

Enterprise, ICT and intercultural learning

An Interim Report on the Dissolving Boundaries/Joint Business Council Enterprise Pilot Programme

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September 2010

Foreword

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The IBEC-CBI Joint Business Council (JBC) is delighted to be working with Dissolving Boundaries on this cross border schools' project that focuses new learning technologies to promote enterprise skills among primary and second level students.

This report is part of a rigorous evaluation of teachers' and pupils' perception of the quality of learning and collaborative experience after the first year of this two-year project.

In support of the enterprise project, JBC has provided a Mac laptop and digital camera to each participating school, as well as teacher training funded under the European Union's Regional Development Fund through the INTERREG IVA Cross-border Programme managed by the Special EU Programmes Body.

Education plays a critical role in terms of developing enterprise skills and informing students of the opportunities created through enterprise. As part of the current work programme, and to ensure that enterprise is considered a valid and realistic career option for students, JBC is committed to strengthening linkages between the business and education sectors and to developing enterprise skills among primary and second level students.

We believe that a vibrant all-island economy will be built on a culture of collaboration, creativity, entrepreneurship and innovation. Consequently, collaboration of this kind will lead to greater student mobility, with students gaining a better understanding of the opportunities to live, work and study on both sides of the border.

A key objective of the initiative is to firmly imbed project activities within the curriculum and to ensure that collaboration between teachers and students becomes central to the overall learning experience.

Teachers' continuing professional development is an important feature of the initiative and we are pleased to see that, with even a small amount of support and encouragement, teachers will use technology creatively within the classroom. Pupils' imaginations are ignited and the result is a very effective and enjoyable learning experience for both pupils and teachers.

I congratulate the teachers and students on the very good start they have made and hope that we will see further work in the second year on new enterprise ideas which can be brought to the commercial marketplace.

Acknowledgements

The Dissolving Boundaries team would like to thank the Department of Education in Northern Ireland and the Department of Education and Skills in the Republic of Ireland for their ongoing support in the planning and financing of this cross-border programme.

We also recognize and greatly appreciate the assistance of the Joint Business Council in the Enterprise pilot, which has been part of Dissolving Boundaries this year.

We would like to thank all participating teachers and their schools and in particular those whom we interviewed for this report.

We would also like to thank the ICT advisors in the Education and Library Boards in Northern Ireland and the Education Centres in the Republic of Ireland who have given us great support and assistance over the years. We would also like to thank the personnel at C2k in Northern Ireland and the National Centre for Technology in Education (NCTE) in the Republic of Ireland, whose support has been critical in helping us to integrate technology with the curriculum in each jurisdiction.

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1 Introduction

The Dissolving Boundaries programme uses Information and Communications Technology (ICT) to enable schools in Northern Ireland and the Republic of Ireland to work together on agreed aspects of the curriculum. It has been funded by the Departments of Education in Belfast and Dublin since 1999 and the programme is managed by educationalists in the University of Ulster and the National University of Ireland, Maynooth.

In 2009 - 2010 the Joint Business Council (JBC), representing the employers' organisations, the Confederation of British Industry (CBI) and Irish Business and Employers' Confederation (IBEC) began a two year partnership with the Dissolving Boundaries programme to promote the development of enterprise in twenty of the participating schools. It was agreed that in addition to the core funding provided by the two Departments of Education each of the 'enterprise' schools would receive an Apple 'MacBook', a 'Flip' digital camera and professional development, all of which were sponsored by JBC under the INTERREG IVA Cross-border Programme managed by the Special EU Programmes Body.

This report is based on work done in the participating twenty schools, ten in Northern Ireland and ten in the Republic of Ireland between September 2009 and June 2010. This is the mid-way point in the pilot project and this report should be seen as a formative internal evaluation designed to highlight good practice for immediate dissemination to the twenty schools as they embark on their second year of engagement.

In this enterprise pilot project, each school was linked to a partner school on the other side of the border. The five primary school partnerships were built on existing links between schools who volunteered to take part. The ten secondary schools were already involved in some aspect of enterprise or business education but were mostly new to the Dissolving Boundaries programme.

Data for this report were gathered through an on-line questionnaire that was completed by teachers from seventeen out of the twenty schools. Teachers were asked to engage with their pupils in a structured evaluation of the work they had done and to use pupil comments as the basis for their responses. This evaluation was designed by the programme team in consultation with the JBC. Four teachers were then selected for follow-up interview, two teachers from one primary school partnership and two teachers from a post-primary partnership. This material was

triangulated with evidence from work actually carried out in the Virtual Learning Environment used on the programme (i.e. Moodle), such as levels of discussion in the forum and contributions to the joint web area (the wiki) as well as data on the usage of video-conferencing between partnerships.

2 Context and key questions

Enterprise education in primary and post-primary schools is not a new concept. Governments around the world have introduced programmes in schools to encourage entrepreneurial skills. (De-Faoite *et al.*, 2003; Wing Yan Man, 2007a; Rolfe and Crowley, 2008; Atkins, 2005; Lewis and Massey, 2003; Fagan, 2006; Erebus, 2004; Deuchar, 2004; Broz, 2003; Miller, 2006).

