



The Digital Wealth Project Year One Impact report.

Dr Holly Foley and Dr Katriona O'Sullivan ALL Institute Maynooth University





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Vision

The Digital Wealth project's vision is for a level playing field. Where every student has the same opportunity for a quality education. Where schools are equipped for 21st Century teaching and learning, where digital literacy and connected infrastructure are embedded within education.

Our mission is to address digital poverty and develop digitally capable citizens who can fully participate in a digitally equal society through increasing the digital capabilities of schools. Our goal is to demonstrate the impact that supporting & resourcing schools to have the skills, infrastructure.



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Background

Digital poverty is an international crisis highlighted by Covid-19. To live in poverty means having an income level so low that the most basic human needs cannot be met. Digital poverty is the great equalizer; it is not income dependent and relates specifically to lacking the digital resources necessary to enjoy a standard of living which is regarded as acceptable in modern society.

Digital poverty is evident for schools across Ireland. Poor and unreliable internet access is a barrier to teaching for over 35% of the teachers, while a third of teachers nationally said they lack "the technical know-how" to use technology to teach.

This is supported by 2018 Programme for International Student Assessment (PISA) data from the OECD in 2018 which found that Ireland ranked lower than average in the availability of online learning platforms and the availability of professional resources to support teachers to use digital devices. Research conducted in an Irish context just prior to Covid-19 identified several areas which were hampering the adoption of ICT within schools at a national level, these ranged from lack of infrastructure, the perception of ICT amongst teaching staff and the messaging regarding ICT coming from school leadership (Marcus-Quinn et al. 2019). When school closures were enforced as a result of Covid-19 the aforementioned obstacles became more palpable.

Research conducted by the ESRI in June 2020 found that the ability of schools to act in response to the remote learning environment was impacted by households' access to digital technologies and local broadband availability. In a very short period, teachers and students were challenged to upskill their digital competencies, typically in a 'learning by doing' fashion. Live online videos and the use of virtual platforms appeared to be the distance learning tools of choice, though schools with catchments characterised by lower coverage of high-speed broadband and lower average household incomes availed of these means to a lesser extent, providing evidence of digital exclusion (Mohan et al. 2020).



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The World Economic Forum has noted the importance of reducing digital poverty; "Technology can personalize learning, engage the disengaged, complement what happens in the classroom, extend education outside the classroom, and provide access to learning to students who otherwise might not have sufficient educational opportunities." A large scale study conducted by Microsoft Education & The McKinsey Global Institute on 'The Class of 2030' found that technology can help teachers reallocate 20 to 30 percent of their time so they can focus more on student-centric activities. The same study found that many teachers and school leaders within the education system are eager to make such changes but don't know where to start.

The Digital Wealth project addresses these issues by reducing digital poverty. It identifies what skills, technology and infrastructural changes are needed within individual schools and then works to empower the whole school community to become digitally wealthy. Without the proper development of digital wealth, the world will fall short of achieving the 2030 Sustainable Development Goals (SDGs) created by the United Nations (UN) (GeSI, 2020). If digital wealth is increased, it will help accelerate progress toward the SDGs by 22 percent and it will deliver reductions in carbon emissions. Digital wealth increases engagement in the economy, and supports wellbeing through connectedness.



Project Innovation

The Digital Wealth Project was developed using theoretical and academic knowledge of the principal investigator, Dr Katriona O'Sullivan, as well as industry expertise from Microsoft Dreamspace.

In 2021 Dr O'Sullivan, co-authored research entitled: Just Digital Framework to ensure equitable achievement of the Sustainable Development Goals (SDGs). This research proposed an innovative framework which supports the achievement of the Sustainable Development Goals through increasing access to 4 key digital competencies, the digital wealth project is built upon this framework and has taken the 4 competencies and applied them to the school environment, they include;

- 1. Capabilities: Increase teacher & student digital capabilities
- Commodities: Partnered with industry to provide training, workshops & activities
- **3. Infrastructure:** Bespoke geographical analysis to identify potential local partnerships as funding opportunities
- 4. Governance: Support all schools to create their digital policy in line with the national digital strategy

Who We Worked With?

