

Review of Improving Gender Balance Scotland

March 2018

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Sincere thanks to our partners at the Institute of Physics and Education Scotland for their valuable support and input into conducting this evaluation.

1. Introduction

1.1 Background

SDS is committed to equality of opportunity within the Apprenticeships and other Work Based Learning (WBL) programmes; a commitment that is driven by the values of inclusion and a duty to improve equality and diversity outcomes for people in Scotland.

The Institute of Physics in Scotland (IOP) is a scientific membership society devoted to promoting physics and bringing physicists together for the benefit of all. The IOP aims to promote the role of physics in education, health, the environment, technology and scientific literacy.

SDS made the decision to partner with and fund the IOP to deliver Improving Gender Balance Scotland (IGBS), which was a 3-year action research pilot project that finished in March 2018. It aimed to identify and address issues around gender imbalance in subject and career choice as well as some of the fundamental issues which cause gender imbalance in the uptake of apprenticeships. It was also designed to align with the ambitions outlined in the Scottish Government's Youth Employment strategy.

Stakeholders agree that the main cause of gender segregation in the workplace – reflected in apprenticeship uptake – is traditional cultural norms and out-of-date value systems, including stereotypical views among key influencers such as parents and teachers regarding young people's choices in school subjects and jobs. These views are deep-rooted in society and are considered to also affect employers' attitudes regarding recruitment or promotion as well as behaviours in the workplace. SDS recognised that to address this challenge, action in partnership with others to address stereotypes and bias was needed at an earlier stage to affect meaningful, long term change in cultural norms.

The project was a key element of SDS' Action Plan to improve the gender balance in apprenticeships through partnership working to address stereotypes and bias at an early stage in the education system. The partnership working with Education Scotland was vital to this as it created synergies with their National STEM project and helped maximise the potential for mainstreaming this activity in the long term.

The project largely consisted of two Project Officers working closely with education practitioners, careers information and guidance staff and other educational and government bodies to help schools identify and address issues around gender and subject choice. By working with early years centres, primary and secondary schools, the project aimed to achieve an embedded and sustainable approach to tackling gender imbalance in subject uptake and education pathway choices, with a focus on STEM (science, technology, engineering and mathematics) subjects.

In year 1: IOP:

- Established the project in the 6 school clusters. These were chosen to align with Education Scotland's STEM cluster areas with the aim of creating synergies.
- Assessed the extent of the problem and explored potential ways to address it.

In year 2: IOP:

- Embedded the approach in the school clusters, evolving to a supporting rather than leading role.
- Worked with partners and other key organisations to promote some of the ideas and work.

In year 3 (2017/18) IOP:

- Continued to develop links with authorities, DYW regional groups, career advisors, parent groups and other key organisations.

This report provides a review of the IGBS project. It is based on feedback from a mix of qualitative and quantitative surveys which were designed, delivered and analysed by the SDS Evaluation and Research team. IGBS supported the team with setting up the focus groups.

1.2 Research objectives

The overarching objective of this research was to review the success of IGBS in meeting key project delivery objectives which were to:

- Increase the number of schools, teachers and other audiences engaging with IGBS strategies around tackling gender imbalance;
- Generate an increased understanding of approaches that can be taken to address issues around gender and subject choice in relation to STEM amongst senior school staff and teachers;
- Influence schools that have previously not engaged to identify and take steps to address issues around gender and subject choice;
- Increase discussion and networking between schools on STEM gender imbalance issues; and
- Influence national and local partners to review their approaches and ensure that their programmes and allocation of resources do not encourage gender stereotyping or unconscious bias.

The review also measured short and medium-term outcomes and benefits on schools, teachers, practitioners working with young people and wider stakeholders. It also sought to identify what worked well or less well in terms of delivery and to identify lessons and critical success factors around successfully implementing this project.

Although the focus of the review was on the influence and impact on early years, schools, teachers and practitioners, evidence on how the interventions had directly and indirectly impacted and benefitted pupils and young people was also collected. This evidence was based on feedback from teachers and practitioners being used as a proxy.

Tackling cultural perceptions of gender stereotypes is a long-term challenge, which must be addressed through a range of approaches to address the many aspects of influence. The Improving Gender Balance Scotland project is one method of intervention that is part of the wider work taking place across the country to change and challenge perceptions to create gender balance. Disentangling the attribution of a shift in perceptions to this project amongst the landscape of interventions was not within the scope of this review.

1.3 Methodology

Over the months of January and February 2018 a review of the IGBS project was undertaken through a combination of qualitative and quantitative research methods. Feedback was gathered from the wide range of beneficiaries that engaged with IGBS via a range of methods.

Focus groups, face to face and telephone consultations were held with a total of 20 early years and school cluster representatives in five cluster areas. Focus groups were hosted in the following schools:

- **Thornton Primary** – including three Head Teachers and two teachers from Pitteuchar East and Thornton primary.
- **Auchmuty High** - including Depute Head teacher and Head of Science.
- **Dulloch Primary** - including Depute Head Teacher and teacher.
- **Woodmill High school** – including Depute Head Teacher and Curriculum Lead for Science.
- **Tinto Primary school** - including Head of Science, three teachers and one nursery manager.

Telephone and face to face consultations with Doonfoot primary teacher, South Ayrshire STEM coordinator, Invergarven school headteacher and the Holmstone primary Headteacher were also conducted.

In addition, 276 other project beneficiaries were invited to provide feedback by the IOP Project Officers via an online survey. **Table 1.1** shows that 113 responses were collected from the following respondents. The response rate was 41 per cent.

Responses are broadly representative of the different types of organisations that were engaged. Schools were slightly under-represented but this is likely due to being covered in the qualitative interviews. Raising Aspirations in Science Education (RAiSE) and Education Scotland were also under-represented but 20% of respondents didn't provide detail on their job role so it is possible that these individuals responded anonymously. It should be noted that more specific detail on job roles was collected in the survey and so the match with the population sample are not exact.

Table 1.1: Online survey responses

| | Survey Responses | | Full Sample | |
|---|------------------|-------------|--|-------------|
| | Number | % | Number | % |
| School Teacher | 23 | 20% | 125 | 44% |
| CIAG practitioner | 20 | 18% | 52 | 19% |
| Other | 13 | 12% | 2 | 1% |
| Head Teacher/Depute head teacher | 10 | 9% | Recorded as school staff (included under school teacher) | |
| Local Authority representative | 7 | 6% | 19 | 7% |
| Raising aspirations in science representative (RAiSE) | 5 | 4% | 40 | 14% |
| Museum or science centre representative | 5 | 4% | 6 | 2% |
| Education Scotland representative | 4 | 4% | 28 | 10% |
| Nursery Teacher | 1 | 1% | 2 | 1% |
| Nursery manager | 1 | 1% | 1 | <1% |
| Developing the Young Workforce representative | 1 | 1% | 1 | <1% |
| No detail provided | 23 | 20% | 114 | 41% |
| Total | 113 | 100% | 276 | 100% |

Others included: Development Officer, Education Officer, Young Engineers and Science Clubs Programme Manager, STEM Ambassador, Pupil Council Leader, NHS Health Improvement, Early Years Field Officer and CIAG Trainer. School Teachers/DHT/H were coded as School Staff in Full sample

2. IGBS delivery and activity

2.1 Introduction

This section provides detail on the structure and nature of activity delivered by IGBS and the range of organisations and representatives were engaged involved.

2.2 Cluster Work

Two Project Officers worked closely with the five school clusters that formed the National STEM project (in North Ayrshire, South Ayrshire, Glasgow, and two in Fife) and a sixth cluster in West Lothian.

The exact structure of engagement with the schools in each cluster varied. In every cluster, the secondary school was involved, some primaries and some Early Learning Centres (ELCC).

Some clusters adopted a formal approach to cluster work with the project officer linking with the secondary school, two primary schools and where feasible an ELCC. Other clusters were more flexible in approach and the project officer engaged with more primaries.

The project largely consists of two Project Officers working with the schools to develop ideas and support trialling of interventions. As collective knowledge developed, the Project Officers shared learning across all cluster schools.

IGBS aimed to build levels of awareness and interest across the schools/clusters to ultimately work (directly or indirectly) with all members of the school community including students, teaching and support staff, parents and the senior leadership team.

In general, the interventions were planned to form a sustained programme to promote a lasting change in school culture. They were facilitated and supported by the Project Officers. All interventions were evidence based.

This section details some of the types of activity trialled. It should be noted that it was a flexible approach and so not all activities were done in every centre. In practice, many of the themes were intertwined.

