

The Royal Society of Edinburgh
Conference
Interdisciplinary Learning:
Creative Thinking for a Complex World

Delegates' Responses to the Questionnaire:
Discussion of Emerging Themes and Ideas

The IDL Conference has provided a one-off opportunity to gather information from delegates through a questionnaire (See Appendix) to gain insights into the development and implementation of IDL within and across the various sectors of the Scottish education system, from primary school to higher education and the workplace. We recognise that not all sectors of education were well or equally represented; that delegates were largely self-selecting, insofar as they had varying degrees of prior knowledge of – and interest in – IDL and its development; and that 45 out of over 154 delegates completed and returned the questionnaire. Questionnaire returns are therefore not necessarily representative of the wider views and experiences of practitioners in these sectors. However, recognising the very limited research on IDL development in Scottish education (*Priestley and Minty, 2013; BOCSH Report, 2015; STEMEC Report, 2016*), the information gathered should make a useful contribution to existing research, providing new insights and identifying challenges, progress and next steps in IDL implementation.

The questionnaire sought feedback on a range of issues around the development and implementation of IDL, including:

- if and how IDL is currently being developed, delivered and evaluated in Scottish education;
- the main challenges in IDL development;
- the impact of the conference on delegates' thinking, ideas and intentions;
- the support necessary to enhance practitioners' and organisations' capacities to develop IDL.

The responses highlight some shortcomings in the questionnaire content but also provide important evidence that varies from unexpected observations and insights to challenging or confirming anticipated patterns and current thinking around IDL development and implementation.

The Conference was concerned with the principles, practice, relevance and wider contexts for development of IDL in Scottish education, from primary through to further and higher education up to and including the workplace. Questionnaires were completed and returned by 45 delegates, largely practitioners, grouped into four broad categories according to the sectors in which delegates work: **primary teachers** (13), **secondary teachers** (20), **higher education (HE)** (eight - six teacher educators and two HE students), and delegates representing educational agencies and organisations (four). Questionnaire returns largely concerned the *practice* of IDL, founded on *principles* of IDL summarised in the conference starter paper *Pillars, Lintels and Foundations* and other recent work (Priestley and Minty, 2013; Humes, 2013, Graham et al, 2014; BOCSH Report, 2015; STEMEC Report, 2016; and references therein).

Understanding of IDL

Much of the information gathered in the questionnaire presumes a common understanding of what constitutes IDL. IDL is often used (and misused) as a general term for various types of learning that involve the wider use, connection and application of disciplinary knowledge. The references cited above identify a more specific 'benchmark' criterion or understanding of IDL (see conference starter paper) in which *learners draw on knowledge, understanding and skills from two or more subjects, in order to advance their understanding of a topic or problem that extends beyond the scope of any*

single subject. Simply linking or juxtaposing discrete subjects with no immediate connection around a theme or topic is not of itself interdisciplinary but is described as *multidisciplinary learning*.

Responding to question 4 of the questionnaire (*What do you think are the main challenges of developing and implementing IDL?*) **primary teachers identified “conflicting understandings of what IDL is” as the greatest challenge, while secondary teachers identified this as the fourth largest challenge** after the practical challenges of timetabling, persuading other staff/management of the value of IDL and a focus on exams/grades. **A common understanding of IDL was also identified as a challenge for HE delegates and representatives of educational agencies and organisations.**

These responses indicate that in practice **a common understanding amongst practitioners of what constitutes IDL has not yet been achieved**. It follows therefore that **some responses to the questionnaire may not reflect or refer to the practice of IDL as defined above but** refer perhaps to multidisciplinary learning around a theme or topic that may or may not offer the possibility - or involve the delivery - of IDL. This accords with the results of some previous evidence gathered from practitioners. **The questionnaire responses should be considered with these possible misconceptions of IDL in mind.**

On a positive note, **the questionnaire indicates that the conference has provided a better understanding of IDL to almost half of secondary teacher and HE respondents and around a third of primary teacher respondents**. A good understanding of the principles of IDL is clearly an important starting point for good practice in IDL development and implementation. **The articulation of a clear understanding of IDL across our education system, together with the exemplification of good practice, remain priority objectives in progressing the development of IDL.**

Question (3): Implementation of IDL

The vast majority of primary and secondary teachers who responded reported that their school currently implements IDL (only one primary and one secondary teacher responded negatively). Amongst positive respondents, **all reported a range of positive impacts of IDL in each of six aspects of learning and teaching**. Leading positive impacts identified were *enjoyment of learning, learners motivation and engagement* and *collaborative working* (secondary teachers); *learners’ motivation and engagement, learning and teaching, learners’ capacity to understand and recontextualise concepts*, and *collaborative working* (primary teachers); and *collaborative working, enjoyment of learning, and learning and teaching* (HE delegates). **This outcome provides strong support for the positive impacts of IDL implementation for learners and teachers**

(3)(a) How is IDL led?; (b) Which Curriculum Areas are Involved?; (c) How is IDL evaluated?