In 2020 – 2021 we invited schools, through an open call on social media, if they would like to participate in a new programme which aims to provide whole school supports to ensure they are digitally wealthy. We had 58 schools across 9 counties in total sign up and we began the process of support (See Index Table 1). We began with a needs analysis; this is where we captured quantitative and qualitative data on where the schools were at in terms of their digital capabilities, commodities, infrastructure and governance.



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Our needs analysis survey was created using the European Commission EU SELFIE tool. The SELFIE tool is a digital competency tool which assesses how schools can improve their use of technology for teaching and learning. (https://education.ec.europa.eu/selfie). The survey questions can be seen in Table 1 Index.

All staff in the schools completed the survey before we started working together and they completed a post-project survey at the end of the academic year. The survey measures the impact of teacher & student engagement in activities, potential capacity for growing engagement & other areas such as infrastructure and software. In this way we could capture 'change', 'improvement' or 'decline' in each area. In addition to this measurement of the overall project, we collected data from the schools after they took part in the preservice teacher fellowship, this was where pre-service digital leader have completed a placement in their school- supporting the digital capabilities of the staff and student.

We worked broadly with all 58 schools based on their 'needs', from this group we worked intensively with a 'core' 15 schools i.e. those that self-identified as having the most 'need' using our Needs Analysis Survey.





Figure 1. 9 counties in which the 58 digital wealth schools are located

How do we do it?

Based on the needs analysis surveys seen in Table 1 Appendix, we created bespoke supports for schools which dovetail with our 4 key areas (Capabilities, Commodities, Infrastructure, Policy & Governance). The supports we created comprise of the following categories:

- 1. Staff Training (capabilities & commodities)
- 2. Student Training (capabilities & commodities)
- 3. Student activities (capabilities)
- 4. Policy & governance advice (Infrastructure, policy & governance)



Figure 2. Bespoke Supports for Schools

Staff Training

Staff training sits under the capabilities, commodities, policy & governance arms of the framework. It is important to note that Year 1 of the project took place during Covid-19 with rolling lockdowns hindering our initial project design. There was a chronic teacher shortage due to Covid-19 related illness and therefore it proved challenging to access teachers for nonessential training. After much consideration we developed a suite of training workshops which were delivered virtually on Microsoft teams. Our virtual teacher workshops ran throughout the academic year in a virtual learning environment. To minimize the burden on school leadership teams we requested that only one teacher per school attend each workshop.

Our intention was to create a sustainable model of teacher training whereby our workshops create 'expert' teachers in each school in each workshop area and this teacher takes the responsibility to share knowledge with their colleagues thus empowering all staff with the skillset. We developed and delivered the following workshops over the course of the academic year.

Workshop 1: Make Code

Microsoft MakeCode is a free online learn-to-code platform where anyone can code games, engineer devices, and mod in Minecraft! Anyone at any skill level can learn to code with Make Code.The workshop included exploring some of the lessons, tutorials, different curriculum options available for teacher classroom.

Workshop 2: Teams and Forms

With the move to remote learning and now an emphasis on blended learning, this workshop provided schools with the chance to to see how schools can make the most of their Office 365 accounts with two of the most popular applications used by schools around the country.

Workshop 3: Microsoft OneNote & Accessibility

Office 365 is full of accessibility supports for students and teachers such as immersive reader, screen readers, keyboard shortcuts, Office Lens and much more. This workshop provided

teachers with a deep dive into a ccessibility and how it can be incorporated into other Office 365 apps such as OneNote.



Workshop 4: Digital Media

Did you know every windows device comes with Paint 3D and Video Editor? These applications are a great way to get your students involved with digital literacy and skills. Join the Dream Space

team to explore how to get students working creatively with applications such as Flipgrid, Video Editor and more!



Student Training

As outlined in our project vision we want every student to have the same opportunity for a quality education. It was important for us to realize this vision and ensure that every student in each of our Digital Wealth schools got to experience a 21CLD activity. In order to achieve this, we created a Pre-Service Digital Leader programme. Student training sits under the capabilities and commodities arm of the framework.