Staff

- **Conversations** – initial engagement was through conversations with contacts in the schools and ELCCs. Interventions were very much co-created with the schools - those early conversations allowed key staff to consider where initial input might best fit with existing school priorities and which areas of reflection they felt their context would respond to best. For many primary schools, the route in to the IGBS work was via STEM. Some capitalised on the links with DYW (Developing the Young Workforce) and employability

- **Surveys** - Some of the secondary schools used an IGBS staff survey to ask their staff to reflect on their perceptions of how the school deal with issues of gender. This provided baseline data to measure progress against; as a starting point for developing a school action plan; and as one way to begin to raise awareness of the topic across the whole staff body. Some schools surveyed pupils' attitudes to gender balance, careers and STEM. This again served to provide baseline data, provide a rationale for interventions, and in some cases highlighted gender imbalances where the senior leadership team did not necessarily expect to find any. Some schools also developed surveys for gathering parents' perceptions of issues relating to gender. Schools were then able to reflect on how to use the analysis to engage with parents/carers and the wider community.
- **Continuing Professional Development (CPD) unconscious bias training** - the Project Officers delivered CPD to staff in a range of formats to best suit the needs/requests of the school/ELCC.
- **Secondary Schools** - Many secondary schools received brief input at a whole staff in-service day. This enabled an introduction to the project, and was intended to inspire individuals to volunteer to form a staff working group to lead work in the school. Later some schools/departments arranged a longer input to enable more depth, and greater reflection on gender stereotypes, unconscious bias and their impacts in the classroom.
- **Primary Schools** - In primary schools CPD tended to be arranged for twilights. Some schools requested CPD input around STEM initially. This tended to lead to requests for CPD on gender stereotyping/unconscious bias. Some schools requested CPD for the whole staff, with the intention that staff would then develop interventions for their own classes – sometimes as the second half of the twilight session. Some clusters with strong working relationships asked for input on gender to all primary staff in the cluster.
- **ELCCs** - CPD with ELCC staff was generally less formal and formatted as a discussion with staff, prompting reflective questions, rather than as formal presentations.
- **Staff working/focus groups** - Many of the secondary and some primary schools formed staff working groups. Some groups regularly met with the Project Officers, some worked more independently.
- **Inclusive teaching** - Some schools had one strand on inclusive teaching, especially within their science faculty. The Project Officers supported with monitoring existing practice, suggesting areas for reflection and supporting changes.
- **Guidance staff** - in some schools, guidance staff asked for input into Personal and Social Education (PSE) lessons. The Project Officers developed lessons around gender stereotypes and unconscious bias for S1-5. Some schools were able to trial them, and some have since embedded the lessons in their programmes.

- **Pupil/parent information evenings** - Some schools asked for Project Officers to have a presence in the form of a stand and/or a short talk at the customary school information evenings.
- **Cluster network** - One cluster, with project officer support established a cluster network – with representatives from across the cluster and the project officer meeting regularly to share ideas.
- **Auditing resources** - Some schools asked for support in auditing existing resources to review the way gender was presented– this ranged from subject choice booklets, equalities and/or health and wellbeing policies, books in ELCC settings to existing skills lessons in secondary school.
- **STEM/gender** - Many schools asked for STEM support and the Project Officers could deliver anything from individual lessons to STEM days. This supported STEM delivery, but also allowed the Project Officers to model good practice in inclusive teaching and consideration of gender/STEM issues.

Pupils

Activity with pupils had several strands: observing/assessing pupil experience through a 'gender lens'; supporting pupil groups tasked with leading IGBS activity; and delivering, or supporting the delivery of activities to highlight gender stereotypes to pupils.

- **Pupil shadowing** – this involved observing the pupil experience through monitoring teacher/pupil interactions and auditing resources on display around the classrooms and school.
- **Pupil focus groups** - this allowed the schools via the Project Officers to ascertain pupil views on gender balance around the school. As the groups were facilitated by the Project Officers, it allowed the pupils to speak freely, and anonymously, to an extent that would probably not have been possible had a member of teaching staff been present.
- **Pupil action groups** - Many schools established pupil action groups to lead on interventions within the school/ELCC. These were sometimes established as new groups, and sometimes capitalised on existing working groups (eg Pupil Council, Rights Respecting School groups).
- **Pupil lessons on gender stereotypes** - Many primary schools were keen to explicitly challenge learners' understanding of gender stereotypes and unconscious bias. In many schools these lessons linked into employability. Project Officers helped as requested to develop and/or deliver lessons.
- **Assemblies** - Project Officers were invited to deliver assemblies in many schools to raise awareness and in some cases to encourage involvement in pupil action groups.

2.3 Work beyond the cluster

Career Long Professional Learning (CLPL) Programme

In year three of the project, the reach of the work in the pilot authorities was extended beyond the pilot clusters. CLPL events with most pilot authorities and with the RAiSE programme were delivered.

Some of the events were 'one off' events, mostly to act as an introduction, to raise awareness and to point to resources.

The bigger/longer events were run either as day events or as a series of two to four twilight sessions. These allowed much more discussion and reflection and included a session for delegates to plan short, medium and long-term actions together. Where appropriate, delegates were asked to implement some of the learning between events.

The events were generally advertised through authorities and IOP and Raise networks. They generally attracted a diverse audience including representatives from ELCC, Primary, Secondary and science centres/museums.

Work with careers advisers

IOP worked with SDS employees providing careers information, advice and guidance (CIAG) in two key areas:

- Training on gender stereotypes and unconscious bias to representatives from most regional SDS offices. It was intended that attendees could cascade the training to all CIAG staff.
- Working with the University of the West of Scotland to develop and trial approaches to embedding awareness of issues related to gender, stereotyping and unconscious bias in their MSc in career guidance and development.

Informal learning

Informal learning providers such as science centres, National Museum of Scotland, some STEM ambassador hubs, non-science museums (eg Scotland Street Museum), Primary Engineer, University outreach programmes received one-to-one advice and feedback. Some received short staff training sessions and were invited to attend longer CLPL days.

Resources to support wider dissemination

Resources for practitioners focussed on what an individual teacher/school/cluster might need to engage with the issues, learn quickly about current research and best practice, and gain ideas for how and where to get started. The table in **appendix one** details the resources available via the Education Scotland National Improvement Hub and IOP sites that were developed as part of the project.

SQA credit rated customised award.

The learning from the training has been packaged into a single unit award “Challenging stereotypes: encouraging gender balance”. The award is now available to support practitioners as a SQA Level 6 customisable award of 10 SCQF credit points. The materials include learning outcomes and associated performance criteria, scheme of work, and assessment materials.

Dissemination & raising awareness.

Partnership - The partnership working between SDS, IOP and Education Scotland allowed the Project Officers to access different networks and share approaches and learning widely.

IOP liaised with the network of CIAG staff and contributed to a variety of SDS events.

IOP’s networks of physics teachers were used. The Physics Network has included IGB in their support for Physics teachers either by running workshops themselves, or inviting the Project Officers to contribute to their events.

IOP liaised with a wide range of professionals from Education Scotland’s networks. The link with the RAiSE programme was a mechanism to raise wider awareness of IGBS. Project Officers contributed to unconscious bias training at all-staff meetings and equalities events.

Wider stakeholders/interest with Local Authorities - Levels of interaction at authority level were varied. Different authorities saw different links and opportunities with existing activity and networks.

Some examples of work included ensuring gender is considered in developing STEM programmes, contributing to ongoing equalities work, arranging for IGBS input into probationer primary teacher programme, linking with DYW regional groups, linking with colleges, joint approach with modern languages and STEM.

Schools/Teachers – IOP worked with other schools/clusters ranging from meeting and offering resources to interested members of senior leadership teams, to running CPD on impacts of gender stereotypes and unconscious bias to all teaching staff in a cluster.

Conferences

The Project Officers have presented at many conferences – below is a summary of few:

- Scottish Learning Festival (2016 and 2017)
- IOP – Stirling Physics teachers’ meeting (2016)
- ASE Scotland conference (2016, 2017)
- Children in Scotland organised a whole day seminar for IGB

- Primary Science Teaching Trust (conference 2016)
- British Interactive Group (conference 2016)
- Engender roundtable Discussion: Creating a Gendered Education Strategy for Scotland (2016)
- College Development Network - Gender Equality conference (2017)
- SSERC – Project Officers have contributed to various SSERC CPD events

Competition

A competition for primary schools (Gender Stereotypes: Are they fair?) received 170 entries from around Scotland. There was a real breadth of responses.

Scale of activity

The figures below provide detail on the scale of activity. They have been calculated in person-hours. So, for example, a half-hour presentation to 10 people would count as $0.5 \times 10 = 5$ person-hours. Only activities led by a project officer are included.

- Cumulative CLPL/teacher/practitioners: 2,685 person hours
- Cumulative pupil engagement activities: 5,423 pupil hours
- Cumulative stakeholder activities: 3,407 stakeholder hours

3. School and other beneficiary feedback

3.1 Background

Over the months of January and February 2018, a review of IGBS was undertaken through a combination of qualitative and quantitative research methods.