In the Republic of Ireland, when the Leaving Certificate Vocational Programme (LCVP) was introduced in 1988, it attracted funding from the European Social Fund as it offered high vocational content. Three modules in Enterprise Education, Preparation for Work and Work experience are offered in this course. Academies with a speciality in business and enterprise have been set up in the UK with the aim of instilling not just business entrepreneurialism, but also social, public and cultural entrepreneurialism (Woods, 2009).

But although enterprise education might be seen to be part of a wider curriculum it is still seen as being on the periphery. Researchers in Ireland have examined the perceptions and attitudes towards enterprise education at secondary level by teachers, principals, pupils and parents. Findings highlighted the need by policy makers to consider the mainstreaming of enterprise education at secondary level, the need for the development of programme resources and teacher training and formal recognition and accreditation of such programmes within the curriculum (Birdthistle *et al.*, 2007).

Research in Northern Ireland echoes the need for more training in enterprise skills, particularly those affective skills such as communication and team work which are emphasized by many researchers as essential (Rolfe and Crowley, 2008; Brownlow 2006; Wing Yan Man, 2007a).

In a recent survey of skill shortages in Small and Medium sized Enterprises (SMEs) in Northern Ireland employers were found to place a slightly heavier weight on skills such as attitude, motivation and communication relative to literacy and numeracy competencies. With the

exception of Information Technology (IT), respondents rated basic skills of young people as average to poor. These respondents felt that a lack of basic skills training in schools and a lack of motivation among young people to acquire new skills were significant factors driving the lack of basic skills within the 16 – 25 year olds section of the labour market (McGuinness *et al.*, 2008).

The common thread in the reports on these school-based enterprise projects is that the learning is made meaningful by linking it with the real world and developing broad-based skills such as enterprise and communications. This is why employers have been keen to support such initiatives and why the Departments of Education on both sides of the border have been keen to modify the curricula to ensure that such skills are strongly encouraged. But absent from these reports and recommendations is the idea of creating enterprise projects with another school and using Information and Communications Technology (ICT) as a means of communicating between them.

The enterprise work carried out in the Dissolving Boundaries programme had two distinctive characteristics: first it was based on the proposition that in a global knowledge-based economy, it was essential that ICT should be a central element and second, that it should require the partner schools, in two different jurisdictions, to use the technology to work together on a joint project. This was consistent with the overall philosophy of the Dissolving Boundaries programme but was particularly important for enterprise in that it would open up opportunities for teachers and pupils to reflect on markets, sales, currency variations *etc.* as well as developing the ‘softer’ skills of communicating and working with young people from a different background. The programme is also distinctive in that it was embedded in the curriculum in different ways, as a discreet subject in the secondary schools but as a non-statutory cross curricular theme in the primary schools.

To provide support for teachers, a planning session was held in September 2009 when teachers were offered ideas about how their work might develop, such as bringing in a local entrepreneur and/or setting up a mini company. In May 2010, all the schools were invited to attend a one day showcase event when pupils presented their work by video-conference with their partner school to an invited audience, which included the Minister for Education in Northern Ireland and senior figures from the educational community in both jurisdictions.

While the programme team were interested in a wide range of questions, for the purposes of this report, we have placed the focus on the following:

- a) What kinds of enterprise activities did the schools undertake?
- b) How was ICT used?
- c) How was the work related to the curriculum?
- d) What was the impact of the programme on pupils and teachers including their understanding of enterprise?
- e) What changes might be made in running the programme again?

3 Executive summary of the findings

3.1 *The range of enterprise activities in schools*

Primary Schools

- All schools worked closely with their partner and most involved people from the business community and set up mini-companies.
- The participation of business people, preferably working in a coordinated way between both partner schools through 'Junior Achievement' and 'Young Enterprise' is very valuable, especially when their advice is linked to the setting up and running of mini-companies.
- Running a mini-company, with a real product or service is highly motivating for pupils and where the partner schools agree on a similar product, it gives an added focus for collaborative work.

Secondary schools

- Even the partnerships that did not produce a product benefitted from sharing the resource of visiting entrepreneurs through video-conferencing. Compared to the primary schools, some of the secondary links stressed the importance of enterprise in community as well as business.
- As with the primary schools, teachers in secondary schools stressed the importance of planning, but also the need to adapt these plans as the year progressed.

3.2 *Use of ICT*

Primary schools

- ICT remains a highly motivating factor for both teachers and children in this work. A wide range of applications have been used, offering options to schools with various ICT set-ups and even unforeseen circumstances.

- The focus on enterprise has led to very high levels of usage of communication tools. This appears to be the result of engaging with something new, which requires a tangible end product.
- The Flip camera and the MacBook are still new to teachers and pupil access to these tools is more limited than the communication tools. Nevertheless, they have motivated both teachers and pupils and we can anticipate greater usage of them in the next phase of the programme.
- Overall, teachers seem to need more than a year to consolidate their ICT skills and for this reason, enterprise partnerships between schools seem to work particularly well when both teachers have had a year's prior experience of using the core ICT applications.
- To get the full benefit of all the ICT tools, schools may feel that the ideal age group for this work is pupils aged 11.

Secondary schools

- Teachers and pupils gained from the challenge of using ICT.
- The use of moving image appealed very much to post-primary pupils
- There was strong interest and pleasure in using the Flip camera and praise for its ease of use.
- Videoconferencing was used to share the expertise of entrepreneurs
- Collaborative ICT tools were not as popular as in the primary sector.