Secondary Teachers

Nineteen teacher responses to these questions revealed that secondary schools are at various stages in the development of IDL from no current IDL implementation to dedicated teachers trying to implement IDL on their own or in small groups, to IDL led within faculties or amongst a subset of subjects, to well-coordinated development led in teams or working groups and covering most or all subjects. In some schools IDL is centered around themes, topics and ‘events’, with the attendant dangers that some of the resulting learning may not be interdisciplinary. Other schools deliver IDL separately from the normal timetable, for example one period a week for a block of weeks, or suspending the timetable for two weeks in summer term for different year-groups, with the attendant danger that IDL is seen as something distinct from - rather than integral to - disciplinary learning. Amongst these diverse models, **collaboration to develop and deliver IDL is at work amongst small groups of motivated teachers or across whole schools**. Subjects involved in IDL varied from one to a select few (perhaps reflecting the commitment of a small number of teachers and departments/faculties) to all subjects.

Responses also indicate that **IDL, where delivered, is in many cases not currently being evaluated or being evaluated in diverse but limited ways**, involving for example questionnaires, focus groups, pupil or teacher evaluation, learner engagement, direct observation, pupil and staff surveys, impact and attendance. Many or all of these approaches may have a role to play, but **there appears to be little or no common strategy for evaluating the impact of IDL**. There is also a need here to understand the distinctions between evaluation and assessment, and the purposes of each of these. By some definitions the two may be synonymous, yet there is a distinction to be made between assessing IDL work undertaken by students (itself a challenge requiring much more detailed research and development) and evaluating the impact and efficacy of IDL as an approach to learning and teaching. **Further careful work is required around the evaluation, assessment and impact of IDL delivery.**

These diverse patterns and models of IDL development, implementation and evaluation may reflect various stages of IDL development at a 'snapshot' in time. At best **they demonstrate a need for a wider understanding and sharing of good ideas and good practice at local, cluster, authority, Regional Improvement Collaborative (RIC) and national levels, and also through CPD/CLPL delivered by experienced practitioners and teacher educators**, recognising that there is no 'one size fits all' solution. **The need for a clear and widely agreed understanding of what constitutes IDL** (recognised as a significant challenge by secondary teacher respondents) **and how it should be assessed and evaluated remains fundamental. There is an important role for teacher educators, school leaders and clusters, authorities and RICs in delivering this agenda.**

Primary teachers

By contrast with secondary teacher responses, **twelve primary teacher respondents present a very positive picture of collaborative working and planning to develop and deliver IDL across most or all subjects and to most or all year groups**. At the same time, a wide variety of approaches to evaluation are reported (subject of course to our understandings of evaluations and assessment as discussed above). In relation to a common understanding of IDL, however, responses to question 4 identified "conflicting understandings of IDL" as the leading challenge for primary teachers in developing and implementing IDL, in agreement with previous (mostly informal) feedback at primary teacher workshops. **It may be that some of the IDL reported is not actually interdisciplinary. This challenge again requires further clear articulation of what IDL is, supported by wider CPD/CLPL and collaboration for and amongst primary practitioners at local, cluster, authority, RIC levels. An important role is again envisaged for teacher educators, school leaders and clusters, local authorities and RICs (as for secondary teachers).**

HE delegates

Six HE delegates (teacher educators) and two HE students responded through the questionnaire. IDL delivery in ITE and professional education is embedded in various ways, including team teaching, collaboratively amongst staff or with students, and individually by staff. IDL is reported in most instances to involve all subjects, but with an emphasis on STEM and social subjects. Reported evaluation styles are diverse, involving regular assessments, assignments, essays, project-based work, posters, worksheets, discussions and presentations, and student feedback.