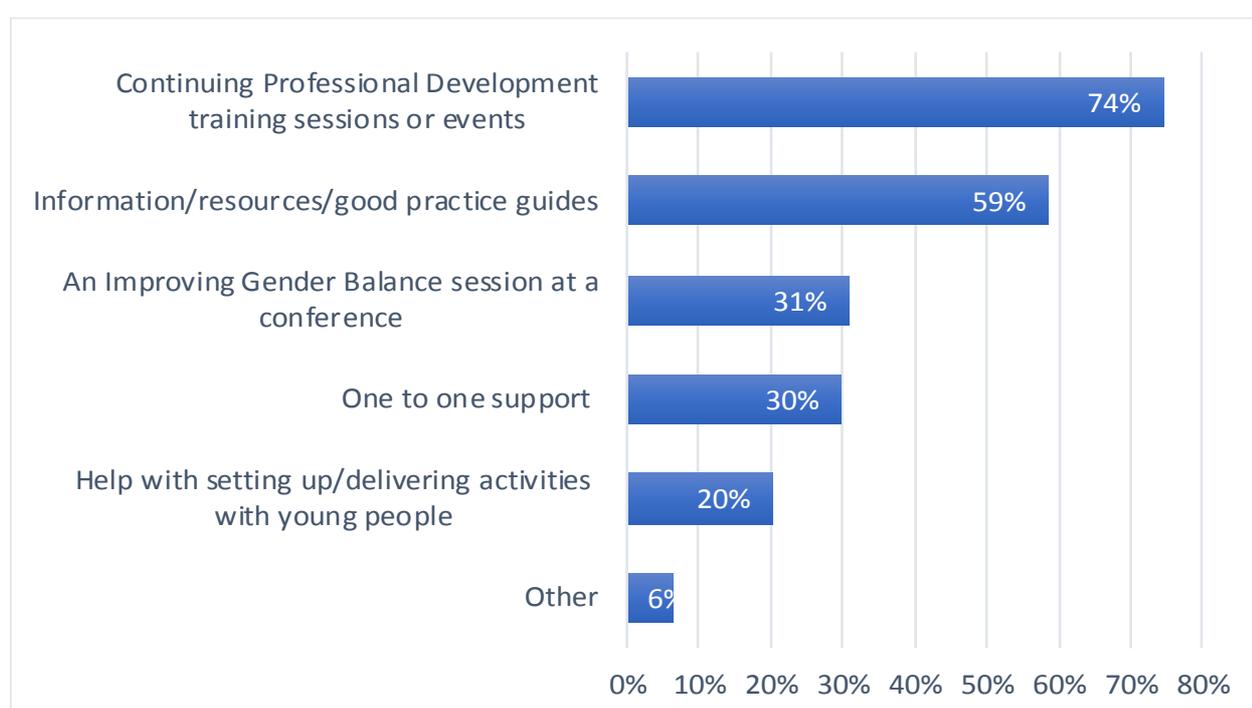
In addition, the full range of project beneficiaries were invited to provide feedback by the IOP Project Officers via an online survey.

The online survey was complimented with qualitative feedback gathered from five focus groups, one face to face consultation and two telephone interviews. This included a mix of 20 senior and operational primary and secondary staff as well as nursery managers. The feedback from the online survey, focus groups and consultations are combined below.

3.2 Engagement and support accessed

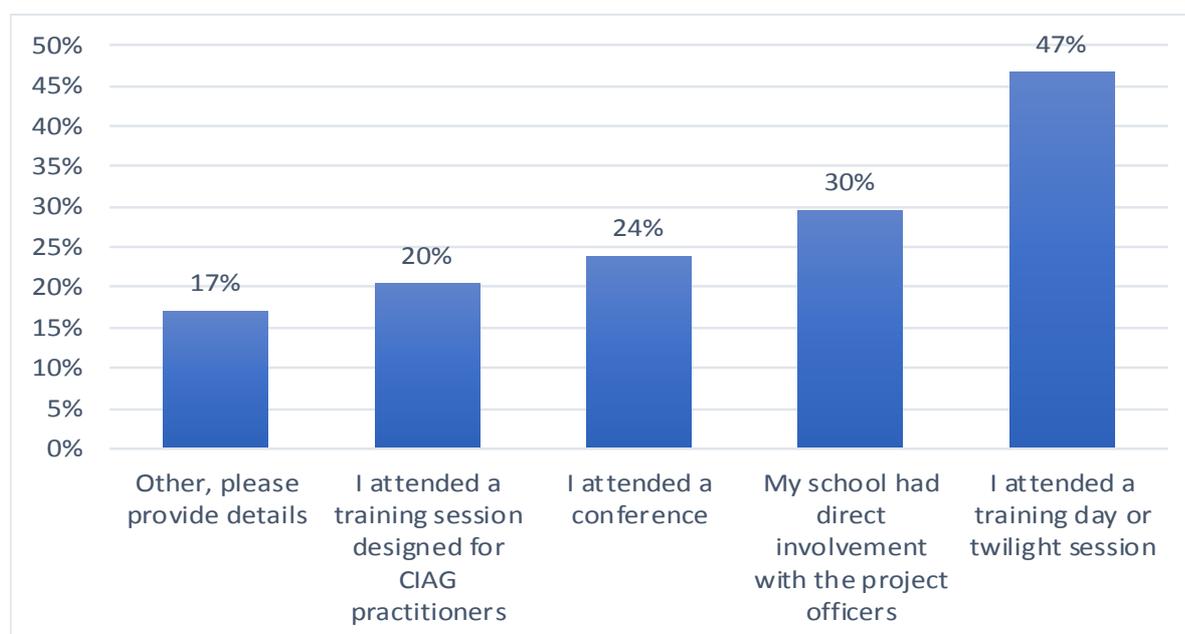
Project participants that responded to the online survey were asked to provide details of the services they had accessed, 60% had accessed more than one type. The majority had attended continuing professional development training sessions or events (74 per cent), 59 per cent had received information, resources and good practice guides and 31 per cent had attended an IGBS session at a conference. Almost a third (30 per cent) had received one to one support. **Figure 3.1** illustrates.

Figure 3.1: Support accessed from IGBS (online survey) (N=94)



Project participants were also asked for details of the IGB activities that they attended or engaged in. Almost half attended a training day or twilight session (47 per cent), 30 per cent worked in a school and had direct involvement with the Project Officers, almost a quarter attended a conference and 20 per cent attended a session designed for CIAG practitioners.

Figure 3.2: IGBS activities – online survey (N=88)



3.3 Rationale for involvement and expectations

Feedback from the focus groups and telephone interviews conducted with cluster schools highlighted that schools decided to engage with IGBS for a wide range of reasons.

The most common was the perceived close alignment and contribution to the schools' focus on STEM. Many of the schools talked about the work they were doing with pupils around increasing interest and enthusiasm for and take-up of STEM subjects. There was a strong awareness of research on future labour market demand and the fact that there was a need to increase take-up of these subjects and to encourage young people to pursue these career pathways. Primary, high schools and ELCCs were also keen to work together through a joint approach to address the gender imbalances in STEM subjects and career pathways.

Addressing these stereotypes at an early stage and keeping this message consistent was viewed as a priority. Schools highlighted that often girls can show a keen interest in STEM at primary that does not translate into take-up of subjects like physics or computer science in high school. IGBS was integral and key to helping support school objectives around this agenda.

'By age of 7, the research says that young people have decided on their career already and a lot of it was dependent on stereotypes - this is something we were keen to address and a reason for getting involved in IGB.' (Primary School)

'The faculty head of science has been pushing the agenda very much. The project has an immediate and direct link to STEM. Uptake is much lower amongst females.' (High School)

Schools were keen to identify how they could address gender stereotypes more effectively, how they could identify unconscious bias and amend their processes, teaching approaches and materials and resources to avoid promoting these further. Some support and advice around this was required.

Schools involved in the consultation highlighted their passion and drive for addressing gender imbalance issues. All schools consulted were engaged in the project at the senior level and head teachers, depute head teachers and faculty heads of science were keen to promote and drive the agenda in the school from the top downwards.

'This is significant and it makes such a big difference – we wouldn't ignore this.' (High School)

Promoting fairness and equality was also cited as a key objective of engaging with the project, this was within the key vision and values for several schools. Schools were also keen to raise aspirations, particularly amongst females and within equality groups such as gypsy travellers or in deprived areas where gender stereotypes can be heightened.

A small number of schools felt that it fitted well and contributed to their school approach to supporting pupils with LGBTI issues. By understanding gender issues and stereotyping and being signposted to appropriate resources, they felt that they would be better placed to support their pupils around some of the challenges they face.

'I had set up an LGBT group in the school to give pupils a safe space to go to. As a result, I have become more interested in gender equality.' (High School)

Several schools reported that driving the STEM agenda and addressing gender imbalance was part of their school improvement plan and IGBS was viewed as a way of supporting them to achieve these objectives.

3.3 Satisfaction, value and usefulness of support

The online survey gathered participants' views on overall satisfaction. They were asked (on a scale of one to ten where one is totally disagree and ten is totally agree) about the extent to which they feel the support has been useful and influential. This is reported in **table 3.1**.

- Almost all (98 per cent) agreed that the engagement and information they received was useful;
- In addition, almost all (98 per cent) agreed they learned something new or now feel more informed about gender balance issues.
- The majority (95 per cent) agreed that they would be likely pass on what they have learned to colleagues and partners and would like to take part in more projects like this in future.

- Over 90 per cent would be more likely to seek out further information and training in this area.