3.3 *Links to the curriculum*

Primary schools

- Teachers expressed very positive comments about how easy it was to link enterprise to a range of other mandatory aspects of the curriculum. Their comments are significant in the context of the sustainability of the enterprise work, since they suggest that far from being an 'extra' on top of what teachers are required to do, enterprise is actually acting as an excellent focus for a wide range of skills and capabilities, including the core areas of literacy, numeracy and ICT. In short, the curriculum on both sides of the border is a very good framework for cross-border

teaching and learning about enterprise, especially when ICT supports collaborative work.

Secondary schools

- Projects tied in with all the various curricula which included in Northern Ireland, Advanced Subsidiary (AS) Applied Business, AS Business Studies, GCSE Learning for Life and Work and in the Republic of Ireland, Transition Year, the Leaving Certificate Vocational Programme (LCVP) and Leaving Certificate Applied (LCA).
- Of the five projects only one actual mini-company was formed.

3.4 *Impact of the pilot on pupils and teachers*

Primary pupils

- Direct experience of working with people in the business community and running a mini-company have given nearly all these children an impressive understanding of what enterprise means and, perhaps more significantly, how it relates to their everyday lives in terms of personal qualities and dispositions.
- It is quite clear that inter-cultural learning is taking place through the process of working together on a common project. Although the pupils and teachers are not directly using the language of reconciliation, they are developing a range of key skills, which include listening, showing respect and tolerance.
- The experience of working together through ICT is giving these children a grounded appreciation of similarity and difference, not narrowly confined to differences arising from politics. Their direct, lived, encounters with other young people, extended over a whole year, are helping them to form friendships and trust based on collaborative learning.
- Through working in teams, they have developed a remarkably wide range of personal and team-working skills under the careful supervision of their teachers. These include greater confidence in speaking to others, engaging in high level thinking skills such as evaluation and recognising the complexity of making teams work well.

Primary teachers

- Teachers have gained considerable 'professional renewal' through their experience of working on enterprise. It has presented them with a challenge which they have responded to with energy and enthusiasm.
- Teachers have all understood more about what enterprise means and how it can fit into the curriculum.

Secondary pupils

- The theory of business translated into a very real experience for pupils and teachers.
- Working together as a team within their own classroom and with another school through ICT made the biggest impression on the majority of pupils.
- Many affective skills were learned such as better communications, greater confidence, staying power, flexibility.
- Pupils also felt that they had learned many business skills from their contact with business people, skills such as problem-solving, organizational skills, how to become an entrepreneur, how to keep your customers interested and to keep up with competitors.
- Potential entrepreneurs were recognized in many classrooms.
- Pupils rose to the challenge posed by the enterprise projects.
- Pupils' horizons were broadened from contact with pupils from a different part of the island.

Secondary teachers

- Teachers' definition of enterprise has broadened.
- Teachers' ICT skills have improved.
- Teachers were motivated by the enthusiasm of their students.

3.5 Lessons for the Future

Primary schools

- Nearly all respondents said they would start the work earlier in the year, have early engagement with Junior Achievement or Young Enterprise and have either one joint company or two that were working on the same product.
- Teachers want to explore deeper levels of collaborative work, making fuller use of all the ICT tools, including the Mac and its video editing software, iMovie.

Secondary schools

- Teachers thought that it would improve their work if there was an earlier start to the collaboration.
- They wanted more regularised communication through Moodle and video-conferencing.
- They supported the idea of developing Joint business ventures.

4 The experience of the pilot enterprise project in schools

Given the very wide differences in approach and time used in primary and post-primary schools, the data are presented in two sections, starting with the experiences of the primary schools.

Primary schools

It should be noted, at the outset that working on the theme of 'enterprise' was a new experience for eight out of ten of the primary school teachers.

4.1 A range of enterprise activities

In four out of the five partnerships, the children were in their last or their penultimate year of primary education. Most were aged 11 but in one partnership, the children in one school were aged 9-10.

In all five partnerships, teachers found ways to explore with their pupils what enterprise meant, often by bringing in a local entrepreneur, in some cases connected to the 'Junior Achievement programme' which operates in the Republic of Ireland or 'Young Enterprise' the Northern Irish equivalent. In one link, the visits of these entrepreneurs ran in parallel and were the focus for discussion by video-conference between the 2 schools. In this link, the two schools then set up mini-companies, one in each school but both were involved in making greeting cards which were sold at Christmas and St Patrick's Day. The pupils used video-conferencing regularly to comment on each other's designs, to discuss marketing and sales of their products, to calculate profit and loss and to discuss which charity should be given the profits. These two schools made exceptional use of video-conferencing, setting up 28 sessions during the year, starting in September.

In a second partnership, one of the teachers described a similar process:

We started off working through the Junior Achievement Programme in both schools and discussed and compared what we were learning. Then we did a lot of brainstorming to decide on a business. Initially we made cards and buns and sold them at a Valentine's Shop and the proceeds raised went to the Haiti earthquake appeal. Then both schools decided that they would build on the existing resources they had, e.g. raised beds, planting pots, seeds, compost etc. So we both decided to plant, grow and sell either plants, vegetables or flowers. We then went to visit the market and carried out interviews with stall holders. The boys and girls in Dublin also had a visit from a business person. On 15 June when they come

to our school, we will have a visit from the owner of a nursery close to our school. We intend to do some planting when he is here and also pick his brains about our business.