Our student workshops were delivered through the Pre-Service Digital Leader programme. The need for pre-service teachers to embed digital skills into their practice was already recognized in the previous National Digital Strategy for Schools 2015-2020 and has been reiterated in the new strategy to 2027.

The pre-service Digital Leader programme aims to provide schools with the opportunity to build the skills of every student through availing of a digital leader who will bring student groups through several Dream Space activities in school. In year 1 we trained 54 pre-service Digital Leaders each of whom delivered lessons weekly in our Digital Wealth schools over a 6-week period.

The digital leaders are pre-service STEM teachers and have completed a full training programme with Microsoft Dream Space

Educators, and Maynooth University Department of Education, in 21CLD. The training programme prepared our digital leaders in the following areas:

- 21CLD model
- The role of STEAM in Education
- The role of STEAM in skills development and across curricula (as it stands)
- Computational thinking
- The role of unplugged activities in STEAM education
- The role of maker challenges in STEAM
 education
- Coding with the micro:bit
- · Pixel art and binary numbers within this
- Coding with Make Code Arcade
- Flipgrid in Education
- Coding with Sphero bolt (robotics)
- Developing a STEAM lesson plan

Student Activities

While the pre-service Digital Leader programme proved to be a sustainable model of embedding digital skills in schools as a team we wanted to ensure that primary and secondary students also benefitted from the distinctive expertise, energy and motivation of the Microsoft Dream Space educators directly.



In addition to the pre-service digital leaders in the schools, the Microsoft Dream Space educators delivered student workshops for each of our Digital Wealth schools.

All 15 schools received a Dream Space workshop. With support from the digital wealth project team and based on their needs analysis responses each school chose which class would benefit the most from the direct engagement with the Dream Space educators. Over the course of the year up to 30 students in each school took part in a Dream Space activity. By May 2022 the Dream Space educators reached almost 450 students supporting them to engage in a Microsoft Dream Space workshop.

The workshops ran from 10am to 2pm and the content was tailored to school stage. For example, primary schools did activities such as learning how to code with Sphero RVR, which is a programmable, infinitelyexpandable robot. Primary students got to explore the basics of block based coding and work as a team to complete computational thinking challenges. Whereas second-level schools got to engage in the basics of Artificial Intelligence (AI) and explore how it is used in our everyday life. From Siri and Netflix to smart cars and smart cities, AI is all around us and it is important to learn how it can be used as an important tool but also be mindful of how it can be weaponised. Second- level students got to do a deep dive into the ethics around AI and understand how bias can affect our technologies.

Crucially the activities could be adapted to be 'unplugged' in the event that a school did not have the infrastructure e.g. strong wifi or hardware e.g. a device for each student. In this way every student that attended the activity got to engage in the workshop irrespective of their school's resources.

Policy and Governance

In April 2022 the Government published their National Digital Strategy for Schools 2022-2027. The preceding strategy ran from 2015-2020 which means it was already at the very tail end of the strategy when Covid-19 forced a pivot to online learning and rendered it instantly unfit for purpose.

One of our project goals is to support schools to create or update their own digital strategy in line with the National Digital Strategy for schools. We understand that school leadership teams have many competing priorities for their time and do not necessarily have the opportunity to examine each new policy in detail. To support our schools to embed the key areas of the National Digital Strategy 2022-2027 and how they can build their own school strategy to align with it we created a condensed and more accessible version of the National Digital Strategy 2022-2027 for our school leaders. At the start of the project each school was offered a one-to-one meeting with our digital specialist, this meeting involved discussing the results of the needs analysis. The teachers were invited to comment on where the school was right now and their needs. They were then supported to identify places where they could try to access support or funding for hardware- local non-profit organisations and tech companies, they were provided with template letters for small, medium and larger organisations with an 'ask' for funding.

At the end of year 1 we brought together school leaders from our 'core' 15 schools to workshop their own school digital policy and bring it in line with the recently publish Digital Strategy for Schools to 2027. We hosted the group in Microsoft Dream Space with various expert speakers and each school leader left with a draft of a policy for their school used the opportunity of our first in-person event to create a community of practice amongst our Digital Wealth Schools.



Results

Year 1 -Impact

This section presents the results of the year one qualitative and quantitative research, we will continue to work with our 'core' 15 schools in year 2 and year 3 and collect longitudinal data each year to give us a full picture of the impact of our project over the three-year period.