Table 3.1: Usefulness and value of engaging with IGBS (1 totally disagree, 10 totally agree)

| | Mean Score (1 to 10 scale) | Percentage between 6-10 |
|---|-------------------------------|----------------------------|
| I found the engagement useful (N=89) | 8.9 | 98% |
| I found the information provided useful (N=89) | 8.9 | 98% |
| I learned something new (N=89) | 8.9 | 98% |
| I now feel more informed about gender balance issues (N=88) | 8.8 | 98% |
| I am likely to pass on what I have learned to colleagues and partners (N=88) | 8.8 | 95% |
| I would like my organisation to take part in more projects like this in future (N=84) | 8.4 | 95% |
| I would now be more likely to seek out further information/training in this area (N=88) | 8.8 | 91% |

All school representatives that provided feedback in the focus groups and telephone interviews were highly satisfied with their experience of working with IGBS. They elaborated on their views around the value and usefulness of the support. The feedback is themed as follows:

High quality/valuable advice and support – schools described receiving intensive support from the Project Officers in the form of discussions, brainstorming, collaborative teaching, designing lessons, staff inset days, CPD, input to subject choice materials and course materials. They supported school staff in unconscious bias awareness and how to respond. Project Officers often challenged staff and left questions for them to explore and address as a school. They also helped school staff to facilitate links with external partners that could support, work with them or share knowledge/ideas. In delivering this, the Project Officers were described as ‘having a depth of knowledge’, ‘experts’, ‘full of ideas’, ‘thorough’ and ‘thought provoking’. Many reported ‘having their eyes opened’ or ‘learning something new’ since being involved in IGBS.

*‘Bounced ideas– given us the confidence to run with new ideas and approaches’
(High School)*

‘Helped us to make links with other organisations involved in the STEM strategy networks, this has allowed us to have conversations, bounce suggestions and ideas and rejuvenate what we do.’ (STEM Co-ordinator)

'Activities were enjoyable, interesting and thought provoking - they challenged our existing perceptions - made us critically evaluate ourselves' (Nursery Teacher)

Provided excellent resources/materials/research– school respondents talked about the value of the materials and resources provided by the Project Officers. This included research materials/evidence, exam examples, STEM resources, e-mails with information, lesson ideas and teaching resources. The online community was highlighted as being a valuable mechanism for sharing these resources as well as examples of good practice between schools and practitioners.

'She added me onto the community chat which covers things that we have learned – it was good to share knowledge, good practice and lessons' (Primary School)

Supported mainstreaming change– schools described the Project Officers' approach as 'delivering sustainable change'. They were encouraged to keep 'chipping away' and challenging themselves around the issues. The Project Officers demonstrated how gender balance could be weaved into and embedded within their existing activities, practices, procedures, projects and strategies. For example, STEM, DYW, growth mindset, ethical purpose of the school. They were shown how gender stereotyping could be integrated in new and existing staff CPD. As a result, many schools feel that there remains a legacy and they can take what they have learned and drive it forward on their own. However, still insisting they would still value support along the way from the Project Officers.

'We got the message, if we don't get this right we are doing our children a major disservice' (High School)

'Allowed us to keep at something, not just one meeting – keep working at it. Running ideas and sharing ideas. Helped cement it. It is a genuinely important thing.' (High School)

'She thinks about things in a sustainable way – she is aiming to change us and when it finishes we will have moved on as a school and be analysing and addressing these things ourselves' (High School)

Flexible, responsive and timely- respondents from schools described the Project Officers as 'accessible' and willing to spend as much time as they needed with them. It was highlighted that working with schools requires a lot of flexibility and this was a key strength of the project officer's way of working. Schools reported that questions, enquiries or requests for information were answered promptly. Schools felt there was ongoing support available and they met regularly with the Project Officers.

'The support has been excellent- very responsive, informative and quick to respond to queries' (High School)

Understands schools- schools really valued Project Officers' knowledge and background experience of schools; how they work in practice and the challenges they face. They felt there was an understanding of what was feasible rather than just theoretical. This was viewed as key to the success of the project in many schools. Teachers felt they could discuss course materials and initiatives and pass them by the Project Officers for suitability.

'Very knowledgeable but also realistic about what can be achieved. Understands schools and how they work, what is feasible' (High school)

'She is a physicist and she understands our school' (High school)

3.4 What has worked well

Project champions

Project champions were highlighted as critical to the success of the project. Having one or a small group of individuals promoting, driving forward the project and supporting the roll out in their school was important. The project needed a key contact for liaising with the Project Officers and for coordinating and driving the embedding of activity in the school. This person needs to inspire and enthuse others to get involved.

Often it was the Head Teacher, Depute Head Teacher or Head of Science that took on the role of driving the agenda. Schools were keen for it to be driven from the top and linked into school strategy (as discussed in more detail below).

However, teachers also were also heavily involved due to their background knowledge, interest and enthusiasm about the subject area.

School staff shared the approach and ideas for projects and activities that they had introduced in their classroom, then encouraged others to do the same and supported them in the delivery.

Champions encouraged others to test these approaches with their classes. They also ran sessions, discussed the project in staff meetings and passed on resources and materials that they had accessed and made sure it was widely known.

Others set up groups involving pupils, for example pulling together a group of female STEM ambassadors.

However, the importance of buy-in and support from across the school was also cited as key to successfully implementing the project.

'Need someone that is championing gender equality in every establishment.' (High School)

'The project raises something personally for people as often people have suffered from other's unconscious bias.' (Nursery Manager)

Partnership working

The effectiveness and value of the partnership working and cluster approach around delivery of IGBS was highlighted as a key success factor. In some cases, the project activity drove partnership working and in others project activity was woven into existing partnership projects to increase the focus on gender balance.

The project was integrated into cluster improvement plans so that schools were portraying a consistent message to pupils.

Several examples of transitional work between early years, primary and high schools were cited as being adjusted to include a gender balance focus. This included STEM ambassadors working with primary school pupils and literacy projects as well as discussions and sharing of ideas between senior school staff. Schools were keen for there to be a strong link and consistency of approach from early years to high school.

'The cluster work has brought the high schools brilliant STEM work into the primary and nursery.' (Primary School)

'I found that being part of a Cluster was empowering because we could share what was working well for us, trouble-shoot together over anything that had us stumped, share articles that were relevant. It had to be a joined-up approach to make any difference, and being part of a larger group made the work that we were doing seem more valuable to those who weren't directly involved, as well as giving it more weight.' (Primary school)

'I loved sharing with colleagues from secondary and nursery establishments - we could see the bigger picture that we were contributing to.' (Primary School)

Schools talked about their external partnership working with local employers and universities on initiatives where positive role models visited the schools and vice versa. A few examples of schools passing on learning to employers and colleges and discussing and implementing ideas as to how to address gender balance on existing initiatives were provided.

'Linked into DYW, STEM and other initiatives - closely aligned to all agendas in the school.' (Primary School)

An example of an interesting partnership project that both a primary and high school delivered was the XX Factor. Twelve PhD research students were invited from St Andrews university to pitch their research topic to pupils in three minutes each followed by a question and answer session. The fact that they were female STEM PhD students was not mentioned, the pupils just saw aspiring female researchers presenting inspiring work. Post event feedback was described as positive, pupils really enjoyed it. First year pupils were asked to draw pictures of researchers before and after and teachers could see that perceptions had shifted.

Alignment with strategic objectives

One of the critical success factors for the project was the fit with and contribution it makes to schools' strategic objectives and ethical standards. Gender equality was high on the agenda for the schools engaged in the consultations and IGBS was intertwined in school improvement plan objectives. This meant that the work slotted in naturally with existing plans and activities rather than being viewed as a 'bolt on' or 'a project.'

In all cases the agenda was driven from the top by head teachers, DHTs and head of faculties by a desire for change. Schools demonstrated a real commitment and as a result generated support and enthusiasm across the school.

The focus on IGBS was weaved into a range of school strategies and programmes of activity. This included transition activity, the delivery of STEM events and activities. Addressing gender stereotyping was also made part of activities delivered as part of the DYW agenda.

For example, career days featured positive female role models from jobs that are or perceived to be male dominated. In one school as part of the DYW activity pupils were given a view of the local economy in terms of jobs available in different sectors. The project ensured that gender balance was covered as part of this. Young females were encouraged and supported to participate in week long activities and STEM challenges. Parents were invited to the school on careers days to talk about their jobs. These were carefully chosen to avoid stereotypes (i.e. male nurse and a female engineer).

Another example was a primary school who as part of a DYW day hosted a Kit car build challenge. They opened this opportunity up to a couple of classes and deliberately put a female in to host the challenge.

'Fitted in with where we are going, was flexible and tailored, linked to and aligned with the curriculum.' (Primary School)

'Revamped all of our policies around DYW and gender - looked at this area within career pathways - it has taken off big time.' (Primary School)

IGBS is written into some school and departmental development plans and in one school staff were given targets on this. Many schools have also included it in their staff training for existing and new staff thereby ensuring sustainability.

Overall, school respondents considered this to be key to successfully mainstreaming IGBS into school activities.

Relationships

School representatives highlighted the value of their relationship with the Project Officers. Project Officers engaged with teachers across the schools and were described as ‘approachable’, ‘understanding’ ‘accessible’ and most importantly ‘not preachy’. Schools felt that IGBS officers could challenge their colleagues from an ‘outside perspective’ in a way that they could not do themselves without seeming critical.