This is a particularly interesting example of close partnership both with the other school and with the business community where even the face-to-face visit was focused on the joint business.

Similarly, a third partnership drew on the services of 'Young Enterprise' and Junior Achievement to 'look at business in our city', then made extensive use of video-conferencing and Moodle for the pupils to exchange social messages as they began to develop ideas for 2 separate mini-companies. In this partnership, 34 video-conference sessions were run, the second highest number from all of the 98 partnerships in Dissolving Boundaries.

In a fourth partnership, the two schools worked a little more independently: they each began with the study of a local business, in one school a company that is developing wind turbines, while the other looked at common objects and various interventions and brainstormed why certain materials were chosen for certain products. Cost of materials was also discussed. In this partnership, the teacher in one school explained that they:

... began to think of a business we could open ourselves in our classroom. We created a presentation for a Dragon's Den Web conference. The other school helped us to choose which business to open. We are in the process of opening a tuck shop that sells toast and fruit to the rest of the school.

Their partner, meanwhile, with no visit from an entrepreneur, began work on an 'imaginary company'. This teacher, reflecting on what he would do differently in the future, commented that he would:

... like the children to have a finished product or a real or final outcome rather than just imaginary, although this was educational and beneficial.

Finally, in the fifth partnership, where the teachers were new to each other and unable to meet for a joint planning session, the two schools worked on separate enterprise projects but kept in touch with each other by video-conference and through the Moodle forums. These schools arranged 22 video-conferencing sessions, once again, placing them in the top ten of ALL Dissolving Boundaries schools. Business people visited both schools and each set up and ran very successful mini-companies.

Key Issues

- Joint face-to-face planning at an early stage by teachers is critical if the work carried out is to have a strong collaborative character.
- The participation of business people, preferably working in a coordinated way between both partner schools through 'Junior Achievement' and 'Young Enterprise' is very valuable, especially when their advice is linked to the setting up and running of mini-companies.
- Running a mini-company, with a real product or service is highly motivating for pupils. Where the partner schools agree on a similar product, it gives an added focus for collaborative work.

4.2 Use of ICT

Nearly all the teachers in this group had previous experience of using the video-conferencing software, Marratech, which is an internet-based video-conferencing application and the Moodle platform, which allows teachers and pupils to use a forum for discussion and a 'wiki', a shared web page where partner schools can put up and jointly edit the text, images and general presentation of the work that is being carried out.

In the enterprise programme, schools were also provided with an Apple MacBook, a 'Flip' digital video camera and the 'iMovie' editing software. Teachers were given a day's training to familiarise themselves with these new ICT applications.

In response to a question on which aspect of the programme most appealed initially to the teachers, (ICT, enterprise or the cross-border dimension), ICT was ranked highest by all but one of the respondents and in this case it was ranked second. By the end of the year's project, however, one the teachers reflected that 'it [was] very difficult to prioritise because they are all important'. She commented further that:

where mutual understanding is concerned, this is very important, but it only comes about through the use of ICT, so it is very interlinked. The enterprise aspect of it, it gives them something in common to talk about and to discuss.

Similarly, another of the teachers who has been involved for several years in the Dissolving Boundaries programme offered an interesting insight into the relative importance of ICT in the programme. He said:

If you had asked me that question last year (about which element of the programme was most important), it probably would have been ICT but this year, it has to be enterprise because of the support we have been given. I see, and the children kind of felt that ICT and cross border collaboration facilitated the enterprise. Here the border does not mean an awful lot to us, we cross the border regularly.

His partner teacher in the Republic of Ireland, also a very confident user of ICT, put it slightly differently:

... the enterprise if you like was the idea for the project that we could collaborate on, ICT was the vehicle that we used to do it but our ultimate aim was to get the children collaborating with each other on a common theme. Cross-border collaboration was the most important.

4.3 The role of video-conferencing and Moodle

While there were variations with regard to which ICT tools were used most often, overall it was the communication tools, either video-conferencing or Moodle, that were most frequently referred to and used. A number of schools made particularly good use of video-conferencing. All ten of the primary schools that worked on enterprise were in the top 20 users of video-conferencing of all 98 partnerships among Dissolving Boundaries schools. They had 34, 28, 22, 18 and 11 sessions during the year, averaging 97 hours for each partnership. Most of these figures were well beyond the average time spent by other Dissolving Boundaries primary schools, where the overall average number of sessions was 10.5. In one partnership, technical problems had prevented use of the videoconferencing for the first term, but in spite of this late start the teacher said that the pupils:

... enjoyed the VC best of all. They loved seeing the other children and loved seeing themselves on camera as well. But actually being able to talk to the other children and being able to see them, that was just very important.

In their partner school, the teacher commented on how the Principal had played a key role in ensuring that things went smoothly:

... any time we video-conferenced he made sure that everyone in school had their internet turned off so we would get a strong signal. He brought the technicians out because we hadn't had time to get that sorted, he was very supportive of all that.

In another partnership, it was again video-conferencing that was chosen as having the most impact. According to the teacher:

... it really brought the project to life. It engaged the children, motivated them, fine tuned their speaking and presentation and listening skills, and was great fun!