ICT Use – Teachers & Students

One of the areas we are highlighting is the adoption of ICT amongst teachers and students. We can see from figure 3 and 4

that there is an increase in teachers using ICT for assessment reasons. This is one of the key areas covered in our teacher workshop 2 'Teams and Forms' it is beneficial for many reasons but as The Class of 2030 research highlighted by using technology for assessment reasons teachers can focus more on student-centric activities such as building deeper oneon-one relationships, refining individual lesson plans, or providing real-time and personalized feedback to students.



Teachers use of ICT for assessment reasons

Figure 3. I use ICT for assessment reasons percentage difference pre and post engagement with Digital Wealth Project

As highlighted earlier in this report, the issue of teacher training and professional resources has arisen pre and post pandemic. According to our needs analysis Microsoft Teams was the most prevalent platform used by schools in our project, however there was a significant percentage of teachers who felt they had not received significant training on the platforms they used. Through our teacher workshops we supported teachers in using Teams and as the chart below indicates there was an increase in the number of teachers who felt they received sufficient training at the end of year 1.



Teachers received sufficient training in using the teaching and learning platforms

Figure 4. I received sufficient training in using the teaching and learning platforms

The graph below illustrates that the vast majority of teachers who attended the teacher workshops have increased their use of ICT in the classroom. This supports the literature which has also found that when teachers have the opportunity to engage in professional training and professional resources for ICT they embed the skills into their teaching practice.

Percentage of teachers using ICT in the classroom since attending the workshops



Figure 5. Percentage of teachers that have increased use of ICT in the classroom since attending the workshops

Increasing teachers digital capabilities is only one side of the coin though. It is imperative that students are equipped to learn and thrive in the digital environment. It is estimated that today's students will enter a workforce in which up to 10 percent of jobs are projected to be in brand new job categories. The students participating in the Digital Wealth Project engaged in a six week 21CLD module delivered by our Pre-Service Digital Leaders as well as benefitting from their teacher's increased digital skills capacity. Figure 6 below illustrates how students have begun to pro-actively engage with ICT and using technology to communicate with their teachers. Figure 6 uses the Likert scale to assess views and attitudes e.g. 1= Strongly Disagree and 5=Strongly Agree.



Students using ICT to communicate with teachers

Figure 6. My students use ICT for communicating with me

In addition to capturing data on the use of ICT amongst students and staff we also found some notable increases in the more general ICT related areas such as Digital Policy. In order to increase the digital wealth of the 'whole' school it is important that the entire staff appreciate the relevance of a having a digital policy, when to use it and where they can access it.

Questions 23-26 are excerpts from the needs analysis which captures data relating to Digital Policy.

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Question 23: I am aware of the school's digital policy.

Question 24: I know where to access the school's digital policy if I need it

Question 25: I contributed to the school's digital policy

Question 26: I am aware of the department of education's national digital policy/strategy



Beyond this, it is even more valuable for a school when the entire staff team have the opportunity to contribute to policies, it increases awareness and creates a sense of investment in the policy area. As part of the Digital Wealth Project we encouraged 'whole' staff involvement in creating the digital policy for the school. Figure 7 indicates indicates an increase in the number of teachers who have contributed to their school's digital policy since participating in the Digital Wealth Project. We found additional data which indicated more awareness in ICT within the schools. Figure 8 illustrates an increase in the number of teachers who responded that their school has as ICT/ TEL coordinator between time 1 and time 2 data collection. It is likely that there was not an increase in the number of ICT/TEL coordinators since time 1 but more likely that there was an increased awareness amongst staff since working on their digital policy etc. that their school has a designated ICT/TEL staff member.