Project Officers picked up on unconscious bias and gender stereotyping in teaching approaches and school process but approached staff in an engaging and supportive manner. Some teachers were shocked at what they were challenged on but generally responded positively.

Respondents felt that the Project Officers supported them to secure buy-in across at the school by showing how the project can work, whilst at the same time managing expectations and setting realistic goals.

*‘The session delivered really provoked people. They are still talking about it and when they are delivering classes and course materials they are thinking about these things.’
(High School)*

‘The outside perspective protects our relationship with staff’ (High School)

3.5 Challenges and barriers

School and pre-school representatives discussed the various challenges they encountered in ensuring the successful delivery and roll out of the project in their school. The most commonly cited challenge was the scale of cultural change required in terms of shifting entrenched opinions inherent in society and portrayed by the media.

*‘Can’t solve this in a year, it is about what can we change – what can we chip away at.’
(High School)*

‘Gender stereotypes are embedded in society’ (Nursery Manager)

‘Hormones hit at high school age and young people become more insecure - it all becomes more exaggerated and magnifies these stereotypes again.’ (High school)

Schools reported that colleagues and parents were generally supportive but they did come across some pockets of resistance and denial that gender imbalance or stereotyping was an issue or that action was needed to address it.

Occasionally parents questioned or disagreed with some of the activities or approaches that were being introduced and reassurance was given. A few schools highlighted that you could

do a huge amount of work to break down gender stereotypes or widen horizons around career opportunities amongst pupils only for it to be superseded by parental influence. Some schools felt that they could do more around parental engagement on this issue, with some plans in place for this going forward.

Some teachers (not directly involved with the project) were reluctant to admit their school may have a gender imbalance or issue or didn't feel that action was needed. Some work was needed to help them recognise unconscious bias inherent in the schools. It was recognised that this was not unreasonable and there has to be respect for different opinions. There were often lively debates and discussions around these issues.

'Some people don't think there is a problem. It will work if we start making changes with some that think there is an issue and give a voice to them and then those left become a minority and will eventually start to buy in' (High school)

The whole school and cluster approach was valuable in giving clout and a consistency of approach to the agenda as opposed to at times in the past being perceived as a 'one person crusade'.

High schools highlighted the importance of addressing perceptions as early as possible in early years as high school is often considered too late. It was suggested that further alignment between pre-school, primary and high school is needed going forward.

A further challenge reported was the difficulty in demonstrating and evidencing long term impact of the project and activities. Schools themselves could recognise the difference, there were pockets of anecdotal evidence but evidence of tangible long-term impact is challenging. Schools were optimistic that evidence of change will likely emerge in the long term but it will be difficult to disentangle the attribution to IGBS as there are so many other external influences.

A small number of schools admitted that the balance of activity had been more towards females and that a challenge for them was to do more for the under-representation of males. Several high schools would also like to do more work on Improving Gender Balance rolled out more widely across different curriculum areas.

3.6 Benefits, learning and outcomes

Participant benefits and outcomes

The online survey sought to further assess the benefits and outcomes of IGBS by asking participants to identify specific outcomes and benefits that directly occurred as a result. **Figure 3.3** reports on feedback around impact on knowledge and confidence

- Almost three quarters of respondents feel that they have a lot more knowledge of approaches that can be taken to address gender imbalance in their setting, with a further 24 per cent reporting that they have a little more knowledge.

- 67 per cent report feeling more confident in their ability to tackle gender imbalance issues, with a further 30 per cent a little more confident.
- Over half of participants (54 per cent) feel that their influence in their own organisation around gender imbalance issues have increased ‘a lot’ and 33 percent feel that they have increased ‘a little.’

Figure 3.3: Impact on knowledge and confidence (N=90)



Feedback from focus groups and consultations with the school representatives reflected the online survey feedback with respondents reporting that engaging with IGBS had made them aware of their own unconscious bias. Many were often shocked to discover this but are now more confident in their own ability to address gender imbalance issues. Several are now reconsidering their teaching methods and use of materials and feel they have the tools to do this. Some teachers highlighted that they have always been keen to promote gender balance in their work but felt they didn't have the ideas, tools or access to the correct research evidence to allow them to do this confidently. Engaging with IGBS has provided them with this and they feel more equipped to influence, discuss and debate the issues with both internal and external partners.

'All staff involved are now thinking about their teaching methods and materials and considering how they should be adapted.' (Primary School)

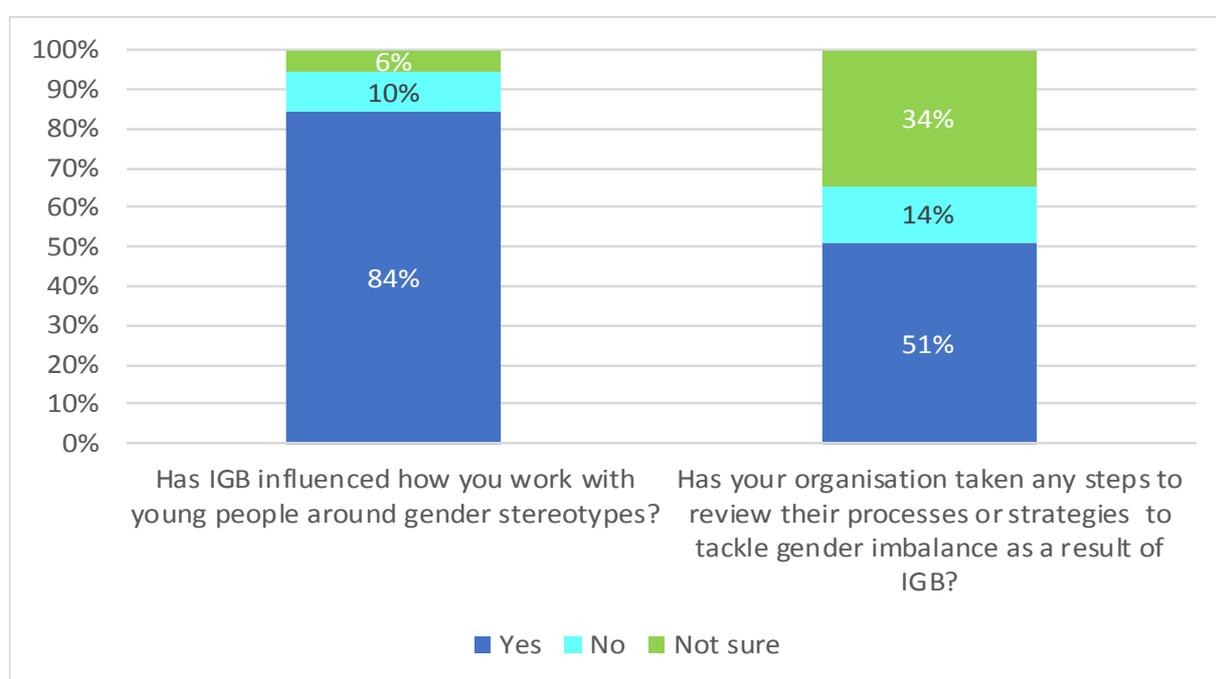
'Gave me the tools, evidence and knowledge to understand the big picture. As a result, I feel better equipped to influence others more widely' (Education Scotland Representative)

Actions taken by participants

Figure 3.4 reports on the feedback from online survey participants on the influence of IGBS project on their own work practices and the processes and strategies of their wider organisation:

- A total of 84 per cent reported that IGBS had influenced how they work with young people around gender stereotypes.
- Just over half also reported that their involvement had led to their wider organisation taking steps to review their processes and strategies to tackle gender imbalance.

Figure 3.4: Impact on work with young people on gender stereotypes (N=90)



Both online survey and school/early years focus group respondents provided detailed examples of actions that were taken due to engaging in IGBS. Changes to processes and strategies reported were wide ranging and demonstrated influence beyond the person that engaged directly with the project. The most commonly reported were:

Audit and review of resources, materials and marketing used for engaging with young people - survey respondents reported changing their imagery, wording, advertising, training and promotional materials to remove and avoid gender stereotypes. Pre – school managers, primary and secondary head teachers have reviewed their books used in class and phased out the use of books inadvertently promoting gender stereotypes. Several schools have subsequently reviewed their lesson materials, teaching examples and photographs used. New gender balanced resources for teaching have been developed and produced following guidance and suggestions from the project. In addition, examples of training materials having been adapted for the training of both careers advisors and the materials used by careers advisors in engaging with young people were also highlighted as actions taken.

'I have developed resources and embedded the learning materials from IGB into the training of careers advisers at postgraduate level.' (CIAG Practitioner)

'Staff are now aware of the messages we present to pupils and we actively consider gender balance when designing any course materials, interventions or new course.' (High School)

Action to promote gender balance/challenge stereotypes – Several respondents reported that they now proactively question and challenge gender stereotypes on a day to day basis. For example, in interview questions, young peoples' job aspirations, discussions with staff and colleagues on the importance of gender balance. Some schools have designed activities for pupils that are specifically aimed at challenging gender stereotypes. Careers advisors also identified that they now have the confidence and ability to challenge gender bias in group work sessions with young people

'Each child was able to justify their opinion based on the photograph, but were brought round to realise that we cannot make these assumptions about others, and that we should challenge the assumptions that others make about us.' (Primary School)

'I work with children of all primary ages in STEM subjects, specifically engineering and computer science. I like to start with them drawing an engineer then look at challenging the stereotypes in their drawings.' (Primary School)

As well as being able to recognise and know how to challenge traditional gender stereotypes, respondents also reported having the ability to now recognise and tackle subtle, unintentional gender bias both in themselves and others. Many felt that engaging with the project has 'surprised them' and 'opened their eyes' to previously unrecognised unconscious bias.

"We have delivered training to staff internally and have agreed with them to 'call it out' if we hear any unconscious biases. We have included an equal opportunities part to our team meeting to include clips or videos on equality including unconscious bias.' (CIAG Practitioner)

Ambassadors - bespoke training for STEM ambassadors has been delivered within one organisation. Schools have put in place STEM pupil ambassadors. Project Officers have also worked directly with pupil councils who have in turn fed back learning to their peers to reinforce the message.

'Pupils council are all fired up about it' (High school)

Adapting vocabulary and language- those supported or engaged by IGBS reported being more aware of their own use of language and that of the people they work with and teach or support. Many reported now being more careful to avoid gendered language and are trying not to use gender as a tool to differentiate between groups of children. One example was a primary school that looked at their use of nurturing language. They hosted discussions about the type of language they used with children and it turned out that all teachers were commonly differentiating their language by gender. In response, they started to switch it up.

'I have been thinking more actively about language when referencing members of the public during interactions. I've also been more conscious of which pronouns I use when speaking about professions such as Doctors and Scientists.' (Science Centre Representative)

'I make very careful and selective use of gender-specific language within appropriate contexts.' (High School)

Increased awareness of and focus on addressing gender stereotypes when discussing career pathways, the world of work and STEM opportunities - respondents report more knowledge of gender imbalance issues allowing them to have more meaningful and informed conversations with young people on the topic. Some feel more confident and informed in challenging stereotypical career choices and perceptions. Schools have added gender balance information and perspectives when covering topics in careers and employability. Teachers have talked to pupils about different careers available in STEM and the genders they associate with them. Respondents also report that they are now promoting careers in STEM to both girls and boys and are more aware of and working to address the female imbalance of STEM subjects.

'Taught lessons with upper primary pupils about gender stereotypes with regards to employment.' (Primary school)

'Ensuring that there is a predominance of inspirational female figures within the context of a science lesson (not just Marie Curie) to show how they and society have benefitted from a career in an integrated STEM subject.' (Primary school)

Sharing and rolling out learning more widely to colleagues and partners – many representatives who engaged with IGBS have acted to influence and share the learning more widely within their organisation and others externally such as schools, local authorities and Skills Development Scotland. Some have rolled out training for all staff in schools and nurseries across their Cluster, whilst others have developed twilight workshops to support colleagues. Training sessions with CIAG staff were rolled out more widely across the organisation. Others have shared learning and passed on knowledge through more informal methods such as team meetings.

'We have planned training to be rolled out. Starting with the Central Team, then Head Teachers and offering twilight sessions/input in school meetings and it is part of the Primary science mentor, training and ELC sessions.' (RAiSE Representative)

Discussion, dialogue on and debate amongst colleagues and partners – some respondents reported that engaging in the project had sparked very interesting and informative conversations on the issues raised amongst colleagues and partners with positive impact in terms of awareness and sharing of different ideas and approaches for addressing them.

Embedding learning into resources and teaching approaches – many teachers have adapted their teaching approaches and methods as a direct result of engaging with IGBS. Research, materials and recommendations have been incorporated into school resources,

materials and approaches to teaching. For example, the structure of class discussions. This was demonstrated in feedback from nursery, primary and high school representatives. This also extends to feedback from representatives from other learning settings outwith schools with a museum reporting that they had adapted learning materials and those who train individuals that work with young people to deliver career services.

'Gender balance is a consideration during every lesson I teach, and I try to be aware of it when buying in new resources, or inviting visitors into the classroom to teach'. (Local Authority Representative)

'Staff are now aware of the messages we present to pupils and we actively consider gender balance when designing any course materials or interventions.' (High School)

'We have changed how we market events, the content of our sessions, how our team is trained, and it has generally changed our outlook of the learning programmes we offer at the museum.' (Museum representative)

Embedding the learning into techniques used in working with young people -

respondents cited examples of introducing activities involving gender balance with all children in their school. Others have made small changes like ensuring they don't unnecessarily separate out young people by gender when allocating tasks and roles. For example, Project Officers critically observed a science teacher's class discussions and noticed that more staff time was spent with boys than with girls. The science teacher hadn't realised that he was doing this but on reflection he agreed that this was the case. He reported now being more conscious of his teaching approach going forward to make sure it is as inclusive as possible.

Stimulating conversations, discussions, debate and awareness raising with young people on the issues raised – engagement in the project has stimulated discussion with young people in the issues raised. Schools have carried out activities and projects with pupils in their school as a direct result and have challenged young people's views and sparked debate and discussion about the issues raised. Respondents also reported that they feel more knowledgeable and confident about dealing with these issues and tackling them with young people.

Case study SDS: Influence on SDS Careers, Information and Guidance services.

SDS staff accessed one-to-one support from project officers and were provided with information, resources and good practice guides. CIAG practitioners across the organisation also participated in training sessions around gender stereotyping and unconscious bias training.

Gender stereotyping is included in class talks to pupils' from S1-6. A lesson plan and worksheet covering gender stereotypes was produced for delivery of group sessions with P7/S1 transition pupils. The S2/S3 one to one sessions on subject choice which includes teachers, parents and pupils were designed in this format partly to provide an opportunity to discuss gender stereotyping as part of the session. Feedback from the online survey also

identified that the IGBS resources and learning materials have been embedded into the training of careers practitioners at postgraduate level.

This has impacted on practice with 90 per cent of CIAG practitioners that responded to the online survey reporting that the interventions had influenced how they work with young people around gender stereotypes. The quotes below provide examples of how the learning has been translated into practitioner training and practice.

'Having more knowledge over gender imbalance allows me to have more meaningful and informed conversations with young people around this issue in group and 1 to 1 sessions.'
(CIAG practitioner)

'I have developed resources and embedded the learning materials from IGBS into the training of careers advisers at postgraduate level. All careers advisers working in Skills Development Scotland have to undertake this postgraduate course. In addition, our students go on to work in Further Education, youth work, the third sector, training providers and Higher Education.'
(CIAG Practitioner)

'Equal opportunities have been included in team meetings to include clips or videos on equality including unconscious bias.' (CIAG practitioner)

Yes, it has had a positive influence on school pupils and has led to more informed conversations with them during subject choice interviews i.e. pupils are more aware that gender should not be a barrier to any career option. (CIAG practitioner)

Schools also provided good examples of activities, reviews and projects that they had delivered as a direct result of engaging with IGBS Project Officers.

One secondary school reviewed their maths problems using a gender lens and noticed that gender stereotypes were present in some problems e.g. the men were managers; females were secretaries and earning less. Project Officers signposted to alternative learning materials.

A primary school did some work on fairy tales to change the gender of the main character to see what difference it made to the story. This generated discussions and insight from the pupils about what this would mean, and how it relates to stereotypes. Another school switched the gender roles in their school play on the jungle book. This generated a good discussion on gender roles and parts and a new light and perspective on stereotypes amongst both pupils and staff. The school reported that it is still being talked about long after the play.

Pupil benefits and outcomes

School and pre-school representatives detailed the varied and wide-ranging ways pupils have benefitted as a direct result of actions and activities delivered through engagement with IGBS. Respondents did caveat that this was a journey and that there was still a lot to achieve. There was a recognition that they still need to keep working to ensure impact and long-term change but all have observed benefits emerging to date. These can be themed as follows:

Raised aspirations – A very commonly reported benefit was the impact the work has had on the aspirations of pupils. Teachers have observed a confidence and shift in the perceptions of pupils. They were described as more aware of what they can achieve and more willing to pursue this. A lot of the discussions around raised aspirations were in relation to females and STEM. Also, in relation to equality groups such as gypsy travellers or pupils from deprived areas.

‘Some of the changes and influences at the individual level have been huge’ (High school)

‘We see girls from more deprived backgrounds raising their aspirations - things are changing gradually’ (Primary school)

Impact on subject choice and career pathway decisions – some of the schools have started to observe shifts in subject choices made by pupils. High schools provided more anecdotal feedback around this, reporting that they have noticed an increased interest and engagement in science subjects, particularly amongst females and they hope this will become more apparent in the longer term.

‘Numbers of females are starting to shift in computer science’ (High school)

Number studying physics up and girls are performing better’ (High school)

Some respondents feel the quality of careers advice the school is providing has improved and that the activities have influenced pupils’ perceptions and views on career pathways. This included respondents from both primary and high schools.

‘There are some young people who have really enjoyed the activities and have indicated that they would be keen to progress into a STEM related career.’ (High School)

‘Before - quite childlike views on careers. Now having an open discussion – it’s really changed their views on jobs and careers (Primary School).’

School representatives also talked about their female pupils’ increased interest and enthusiasm for STEM challenges, competitions, work placements and science clubs.

Knowledge and ability to challenge and debate- several school representatives reported that they feel the actions taken have provided their pupils with the skills, knowledge and confidence to respectfully challenge gender stereotypes with adults. Many reported that they themselves had also been challenged by their own pupils on their own language and approaches.

Teachers described some of the classroom discussions they had with their pupils on stereotypes, career aspirations and fairness. They were impressed by how much pupils understood and by their enthusiasm on these topics. This included both primary and high school pupils.

Teachers described pupils talking to peers about what they have learned and highlighted several instances of pupils being forthcoming on speaking up and giving their opinion when they spotted something they didn't agree with.

'They know facts and evidence and have the ability to have mature conversations with adults'
(STEM Engagement Representative)

'Was amazing some of the things they said - really impressed by the responses we got'
(Primary School)

'Really empowering for pupils and staff' (Local Authority Representative)

Change in school culture/relationships/inclusiveness/fairness - Several schools felt that steps towards a change in the culture of the school have been made with more emphasis on inclusiveness and fairness. This has changed the relationship between pupils and between teachers and pupils.

'Teachers are more aware of the unconscious bias and so less likely to project this onto their pupils' (STEM Engagement Representative)

'A more accepting culture in the school with less judgement between pupils and between teachers and pupils.' (Primary School)

Respondents talked about class discussions and how teachers have changed their approaches to selecting male and female pupils for discussion, ensuring it is more balanced and everyone had a chance to become engaged and provide opinions and ideas.

Others have discussed gender stereotyping across curriculum areas such as Drama, Maths, English and Physics. Pupils have responded enthusiastically and been keen to contribute. Teachers believe this has 'empowered' pupils to input, question and debate.

Pupils have demonstrated a willingness to challenge stereotypes in the media and on social media. They hope that in the long term this will impact on things like body image, strength of character and resilience. They are also optimistic that it will enable them to challenge peer pressure and that pupils will be more accepting and understanding of each other and their differences.

Confidence/mental health benefits – several respondents reported that the actions have helped create an environment and culture in the schools that enables pupils to feel more confident in themselves, who they are, their interests and hobbies regardless of gender.

'If a little boy wants to be a dancer on 'be who you are day' he feels like he can'. (Primary School)

They talked about the positive impact that this had on mental health of pupils, particularly LGBTI pupils. The creation of a culture and use of language and literature materials that is

more accepting and absent of stereotypes is viewed as helping pupils to feel more confident being themselves. Pupils feel more accepted and like they 'fit in'.

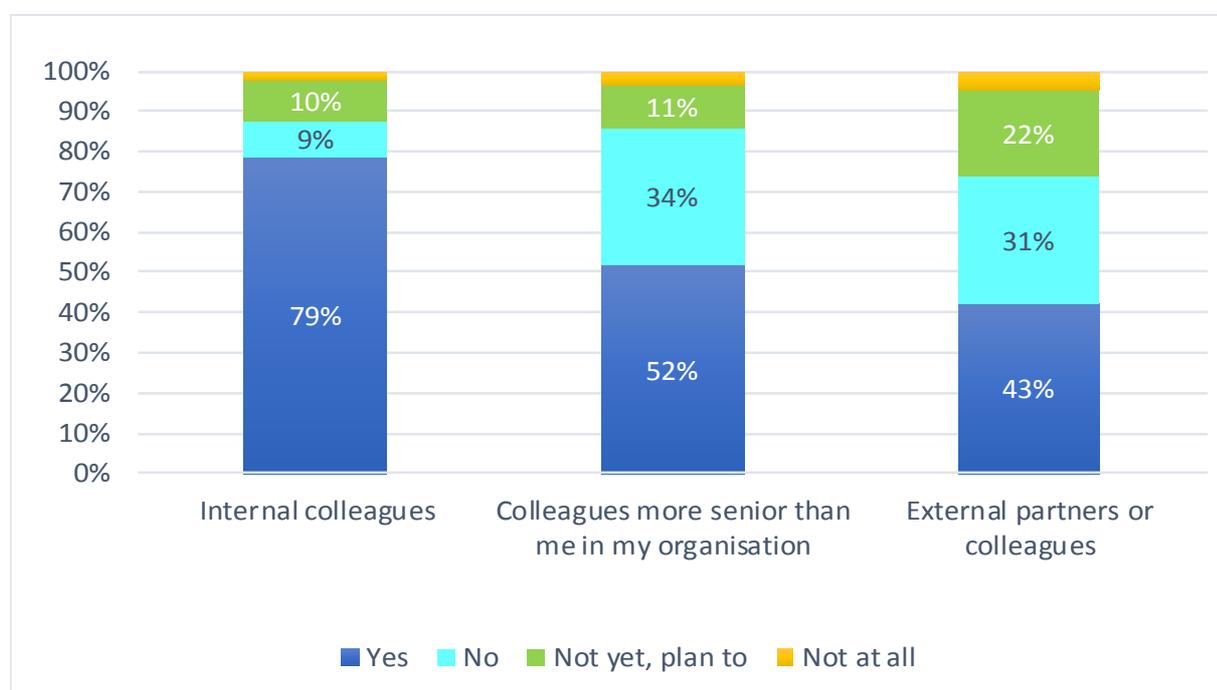
Keen to influence/change – Respondents reported that pupils are sharing their experiences and learning with peers and the messages from the IGBS activity are spreading.

3.7 Wider influence and dissemination

The extent to which learning has been shared both internally and externally was explored in both the online survey and focus group discussions. **Figure 3.5** shows that:

- The majority if those engaged on IGBS (79 per cent) have shared their learning with internal colleagues, a further 10 per cent plan to do so;
- Over half, have shared their learnings with senior staff in their organisation and a further 11 per cent plan to do so in the future; and
- Some 43 per cent have shared the learning with external partners and colleagues, with a further 22 per cent planning to do so.

Table 3.5: Proportions sharing learning with colleagues and internal and external partners (N=89)



Partnership working was considered a critical success factor in the delivery of IGBS and is discussed in more detail in the 'working well' section above. School respondents elaborated and provided some examples of the wide range of external influencing that they have been doing:

- Participating in a community of practice to share resources, ideas, good practice and materials;
- Discussing the project with partner businesses;
- Visiting schools to share learning and good practice;
- Delivering lesson demonstrations to other schools.
- Speaking at learning festivals, government policy events, conferences and STEM events with representatives across Scotland.
- Delivering joint teacher and IGBS CPD sessions for probation teachers.
- Sharing learning, examples of activities projects and actions with RAiSE officers so that they can pass on good practice to a wider range of schools; and
- Sharing learning and passing ideas onto colleges.
- Input into the development of the Scottish STEM strategy.
- Discussing the issues with employers who are recruiting young people, ensuring they are asking the right questions and not indirectly excluding anyone from their recruitment process.
- Discussing and encouraging partners to critically evaluate their own setting and practice as well as highlighting relevant texts and current thinking; and
- Practitioner workshops will help raise awareness and support further changes.

'Being in a DYW position within my school allowed me to discuss this work with some of the school's business partners. Engineering companies were interested in the approaches schools were using and we had good discussions about advertising of engineering courses and modern apprenticeships to avoid gender bias.' (DYW Representative)

4. Analysis of key findings

4.1 Introduction

This section provides an assessment of the extent to which the project funding objectives have been met. It also provides an analysis of the key evaluation findings.

Progress against objectives

The feedback and evidence outlined below would suggest that the project delivery objectives have been met.

Obj 1: Increase the number of schools, teachers and other audiences engaging with IGBS strategies around tackling gender imbalance.

Several Primary and High Schools School's in at least six project cluster areas have been engaged intensively by the project officers. In addition, at least 150 organisational representatives such as CIAG Practitioners, RAiSE officers, Museums, STEM representatives and Local Authority representatives were engaged in the wide range of interventions beyond the pilot clusters.

In addition, learning and knowledge has been shared and cascaded, 87 per cent reported that their influence in their own organisation around gender imbalance issues has increased 'a lot' or 'a little'.

Obj2: Influence schools that have previously not engaged to identify and take steps to address issues around gender and subject choice

Work was done in the third year of project delivery to cascade and share the learning from the school cluster activity. Project Officers and school cluster staff visited other schools to share learning and good practice. Lesson demonstrations to other schools were delivered by teaching staff. School staff spoke at learning festivals, government policy events, conferences and STEM events with representatives across Scotland.

Learning and examples of activities, projects and actions taken were shared with RaiSE officers so that they could pass on good practice to the wider range of schools that they work with.

IOP worked with other schools/clusters (outwith the original six) ranging from meeting and offering resources to interested members of senior leadership teams, to running CPD on impacts of gender stereotypes and unconscious bias to all teaching staff in a cluster.

Obj3: Generate an increased understanding of approaches that can be taken to address issues around gender and subject choice in relation to STEM amongst senior school staff and teachers.