Student returns concern undergraduate outreach and engagement work (in STEM/earth and environmental science and other related subject areas) to develop and deliver IDL projects in collaboration with teachers in schools, contributing subject expertise and ideas across subject boundaries. This represents a novel collaborative approach between schools and HE to create and support topical IDL learning.

Education Agencies

A return from an educational agency highlights the IDL project component of the Scottish Baccalaureate (science, social subjects and languages) and **the possibility of developing an assessed independent IDL project at level 6/7.**

Question (4): The main challenges of developing and implementing IDL

Respondents identified challenges to IDL development in all but one of the nine suggested categories, the exception in all groups being (perhaps surprisingly) *students' prior knowledge*.

Leading challenges for secondary teachers were *timetabling*, *persuading other staff of the value of IDL*, *a focus on exams*, *conflicting understandings on what IDL is*, and *collaborating with other subjects/curriculum areas*. For primary teachers the challenges of *conflicting understandings of what IDL is*, *assessment of IDL*, and *time and support* loomed large, whereas *timetabling*, *collaboration*, and *persuading colleagues of the value of IDL* were not widely considered problematic. Only one (secondary) schoolteacher reported that IDL was not encouraged. Amongst HE delegates *a focus on exams/grades* was identified as a leading challenge, followed by *timetabling*, *time and support* and *conflicting understandings of what IDL is*.

Interestingly, *assessment of IDL* was seen as perhaps less of a challenge than expected, although this issue and how it is being addressed, together with the relationship between assessment and evaluation of IDL, deserve more detailed investigation and clarity. One teacher commented that *IDL should not be assessed to allow creativity*, implying that assessment and creativity are in some sense at odds.

Other challenges mentioned by secondary teachers were a perception that **HE does not value IDL** (in accord with educational agency responses) and also that expectations and awareness beyond school (presumably referring to FE, HE and the workplace) provide an added impetus for IDL. Reductions in teacher numbers are also reported as a challenge. **Primary teachers mention the tension between a perceived need to cover the Es&Os and also follow child-led interests. Lack of (subject) knowledge and lack of confidence are also seen as obstacles to IDL delivery**, as reported in previous studies. **Amongst other challenges identified in HE delegates' responses is the priority focus on exams in secondary schools in order to meet HE entry requirements and a need for HE and employers to recognise the value of the Scottish Baccalaureate and the interdisciplinary project.**

Questions (5) and (6): Impacts of the conference on delegates' ideas and initiatives

In response to question (5) about what new ideas and initiatives the conference has created, primary and secondary practitioners and HE delegates agreed that the conference had provided: *a better understanding of IDL*, *the motivation and new ideas about how to develop and implement IDL*, *a better understanding of the role of IDL in preparing learners for the world of work*, and *collaborations and partnerships for developing and implementing IDL* in broadly equal measure. *New ideas about how to develop and implement IDL* was a prominent response amongst HE delegates. **This feedback indicates that the conference created a very positive impact amongst delegates for the further development and implementation of IDL and generated ideas about how this might be more readily improved and achieved.**

Further comments in response to question (5) included: "an understanding of the pivotal place of IDL in Curriculum for Excellence" (a secondary teacher, also echoed by a primary teacher), and the need to "continue to improve current IDL initiatives already in place" (primary teacher). An HE respondent reflected that we should not worry about "what subject?" or "how to assess?" but rather to "inquire into the big questions" (but are these options actually incompatible?). Another HE respondent called for **a better understanding of "the range of perspectives that exist on IDL"** while an educational agency respondent commented on the importance of persisting with

interdisciplinary projects and suggested **exploring IDL at senior levels other than the baccalaureate**.

In response to question (6) primary and secondary practitioners and HE delegates agreed in broadly equal measure that they were more likely to: *ensure that IDL is highlighted/introduced/further developed in their organisation, support other staff in developing IDL, and speak to other members of staff about IDL* as a result of attending the conference, again **indicating a positive impact of the conference in promoting new thinking about IDL development**. Further comments in response to question (6) included **the importance of speaking to other staff about IDL, including beyond the school with cluster colleagues and other schools in a learning community** (two primary teachers).

Question 7: What external support and developments (at local or national level) would enhance your or your organisation's capacity to develop IDL?