Teachers who contributed to the school's digital policy

Figure 7. I contributed to the school's digital policy: percentage difference pre and post engagement with Digital Wealth Project



Schools with ICT/ TEL coordinator

Figure 8. We have an ICT/TEL coordinator in our school: percentage difference Pre and Post engagement with Digital Wealth Project

Finally, we captured data in time 2 around the role of the leadership team. As research on The Class of 2030 found that 'School leaders are pivotal as they create the "cultural climate" for their school and set vision and direction.' Research in an Irish context states that for effective ICT integration in classrooms to take place, a framework that recognises the role of the school-leader and teacher is needed and that the centrality of school leadership in technology adoption, particularly at the classroom level is fundamental (Marcus-Quinn et al. 2020). With this in mind, perhaps one of the most significant findings from our time 2 data collection is the chart below which indicates that 81 out of 101 teachers reported that ICT and digital skills are now highlighted more from the leadership team. This is a very encouraging statistic and suggests schools are moving towards becoming digitally wealthy and will continue to do so with our support over the next two years.



School leadership highlights ICT and digital skills

Figure 9. ICT and Digital Skills is now highlighted more from the leadership team responses post engagement with digital wealth project

The creation of Digital Leader initiative which supports pre-service digital leaders to deliver 21CLD modules has created a 'pipeline' of teacher talent who will have 21CLD embedded into their practice before they even graduate. Thus, creating a sustainable model for increasing teacher and student digital skills in schools. The digital leaders were very well received by both teachers and students.

In our time 2 data we collected data on the impact that the digital leader initiative had on the students. We received overwhelmingly positive results with some elaborating to indicate how much impact they had:

Qualitative results

Did these workshops have an impact on the students' digital skills?

School 1: Hugely- fantastic initiative!

School 2: yes - excellent

School 3: Yes. They thoroughly enjoyed the classes.

School 4: Yes - they loved it

In addition we collected data on which area of the project was most impactful for their school and followed up with why this was the case:

What area of the project was most impactful for your school?

Pre-service digital leader workshops

Please elaborate on why this was most impactful for your school

Interaction with students, exciting and engaging. Pre-service digital leaders were really excellent. exposure to coding etc that students hadn't previously done.

The responses above indicate that the work of the pre-service digital leaders was impactful. It appears they were able to bring an energy and enthusiasm to digital skills which motivated students to engage with the digital skills lessons and show a willingness for new concepts such as coding.

In our time 2 data collection we wanted to capture how the project has impacted the promotion of ICT in the schools. The qualitative data below illustrates what a lot of schools experienced coming through Covid and remote learning to engaging with our project:

How has engagement in the project impacted the promotion of ICT and digital skills in your school?

It has given us a focus for the year. We were somewhat lost prior to engaging in the project but we now have a path to follow. We have made some progress, but I feel we have a long way to go yet. In relation to the Dream Space educator workshops with the primary and secondary students we received really encouraging feedback from this element of the project. As previously mentioned the Dream Space educators reached almost 450 students for workshops which ran from 10-2 and offered a variety of ICT areas which could be done either using devices or 'unplugged'

Did the Dreamspace workshop have an impact on the students?

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School 1: Yes Yes, very positive and engaging

School 2: Yes. Great interest and enjoyment from workshop. Queried about more of this!

School 3: It was very beneficial and informative. It was also great fun for them.

School 4: Yes - they loved it

School 5: Yes, some children said it was their best day in school so far! They loved it!

School 6: Students were very motivated and enthusiastic

"

We know from our time 1 data collection and other research conducted during the Covid-19 pandemic that many teachers in schools like other sectors felt lost with this new way of working and so much had to be self-taught. The digital wealth project recognizes all the barriers and obstacles e.g. infrastructure, commodities, capabilities and governance and builds in each area to ensure that a whole school approach is taken to digital wealth and to quote the teacher above that there is 'a path to follow'. We will continue to support our 'core' 15 schools from year 1 in areas where they still display levels of need based on their time 2 data collected.

The excerpts from the survey on page 23 indicate how popular and motivating the engagement with both the pre-service teacher programme was and the Dream Space educator activities. Teachers responded that it had a positive impact on their students which can often act as a motivating factor for teachers to build on this movement. It is our goal that the teacher workshops we run throughout the year will support teachers to have the confidence and capacity to be able to do this. Over the course of the year 100 teachers attended our workshops. Each teacher will have carried their knowledge back to their colleagues to share what they have learned. We received the following feedback from a second level Principal in Dublin.

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One of our teachers 'Mary' attended the accessibility training that you guys put on last year and thought it was amazing. Today as part of our whole school plan she delivered in house training on what she had learned to all our staff here-so all staff now have the skills and knowledge in immersive reader etc. Staff were amazed and can really see the benefits of the programme. It was a really good example of passing on knowledge, collaborative practice and making the digital wealth programme sustainable and transferrable!

Personally, I would like to thank you for working with our school thus far, the digital wealth programme is having a direct impact on teaching and learning for the students.

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Conclusion

Results of the first year of the Digital Wealth Project demonstrates it's value in terms of supporting teachers and students to increase their digital skills and knowledge. The research shows the value of the programme in the longer term particularly for initial teacher education where our Digital Leaders are equipped with the skillset to deliver digital skills modules and embed them into their teaching practice. The pre-service digital leader element of the project has created a pipeline of teacher talent ready to prepare students in the class of 2030 and beyond.

Next Steps

For 22/23 We recruited a new cohort of 15 schools who we will offer intensive support to this year. We decided to grow our project inclusively to ensure that when we talk about all schools we are being as inclusive as possible. This year our new 15 schools include a Gaelscoil, special education schools and a Youthreach centre. We will collect data longitudinally each year to measure change, growth and impact. It is our intention to continue to use the data to identify how we can support all schools to become digitally wealthy.

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Survey Questions	
1.	Name of school
2.	Your role
3.	How long have you been a qualified teacher
4.	How long have you been teaching/ working in this school
5.	I have the equipment I need to support digital learning in my classes
6.	My students have the equipment they need to engage in digital learning in my classes
7.	Each student has access to their own device in school
8.	The school has a device library system
9.	Broadband connectivity is not an issue in our school
10.	Each student has access to a device at home
11.	Broadband connectivity is not an issue for students at home
12.	We are a school that has iPad's for student learning
13.	Please list the teaching and learning platforms you use e.g. seesaw, teams, Gmail, zoom, Aladdin
14.	I received sufficient training in using the teaching and learning platforms
	a. If yes, please outline the training you received
	b. If no, please outline the training you feel you require on each platform your school uses
15.	I am comfortable using the teaching and learning platforms

16.	I use ICT for assessment reasons
	a. If yes, please outline the pros and cons of using ICT for assessment reasons
	b. If no, why do you not use ICT for assessment reasons?
	c. If you would like to what are the perceived benefits?"
17.	I use ICT for communicating with students
18.	My students use ICT for communicating with me
19.	I use ICT for communicating with parents
20.	Parents use ICT for communicating with me
21.	My principal/administration team use ICT for communicating with staff
22.	I use ICT for communicating with the principal/administration team
23.	I am aware of the school's digital policy
24.	I know where to access the school's digital policy if I need it
25.	I contributed to the school's digital policy
26.	I am aware of the department of education's national digital policy/strategy
27.	I received security training in using ICT for communicating with parents and students
28.	I have enough time during work hours assigned to training and development of my digital skills
29.	The integration of STEM is valued in my school
30.	We have an ICT/TEL coordinator in our school
31.	Our SSE/ DEIS plan includes our digital skills plan
32.	New staff receive induction on the school's digital strategy

33.	The leadership team promotes the use of ICT in the classroom
34.	Please outline the ways in which your senior leadership team promote the use of ICT in the classroom
35.	I feel confident in using ICT to support a differentiated approach for a range of levels in my class
36.	I feel empowered to lead on ICT initiatives in the school
37.	I have the skills to help students develop digital literacy (including misinformation, ethics and cyber safety)
38.	I use ICT as a tool for Accessibility and Inclusion in classrooms including the supporting of students with AEN/SEN
39.	ICT is helpful for students with SEN/AEN and gifted students to reach their full potential
40.	If yes, please outline the ways in which ICT has supported students in this area in your school.
41.	If no, please outline why ICT is not supporting students in this area to reach their full potential
42.	Is your lesson plan as inclusive as you would like it to be?
43.	What supports you to create an inclusive lesson plan?
44.	What barriers are there in creating an inclusive lesson plan
45.	Are your students using ICT to it's full potential?

Table 1. Needs Analysis Survey completed by staff in each school