Almost three quarters of respondents (72 per cent) reported that they have a lot more knowledge of approaches that can be taken to address gender imbalance in their setting, with a further 24 per cent reporting that they have a little more knowledge. In addition, 67 per cent report feeling more confident in their ability to tackle gender imbalance issues, with a further 30 per cent a little more confident.

Feedback from focus groups and consultations with school representatives identified that many were now reconsidering their teaching methods and use of materials. Some teachers highlighted that they have always been keen to promote gender balance in their work but felt they didn't have the ideas, tools or access to the correct research evidence to allow them to do this confidently. Engaging with IGBS has provided them with this and they feel more equipped to influence, discuss and debate the issues with both internal and external partners.

Obj4: Increase discussion and networking between schools on STEM gender imbalance issues.

The effectiveness and value of the partnership working and cluster approach around delivery of IGBS was highlighted as a key success factor by schools. Some 43 per cent reported that they have shared the learning with external partners and colleagues, with a further 22 per cent planning to do so.

In some cases, the project activity drove partnership working and in others project activity was woven into existing partnership projects to increase the focus on gender balance.

Several examples of transitional work between early years, primary and high schools being adjusted to include a gender balance focus were highlighted. This included STEM ambassadors working with primary school pupils and literacy projects as well as discussions and sharing of ideas between senior school staff. The feedback highlights that schools were keen for there to be a strong link and consistency of approach from early years to high school.

Obj5: Influence national and local partners to review their approaches and ensure that their programmes and allocation of resources do not encourage gender stereotyping or unconscious bias.

Some 84 per cent of organisations engaged thought that IGBS had influenced how they work with young people around gender stereotypes. Just over half also reported that their involvement had led to their wider organisation taking steps to review their processes and strategies to tackle gender imbalance.

The partnership working between SDS, IOP and Education Scotland allowed the project officers to access different networks and share approaches and learning more widely. IOP liaised with the network of CIAG staff and contributed to a variety of SDS events.

IOP's networks of physics teachers were also used. IGB supported Physics teachers either by running workshops themselves, or inviting the project officers to contribute to their events.

Examples of change implemented include auditing and reviewing of resources, materials and marketing used for engaging with young people, embedding learning into techniques used in working with young people and introducing activities and interventions aimed at challenging gender stereotypes.

Project delivery and approach

The IGBS project has been strongly supported and welcomed by those that have engaged. Implementing the learning has been high on the agenda across the board and as a result there is evidence that change is being embedded in practices and processes. Respondents who participated in the focus groups and consultations talked enthusiastically, at length and in detail about what they had learned and the steps they had taken in response.

There has been a wide variety of activity, engagement and resource provision to support schools including twilight sessions; in-service days; examples of good practice and one to one coaching. The relationship with the IGBS Project Officers has been key to successful implementation. The non-judgemental approach was consistently cited as important for securing buy-in and supporting change. The Project Officers have worked with schools in a sensitive manner to explore school and individual teacher unconscious bias. They have supported critical reflection of teaching style; classroom management; educational resources and promotional material. This coaching style has encouraged schools, teachers and others to explore their own practice and processes and to make them less stereotypical.

The value and usefulness of the information and engagement provided by IGBS is highly rated. Project Officers were valued for their knowledge, insight, ideas and ability to challenge those engaged. They were also considered flexible, supportive and accessible.

Critical success factors

There are several factors that have driven the success of the project. Project Officers have worked in a sustainable way by encouraging conversations about gender and ways of working that might reinforce stereotyping and proposed alternative ways of working that are gender neutral. They have encouraged schools to integrate their work on gender with other change themes in schools such as Developing the Young Workforce, STEM strategy, school improvement plans and ethical and moral standards. IGBS have helped schools weave gender balance perspectives into existing and new activities or projects. Embedding the activity is more likely to result in legacy.

Organisational project 'champions' have been enthusiastic and passionate and have inspired and enthused others in the organisation to become involved. Sharing learning, ideas and activities and securing buy-in and support is key to successfully driving cultural change within a school or institution.

In addition, the cluster approach in the schools has ensured a consistent and united message for pupils across early years, primary and high school as well as joint working, sharing resources and ideas.

There have also been a wide range of successful examples of integrating the project into external partnership working with for examples businesses, colleges and universities.

Challenges and barriers

The main challenge is the scale of change required to shift entrenched culture and perceptions. There was and remains a resistance and denial that there is a gender imbalance or stereotyping issue by some individuals within organisations/schools. In addition, parents are recognised as key influencers and if they are not reinforcing the messages then schools feel that they can only go so far to achieve change and a shift in perceptions.

Providing tangible evidence of long-term impact and shifts in pupil perceptions and decisions from the activities and changed processes is challenging. This is because pupils move through early years, primary and secondary schools and in and out of the interventions. Adding to this is the challenge of assessing attribution of this intervention amongst a wide range of supporting and competing external factors.

Going forward, a baseline method for collecting views and perceptions at the start of the intervention and at various intervals during delivery is recommended.

Achievements and outcomes

IGBS has successfully encouraged culture change in organisations by building up towards saturating teachers and practitioners with new ways of working; projects and changing practice. This included small things like changing school stationery to include a slogan about gender balance; to exploring working practice through a gender lens or redesigning the subject choice materials to eliminate gender stereotypes and changing the process of selecting subjects to a list rather than columns. Other non- school examples include supporting a museum to change their imagery, wording, advertising, training and promotional materials to remove gender stereotypes.

Most project participants are now more knowledgeable about and more confident in their ability to tackle gender imbalance issues. School representatives are more aware of their unconscious bias and feel better equipped to influence, discuss and debate the issues internally and externally.

There is a recognition that although progress has been made towards shifting perceptions and culture, schools highlighted that they have only just taken their first steps towards this. They recognise that there is still a lot more to be achieved with further work needed. Embedding change and shifting mindsets across schools and organisations requires time and persistence, it is an ongoing process and not something you can claim to have achieved with no further action needed. Participants feel that the project interventions have provided them with the tools, knowledge and ideas as to how to continue to embed change going forward.

Nevertheless, schools are observing shifts in pupil aspirations, subject choice decisions and career pathway interests and choices. Examples of pupils using the knowledge and confidence to respectfully challenge stereotypes were identified.

A step change towards a culture shift in schools has helped to promote inclusiveness, respect and fairness, with the relationships between pupils and between pupils and teachers improving. School representatives are hopeful that this will lead to further confidence and mental health benefits in the future.

Next steps

In line with the commitments in the STEM Education and Training Strategy, Education Scotland will lead the work to embed the learning from the Improving Gender Balance Programme in the practice of every school by 2022. This work will be led by a dedicated team of Improving Gender Balance and Equality Officers who will work within the context of the newly established regional improvement collaboratives. The ambition is for this team of six officers to be in place by autumn 2018. Their work will focus strongly on the promotion of gender balance and will also be extended and deepened to include equality and equity issues where required. This is in line with the key finding from the three-year pilot programme which showed that whole setting and school approaches to equality are the most effective ways of addressing unconscious bias, stereotyping and inequity. The programme will also reach out to regional and national partners and providers as well as colleges and universities to align programmes and strategies, build capacity and to ensure collective efforts have maximum impact. This includes Sills Development Scotland who will utilise the new module for staff training and the findings within the report to support further embedding of approaches to challenge stereotyping across its own services.

Appendix one: Resources to support wider dissemination

| | Item | Description |
|---|--|---|
| 1 | Action guides x 4 | An 'introduction to gender stereotyping' and action guides for each of ELCC, Primary and Secondary schools |
| 2 | Professional learning films | Series of 14 short films covering ELCC, Primary and Secondary and involving classroom teachers, SLT, guidance, etc. |
| 3 | Challenging stereotypes: encouraging gender balance". SCQF Level 6 module. | The learning from the training has been packaged into a single unit award. The materials include learning outcomes and associated performance criteria, scheme of work, and assessment materials. (awaiting SQA accreditation) |
| 4 | 5 PSE lesson plans – on gender stereotypes and unconscious bias. | 5 lesson plans with accompanying background information, power points and worksheets – aimed at S1 – S5 – but could be used quite flexibly. |
| 5 | Image bank | With the help of a photographer an image bank was created. The substantial set shows young people (from EY, PS and HS) at work, in stereotypical and counter-stereotypical activities. A manageable subset of the images is available to practitioners on the NIH. |
| 6 | Authentic research booklet (Scottish version) | Links to STEM research opportunities, awards, grants etc for schools. |
| 7 | Films of pupils | Three films of Secondary School pupils looking at gender stereotypes, gender imbalance in sport, and gender & jobs. |
| 8 | Postcards (A6, two sided) and posters (same information, but A3 and one sided) | A set of 6 postcards to provide a quick and easy way to highlight and counter some of the persisting myths and misconceptions around gender in education. All the statements are things heard often in schools and ELCCs. The responses on the back are all a distillation of the relevant research, further described in other IOP publications. |
| 9 | Case studies | A booklet with a collection of case studies from a range of settings. To give concrete ideas that practitioners have found useful. |