This open question attracted a wide and varied range of interesting ideas and proposals. **Prominent amongst these for secondary teachers was the need for exemplification of successful IDL**. There is a realisation that **IDL is a new way of learning, requiring more guidance to be sent to schools supported by the delivery of CPD and CLPL**. Engagement with external agencies, including the recently established RICs, is seen as an important contribution to this development. **A national shift in emphasis away from the "chase for exam grades", and changes to the assessment structure and to university entrance requirements would all be required**. There is a call from an educational agency to **ensure that the Scottish Baccalaureate is understood, valued and "looked for" by end-users**, especially in HE, requiring support from Scottish Government and all educational stakeholders.

Primary teachers also recognised a need for external support, CPD/CLPL and sharing of good practice at cluster, authority and national levels through networking and sustainable partnerships. Confident IDL practitioners should promote and describe their approaches through Q&A sessions to encourage others to "give it a go". **There is a need to address varying teacher perceptions of what constitutes quality IDL**. HE delegates' responses include a call for a **strategic review of the whole education system, bold leadership, a recognition that CfE offers good IDL opportunities, provision of a bank of case studies (exemplification) and more opportunities for professional dialogue**.

Question 8. Invitation to contribute to a teacher forum to support development and implementation of IDL in Scottish education.

This question aimed to gauge what if any interest and support there might be for the establishment of an IDL teacher-led forum. Twelve delegates responded positively to this question and provided contact details. They comprise a mix of primary and secondary teachers, teacher educators and members of education agencies and organisations.

The forum is envisaged to provide a support network for teachers and educators to enable collaboration through online sharing of ideas, resources and questions about IDL in order to build confidence in the design, development and delivery of IDL in schools across Scotland. **Details of how this might work best in practice remain to be discussed and agreed, and further ideas and support would be welcome**.

Similar teacher networks have been established in Scotland in recent years, including 'Synapse' for biology teachers and 'Strontium' for chemistry teachers, emulating the earlier physics teacher network 'Sputnik'. However, while these networks provide a model of how teacher networks function successfully in practice, they also have natural homes and support amongst secondary subject specialists, with support from their discipline-based professional societies. Interdisciplinary learning, as a way of thinking and learning, differs in transcending discipline boundaries and levels, so currently has no such natural home or professional group beyond (perhaps) teacher educators and committed practitioners.

Appendix:

Interdisciplinary Learning Conference – Delegate Questionnaire

There is little data or information about the development and implementation of interdisciplinary learning (IDL) in Scottish education. Please help us to gather further information by taking a few minutes to complete this questionnaire and place your return in one of the boxes provided. *For each question, please tick as many boxes as apply.*

Many thanks.

Name and organisation (optional)

1. Why did you choose to attend the conference?

- IDL is part of our school/department/organisation development plan
- Personal interest
- Developing my professional learning
- Other (please specify)

2. What sector(s) do you work in?

- primary
- secondary
- college education
- initial teacher education
- higher education
- workplace (public sector, private sector, other)
- education agency/organisation
- education policy, research
- other (please specify)

3. Do you or your organisation currently implement IDL? – (yes/no)

If yes, has IDL development in your organisation had a positive impact on:

- learners' motivation and engagement?
- learners' capacity to understand and recontextualise concepts?
- attainment?
- learning and teaching?
- collaborative working (e.g. amongst staff, students)?
- enjoyment of learning?
- other (please specify)

(a) How is IDL led?

(b) Which curriculum areas/subjects are involved?

(c) How is IDL evaluated?

4. What do you think are the main challenges of developing and implementing IDL?

- timetabling
- collaborating with other subjects/curriculum areas
- time and support
- assessment of IDL
- a focus on exams/grades
- persuading other staff/management of the value of IDL
- our establishment does not encourage IDL
- conflicting understandings of what IDL is
- students' prior knowledge
- other (please specify)

5. What new ideas and initiatives has the conference provided for you?

- a better understanding of IDL
- the motivation to develop and implement IDL
- new ideas about how to develop and implement IDL
- a better understanding of the role of IDL in preparing learners for the world of work
- collaborations and partnerships for developing and implementing IDL
- other (please specify)

6. After attending this event I am more likely to: (tick box where applicable)

- ensure that IDL is highlighted/introduced/further developed in my establishment
- support other staff in developing IDL in my establishment
- speak to other members of staff about IDL
- not pursue IDL at this time
- other (please specify)

7. What external support and developments (at local and/or national level) would enhance your or your organisation's capacity to develop IDL?

8. I would like to be contacted about contributing to a teacher forum to support development and implementation of IDL in Scottish education - (yes/no)

Contact details: