

Edinburgh and South East Scotland City Region Deal Joint Committee

10am, Friday 6 September 2024

Data Driven Innovation - Internet of Things in Schools Project Update

Item number 5.7

Executive Summary

This report updates on progress made by the Data Driven Innovation (DDI) Internet of Things (IoT) in Schools project. A presentation was previously provided to the Joint Committee on [3 December 2021](#) and [1 March 2024](#), and a video showcasing examples such as work at Addiewell Primary School was included in the ESES City Region Deal [Annual Report 2022-23](#).

The project aims to deliver the IoT in Schools service to most schools across the ESES City Region.

The IoT in Schools service provides schools with environmental sensors, which may include the measurement of CO₂, light levels, humidity, and temperature, as well as access to data visualisation web pages showing data from each sensor, lesson guides and other support materials. Learners can explore the data from internal and external environmental sensors, developing their skills in data, numeracy, technology, and science. This will improve digital and data literacy, empowering learners to succeed in a data driven future.

Three ESES City Region Local Authorities have full rollouts to all primary and secondary schools complete or progressing well. Remaining authorities are running cluster pilots (each cluster is a secondary school and all associated primary schools) and evaluating the technical solution for the full deployment. A brief statement on progress in each authority is included within the main section of this report.

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Report

Data Driven Innovation – Internet of Things in Schools Project Update

1. Recommendations

- 1.1 To note the progress made in the IoT in Schools project across all ESES City Region Local Authorities.
- 1.2 To acknowledge the great effort made by students, teachers, support teams, and other local authority staff across all ESES City Region Local Authorities to bring the project to this point.
- 1.3 To note the individual authority updates within the main section of the report.
- 1.4 To acknowledge that the current IoT in Schools end of service date is 31st March 2027. There will be discussions to identify if and how the service will continue beyond that date for each of the ESES City Region Local Authorities.
- 1.5 To request that the ESES City Region Local Authorities that have not yet completed pilots and reviews (East Lothian, City of Edinburgh, and Scottish Borders), work with the DDI project team to ensure a timely completion of those pilots and reviews, and to make a timely decision on whether to proceed with the full rollout of the service.
- 1.6 To agree that a further progress report is presented in six months as part of the overall DDI annual update to Joint Committee.

2. Background

- 2.1 The IoT in Schools project is part of the wider IoT Programme within the Data Driven Innovation (DDI) Programme.
- 2.2 The IoT in Schools project is working closely with the Data Education in Schools (DES) Programme, which is part of the Data Skills Gateway element of the Integrated Regional Employability & Skills (IRES) Programme.

- 2.3 The project aims to provide the IoT in Schools service to schools across the ESES City Region area. The service will be a significant factor in supporting the DES programme's aim to improve digital and data literacy, empowering learners to succeed in a data driven future.
- 2.4 The IoT in Schools service consists of the following:
- A Memorandum of Agreement in place between the University of Edinburgh, and each Local Authority separately.
 - Each school will have:
 - A connection to the University of Edinburgh and the DDI IoT networks.
 - Several environmental sensors to be located within the school. All schools will have sensors that will monitor CO2, temperature, humidity, and light levels. Some schools may have sensors to monitor soil temperature and moisture, and air quality in outdoor spaces, and some may monitor school wormeries or bee hives.
 - Access to online data visualisations, showing data from each sensor, on the IoT in Schools website.
 - In-person professional learning sessions on data literacy and sensor technology for groups of teachers. For teachers who cannot attend in-person, online support is available.

3. Main report

- 3.1 This is an update of the progress in each authority, following the report presented at the March 2024 Joint Committee meeting:

All local authorities within the ESES City Region had previously run initial pilots consisting of individual and small groups of schools. Although pilot schools are still involved, these pilots now cover entire clusters (a secondary school and associated primary schools) as feedback from authority staff suggested this was the most appropriate way forward.

1. West Lothian
As reported previously, the service has been deployed to all primary and secondary schools. University staff are maintaining engagement with schools to ensure teachers' support going forward.
2. Midlothian
Two full cluster pilots (Penicuik and Beeslack) were completed before the summer break, which covers approximately one third of Midlothian schools. These pilots were a success, and it has been agreed to move to a full rollout, which will start in September 2024. The rollout to all primary and secondary schools is expected to be completed by the end of the 2024-25 academic year.
3. East Lothian
Equipment is in place for full cluster pilots in Dunbar and North Berwick, and these

are scheduled to start shortly in the new academic year. A review will be held following the pilots, and a decision made regarding the rollout to all schools.

4. City of Edinburgh

The City of Edinburgh Council Digital Learning Team considers pilots to be a success, including the Royal High cluster, and the authority's managed IT services provider is evaluating the technical solution for full deployment. Once the technical solution and associated budget have been approved, planning for the full deployment will commence.

5. Scottish Borders

Equipment is in place for a full cluster pilot in Peebles, with the pilot beginning after the summer break. The authority's managed IT services provider is evaluating the technical solution for full deployment. Once the technical solution and associated budget have been approved, planning for the full deployment will commence.

6. Fife

Full deployment is underway, with three cluster pilots completed before the summer break (Auchmuty, Glenrothes and Glenwood). Four clusters are scheduled to start shortly after the start of the new academic year in Kirkcaldy (Kirkcaldy, Balwearie, St Andrew's R.C, and Viewforth), with the aim of completing all primary and secondary schools by May 2025.

7. Addition Support Needs (ASN) schools.

The University's IoT team has been working with specialist staff over the summer to consider how lessons can be adapted for learners with additional support needs, including how sensor data visualisations can be more accessible. The outcomes of this work will be reviewed later in September and plans for ASN schools and settings will be agreed upon with each council.

4. Financial impact

4.1 There are no specific financial implications resulting from this report.

4.2 The IoT in Schools service rollout and ongoing provision are free of charge to schools until the service end date of March 2027. This includes the provision of IoT gateway and sensor hardware, the provision of and access to sensor data visualisations, and teaching and other support materials. However, councils may incur some costs relating to the installation and set-up of the IoT gateway(s) on their networks in the schools.

4.3 If and how the service might continue beyond the current duration will be reviewed 12 months prior to the service end date.

5. Alignment with Sustainable, Inclusive Growth Ambitions

5.1 The hands-on access to sensor-based real-time environmental monitoring that the IoT in Schools service provides to school learners supports data literacy and engagement in the issues and factors for a sustainable environment.

6. Background reading/external references

- 6.1 The IoT in Schools website:
<https://www.ed.ac.uk/information-services/iot/learn-iot>
- 6.2 Links to key areas on the web site:
 - 6.2.1 Intro video to the IoT in Schools service:
<https://www.ed.ac.uk/information-services/iot/learn-iot/iot-in-schools-project>
 - 6.2.2 Case studies from pilot schools (including three case study videos):
<https://www.ed.ac.uk/information-services/iot/learn-iot/pilot-studies>
 - 6.2.3 The DES (Data Education in Schools) page on the IoT in Schools site, which includes a link to the wider DES programme site:
<https://www.ed.ac.uk/information-services/iot/learn-iot/data-education-in-schools>
- 6.3 Recent media exposure:
 - 6.3.1 STV:
<https://news.stv.tv/east-central/west-lothian-pupils-compare-classroom-conditions-to-crocodile-enclosure-in-data-driven-project>
 - 6.3.2 Glasgow Herald:
<https://www.heraldscotland.com/news/23839740.addiewell-primary-works-edinburgh-uni-internet-things/>

7. Appendices

- 7.1 None