Another teacher made a neat distinction between the pupils' view of ICT and her own:

From the children's perspective, the video-conferencing was the highlight of the project. They so enjoyed talking to their friends and finding out how they were getting on with their project. For myself, the use of iMovie (the software on the Apple Mac for editing digital video) was exciting with the editing of clips we recorded during our project.

In another partnership, one of the teachers commented on the powerful role of both Moodle and video-conferencing:

The Moodle forums were invaluable to the project's success because the children were able to chat to each other so easily about social things initially and when they had developed as friends they were then able to converse about their enterprise projects... They were able to compare what each school was doing, how their planning was going, how sales were progressing. The use of video-conferencing was also invaluable... they were able to see each other so instantly to discuss ideas and share experiences.

Analysis of the enterprise schools' use of Moodle showed that they used the discussion forum 20% more than other experienced primary schools, an outcome that we believe can be attributed both to the need to get products to market and the novelty of working together on a project which was new and different. One issue with the use of the forums was to keep the discussion balanced between social interaction and exchanges related to work. In one partnership, a teacher described her pupils' weekend contributions as 'almost over-chatting', a new addition to the lexicon of ICT language!

Some schools made good use of the shared web space, the wiki, to present their emerging business plans.

One teacher, when asked what the most impressive achievements by the pupils were, said:

Their ability to use ICT. They are so confident now in using Moodle, in building the wikis... that started when they put their business plans onto the wiki, and then they decided that for part of the business they would build a wiki outside Dissolving Boundaries so they could advertise on the general internet.

Overall, while primary enterprise schools used the discussion forums in Moodle significantly more than other Dissolving Boundaries primary schools, there were similar levels of activity in the wikis. It would appear that the demands of the enterprise projects, especially those which required close collaboration related to the mini-companies, led to greater use of both synchronous communication tools in video-conferencing and asynchronous contact through the discussion forums.

4.4 Flip cameras, Apple Macs and iMovie software

In another partnership, a fire had put the computer suite out of action in one of the schools and this had impacted on the place of ICT in the joint work and which tools could be most easily used. Both teachers were able to make use of video-conferencing but it was the 'flip' digital video camera that caught the imagination of many pupils. It was:

... very easy for the children to use and very durable. They wanted to incorporate it into lessons. It was associated with the MacBook so both tools were utilised in conjunction with one another. The camera helped the children edit and self-correct as well as develop their imagination.

In another school, it was again 'iMovie and the Flip camera, the pupils loved using them and became confident using them very quickly'. Yet again, these two applications really appealed to one of the teachers who commented that:

iMovie was an excellent piece of software that was reliable, easy to use and produced almost professional quality material. The Mac book has changed my ICT usage and I am now only using the Mac for the most important ICT projects I'm involved in.

This teacher, while bemoaning the fact that his school only had 1 Mac book, said that what had left the biggest impression on the pupils was:

... the ability to create moving images that are up to the standard of what they see on some television programmes... Mac book was a massive advance for them in terms of what they could achieve with moving images.

One teacher, working with 9-10 year old pupils, among the youngest in the programme, said that while they loved the flip camera, "... the editing was too much for them... they were too young'. She also added that she herself, new to the project, was not quite on top of making wikis, and added that her pupils were too young to be able to do this. There is an important issue here about teacher professional development.

Key Issues

- ICT remains a highly motivating factor for both teachers and children in this work. A wide range of applications have been used, offering options to schools with various ICT set-ups and where unforeseen circumstances can cause disruption.
- The focus on enterprise has led to very high levels of usage of communication tools. This appears to be the result of engaging with something new which requires a tangible end product.
- The Flip camera and the MacBook are still new to teachers and pupil access to these tools is more limited than the communication tools. Nevertheless, they have motivated both teachers and pupils and we can anticipate greater usage of them in the next phase of the programme.
- Overall, teachers seem to need more than a year to consolidate their ICT skills and for this reason, enterprise partnerships between schools seem to work particularly well when both teachers have had a year's prior experience of using the core ICT applications.
- To get the full benefit of all the ICT tools, schools may feel that the ideal age group for this work are pupils aged 11.

5 Enterprise in the Primary curriculum

Within the last 5-8 years there have been revisions to the curriculum on both sides of the border. CCEA in Northern Ireland and NCCA in the Republic of Ireland now put more emphasis on the development of skills and capabilities for life-long learning and for contributing effectively to society. (See references for website information):

These changes have undoubtedly helped teachers' ability to embed enterprise in their daily work. Without exception, teachers in all partnerships commented on how well enterprise had 'fitted' into the curriculum. One teacher in the Republic referred to the exceptionally wide number of links such as those between:

... making money and maths [...] making decisions about your business, interacting and communicating with others linked to Social, Personal and Health Education (SPHE), drama and oral language, creating ads and filming, art-creating advertising posters, English-reading, writing and oral language, Geography-my local community-people at work.

Another teacher added that:

... the vocabulary the children have encountered as a result of this project certainly ties in with our English curriculum, as well as the writing of emails.

She added that:

In Maths we have used pie charts to represent some of the findings of our survey regarding the project and we had to work out percentage profits and percentage return investors were to receive.

In Social Personal and Health Education (SPHE) she referred to 'group work ... finding solutions to problems, treating each other's opinion with respect, self belief that they can create their dreams' and in Art, 'creating the cards for the company, studying the best colours to use when advertising'.

A third teacher whose comments echoed those above also added that in his project, science played a large part including 'design and make, materials, properties' and that the English element was particularly strong since project work covered 'presentation skills, writing skills, creative writing and persuasive writing'.

In short, the evidence from south of the border shows a very good fit between enterprise and the curriculum with particularly strong links in literacy, numeracy and SPHE. What is particularly striking is that very similar comments were expressed by teachers in Northern Ireland, an indication that in some key areas, there is a closer alignment of curriculum goals on both sides of the border than was true in the past. One of the teachers said that the move away from 'content' to skills and capabilities in the Northern Ireland curriculum made enterprise a 'perfect' fit.

Another of the teachers in Northern Ireland noted how her children were becoming more evaluative of their own performance:

... as you know the heart of the revised curriculum is really with your thinking skills and personal capabilities, that can be completely covered through the use of moving images from being creative, from managing information, from being able to work together for a shared outcome and it was quite interesting that in one of the evaluations one of the children had actually written that they maybe didn't get as much done as they should have done with regards to the dragon's den because they hadn't worked well together as a team and if they were doing the project again they would try to be more understanding of each other.

Another teacher said simply, 'this project sits perfectly with thinking skills and personal capabilities'. He added in an interview:

Enterprise fits perfectly into the revised curriculum because it is open-ended. The students' skills that they are learning here are transferable across every subject and they are taking in their numeracy and literary. They are making advertisements, they are making signs, they are sending home letters to parents saying that the Tuck shop is opening, they are doing out costings, business plans, they are learning to work in a group, it is endless really.

One final comment is worth quoting in full since it captures both the cognitive side of children's learning and the affective, showing how enterprise had extended the children's academic achievements and skills as well as their personal growth.

It lends itself very well to Personal Development and Mutual Understanding as well as group work, talking and listening as well as the other areas in language and literacy work, i.e. reading and writing across many areas e.g. persuasive writing for advertisements, job adverts, creating questionnaires, market research, keeping garden diaries, CVs etc. The project also linked into the teaching of numeracy in that children were able to carry out stock takes and take orders, making tally charts etc., as well as excellent real life opportunities to use mental maths and quick recall of number facts through the whole selling process.

We were able to incorporate a huge amount of 'Our World Around Us' into the project because we were planting and growing flowers and vegetables. This also provided children with the opportunity to develop 'stickability' in that they had to be determined to water the plants/seedlings every day and take pride and a care in what they were doing, whilst also monitoring and recording changes in the plants on a regular basis, not to mention the fantastic opportunities for the development of interpersonal skills in persuading people to buy our plants, cards and buns. Art work was incorporated into the design of posters and of course all the incredible opportunities to develop ICT skills, with particular emphasis on the communication part of ICT.

These very positive comments are significant in the context of the sustainability of the enterprise work, since they suggest that far from being an 'extra' on top of what teachers are required to do, enterprise is actually acting as an excellent focus for a wide range of skills and capabilities, including the core areas of literacy, numeracy and ICT. In short, the curriculum on both sides of the border is a very good framework for cross-border teaching and learning about enterprise, especially when ICT supports collaborative work.

Key Issues

- Teachers found the enterprise element fitted neatly into the curriculum, provided focus and development for a wide range of knowledge and skills as well as opportunities for personal development.
- Greater commonality in relation to the curriculum in the two jurisdictions has emerged since the revision of the curricula and this has facilitated cross-border work
- Enterprise can be seen as integral to the curriculum rather than as an 'extra' element.

5.1 Impact of the programme on teachers and pupils

In this part of the report we provide evidence on children's understanding of enterprise, of working with others and the impact of the project on teachers.

5.1.1 Enterprise

Very few of the children in the primary schools had much idea of what enterprise meant at the start of the project. One teacher commented that whereas his pupils initially thought that enterprise was:

... being rich and making money... they now have a completely different understanding of the word.

From their contact with their business partner, they began to understand that:

... you have to be an individual that was willing to make hard choices that would affect the business you are running. There isn't always someone there to support you.

In this teacher's partner school there was a similar transformation of pupil understanding:

We did start with maybe one view of enterprise and actually it was through the children kind of brainstorming and discussing and hypothesising what they could do with their project ideas that we completely changed our own notion. And interestingly enough, from the majority not actually knowing what enterprise was, they ended up having a very good understanding. The children went from knowing nothing to knowing so much more. They had a hundred per cent increase in knowledge and understanding.

The experience of taking part in the project meant that enterprise was now directly relevant and important to the pupils, a point made explicit by another teacher when she said:

Children thought that enterprise related to themselves everyday and was about being creative, taking risks, using imagination and to a certain extent making money. They all added the fact that people need to have skills and use them well and be good problem solvers in order to be enterprising. They also said you need to be able to work well with other people. They said you can't be lazy or shy...you have to be able to stick at it and persevere, you must be hard working, creative and punctual.

In this school it was clear that the children had benefited considerably from their contact with a local business person who had come in to advise them how to set up their own mini-company.

The teacher noted that the children learned from this contact that:

... you have to be a social person, agree with your customers and treat them well. You need to know how to add and subtract and multiply in your head quickly, particularly when working on a stall.

In this class another group had emphasised that:

... you need to know all your products, be able to advise people properly and price your products accurately, and you have to be a good sales person, willing to persuade people to buy your produce.

The themes of 'risk taking, using your imagination, being creative' were all mentioned frequently in pupil responses in all schools. In some where mini-companies had been set up, 'making a profit' was also seen by pupils as an element of enterprise. As one teacher put it, his pupils said enterprise was 'getting a really good idea that nobody else has and making money from it'. One teacher reflected on what the pupils had learned from their business contact as 'the 5 P's of Price, Place, People, Promotion and Product... they used this throughout the project'.

In short, the contribution from the business community was crucial in making the abstract idea of enterprise something 'real', particularly when advice was directed towards the operation of the mini-company.

Where nobody from business had been able to visit a school, the pupils had a far less developed understanding of enterprise. One of the teachers in such a school said his pupils understood enterprise to be:

... inventing, creating things and running a business. Another, without support from Junior Achievement said that this was one of the biggest challenges and that in the future she would like the pupils 'to have a better understanding of business.

Key Issues

- Direct experience of working with people in the business community and running a mini-company has given nearly all these children an impressive understanding of what enterprise means and, perhaps, more significantly, how it relates to their everyday lives in terms of personal qualities and dispositions.

5.1.2 Inter-cultural learning

Data for the theme of intercultural learning were explored in the four interviews that were conducted with the primary school teachers. Different views emerged about the overall importance of cross-border understanding. For some it was indeed the case that collaborative

learning was at the very centre of what they did, with ICT and enterprise being simply a means to an end. One of the teachers described his pupils' experiences of working with their partner school:

... they started initially not kind of understanding anything about the other social group and thinking that they were extremely different. Not having the same kind of lifestyle, if you like, that they had. To move them through the year and realising actually these people are so similar to ourselves and I could see the friendships forming and the children really eagerly looking forward to seeing the messages back from their partners in Northern Ireland, to the absolute euphoria when they had to meet up then at the end.

His partner teacher in Northern Ireland noticed that there were important differences too but these were more related to their rural context compared to their partner in Dublin.

... in the grand scheme of things we are a small school and we can get a little bit isolated here... they are exposed to a lot more cultures in Dublin and that is one of the things that they found first of all that they were meeting people with names they had never heard before and colours they had never seen before and hopefully it will open up their horizons here.

In another school, in Northern Ireland where most of the pupils came from a Protestant background, it was again the surprise at finding out through ICT that pupils in their partner school had similar interests:

... they did find it strange that they were listening to and watching the X Factor and they were following the same football teams and they had the same interests. Again when our partner school were trying to teach some of us Irish to find out that some of my children, a boy in my class could speak some Irish his uncle had taught him as well, so it maybe gives them an understanding. Where mutual understanding is concerned, very, very important but that only came about through the use of ICT, so it is very, very interlinked.

Her partner simply said of her class:

... they liked making new friends the most, they liked connecting. They just felt they were the same, kids don't see boundaries. Maybe it's different for the kids in the North because they're maybe more exposed to the politics of it all, the kids down here just think it's Northern Ireland, they're not really aware of the Troubles.

Her partner, asked to say what skills her pupils had learned, summed their experience up by emphasising one key word:

I think tolerance would be the big thing. Tolerance within the classroom, tolerance within the community but also tolerance of other people in other communities as well. I think that has really shone through, again, getting to know the children in our partner school and

understanding that they are the same and being tolerant of other people's point of view, that everybody has a point of view and they are entitled to that point of view.

Key Issues

- It is quite clear that inter-cultural learning is taking place through the process of working together on a common project. Although the pupils and teachers are not directly using the language of reconciliation, they are developing a range of key skills, which include listening, showing respect and tolerance.
- What we can observe here is that the experience of working together through ICT is giving these children a grounded appreciation of similarity and difference, not narrowly confined to differences arising from politics. Their direct, lived encounters with other young people, extended over a whole year, is helping them to form friendships and trust based on collaborative learning.

5.1.3 Pupil confidence and team skills: the inclusive classroom

In our preoccupation with cognitive achievement and league tables, we sometimes overlook some of the most important personal achievements that projects like this provide young people. The data gathered for this report show consistently that one of the most important outcomes for the pupils was greater self-confidence. One of the teachers, asked to comment on what skills her class had gained said 'confidence is the biggest one, confidence in getting up and doing the Dragon's Den, confidence in making new friends'. Her partner in Northern Ireland, responding to the same question said:

Their ability to stand and speak in public. They have done presentations in school assemblies, presentations in front of parents they went into a PTA meeting and explained about their business and asked permission to sell at the fair last night. They are doing a presentation to the board of governors next Thursday night about their business challenge as well. It will form part of their leavers' assembly and of course on our Dissolving Boundaries enterprise day as well. They were able to go and speak to all those adults confidently, I just think they were tremendous achievements.

In a number of schools, teachers noted that it wasn't just the academic children who benefitted from this process.

One teacher noted how the project had created more of a level playing field for her mixed ability class:

I have children in my classroom who are not particularly academic but who are good at communicating with others or good at selling things and talking to the class and those children are coming back feeling really good that they have achieved something, that for once they are equal with these other people that they perceive as being academic so it is very good for the non-academic child as well as the academic.

What created this inclusive experience was not only an experienced and skilful teacher but a pedagogical approach that was strong on constructivist learning with great emphasis on children working in teams. The pupils were asked to evaluate their team-working skills. The teachers reported that this process of thinking about their learning had encouraged some careful analysis. One teacher commented that:

... the children thought they were good at planning, got on well together and were quite good at decision making... they felt they were willing to take risks and most of all they had a successful product that people wanted to buy, evidenced by the fact that the stall of plants was completely cleared and people made orders for more plants.

These comments were echoed in all the other schools. In one case, the teacher noted that his class were now able to:

... ask deeper and wider questions to clarify the task, to plan and set goals, to begin to challenge conventions and assumptions and be able to classify, compare and evaluate information and to select the most appropriate methods for the particular task.

They were able to:

... develop methods for collating and recording information and monitoring progress on a task with a sense of audience and purpose.

This is an impressive summary of the benefits of well managed group work.

Key Issues

- Through working in teams, they have developed a remarkable wide range of personal and team-working skills under the careful supervision of their teachers. These include greater confidence in speaking to others, engaging in high level thinking skills such as evaluation and recognising the complexity of making teams work well.

5.1.4 Impact on teachers

The focus on teachers is central to any curriculum development work such as in this programme. If teachers are not motivated to take part, relationships with their partners can suffer. As we have noted in earlier research, teacher engagement and professional development are core to the whole endeavour (Austin *et al.*, 2007; Quirke-Bolt *et al.*, 2008).

For eight out of the ten teachers in the primary schools, enterprise was a completely new focus to take in their work. When asked why they had chosen to take part, responses fell into three broad categories. Several schools saw how well it would fit into the curriculum while adding that it was 'innovative' and looked like an interesting challenge. A second category of responses put the emphasis on the need for children to become aware of business and enterprise as a life skill while a third, smaller group of teachers saw it as an opportunity for professional development, particularly in the use of 'moving image and the Mac' which they knew would be well supported by the programme team.

Teachers were asked what the most important learning outcomes were for them as teachers. We can discern two broad interlinked themes in their comments. The first of these was what we can call 'professional renewal'. A number of teachers reported that the experience had 'energised and motivated' them, rediscovering the pleasure that comes when children are fully absorbed in meaningful, innovative work. One of the teachers said:

I have been reminded that you can never underestimate the possibilities and capabilities of the young people we teach. They are the entrepreneurs of the future. They have great ideas and are capable of understanding and taking on board many of the ideas and processes involved in creating, managing and running a business.

Since enterprise was new for both teachers and children, it was a journey of discovery that involved the stimulation of co-learning. In this journey, it was the help provided by those with expertise in business that forged a really powerful partnership in one of the schools. The teacher said she:

... really enjoyed the Junior Achievement input into the enterprise project... it brought the whole idea of business to life for the children and the materials used to deliver the programme were excellent.

Another said:

I think I have got as much out of it as the children have... I think that is where a lot of enthusiasm has come from because it has been like a joint learning for the children and me.

When this kind of 'buzz' was created it set up a very positive learning atmosphere in the classroom where teachers and pupils were ready to take advantage of what one called 'spontaneous learning opportunities'. She said:

I hadn't intended to teach the formula in spreadsheets but because the children were so enthusiastic and so willing to take everything on board there was a lot more taught and a lot more came out of it and the children were just so enthused and parents have said this as well that they can't believe that their children are coming home and talking about shares and asking about shares and the exchange rate and looking it up as well, they are just amazed.

Another teacher in a different link found professional satisfaction from observing 'the dynamics of my class group and the skills that were required in business'. For her, it was also:

... the sharing of our day when we video-conferenced with our friends in the North. It's not often another class comes to visit ours.

This is an important reminder that teachers value the professional enrichment that comes when the classroom is opened up. Her partner added that:

Video-conferencing is worth its weight in gold as a learning tool and pupils want to impress an audience.

And, in this case, it was clear that the pinnacle of this experience was the face-to-face meeting of the pupils:

I am really looking forward to that as it is a magic moment when the children who have emailed each other, shared a project and seen each other on screen get to meet each other face-to-face.

One final comment from a teacher sums up the sense of professional pride that teachers get when they see their children enthused about learning and doing something remarkable:

I would say honestly, I have a class of 32 and there are easily 28 of them that were totally, totally enthused and committed. They really are the driving force behind this. They

absolutely love it. Every morning when they come in they are 'can we go and get some orders', 'can we go'. To see the children so enthusiastic about education and they have learned so much but because it has been done in a fun way and they have actually said to me 'but we are not doing work' and when you look at what they have learned out of it, they are learning without realizing it.

What we can see here is that when pupils as young as 10 or 11 are offered a dynamic curriculum, in which they are not mere recipients of received knowledge but active creators of knowledge, both they and their teachers see classroom learning as an exciting journey of discovery.

A second theme that emerged from the analysis of teacher comments was their changed understanding about the place of enterprise in the curriculum and the remarkable possibilities they saw opening up for their pupils. One of the teachers said simply:

I certainly think that many of my girls now realise that they too could form a company if they had a good business idea and followed a good business plan.

Her partner in Northern Ireland added that pupils 'work much harder on projects which had a real outcome', in this case, their company where 'money, profit and loss were a great motivator'.

Another teacher said:

I think financial capability is something that the children wouldn't normally acquire at primary school level. The project has taught me the importance of getting children to investigate business and understand how it works as it is a necessary life skill.

His partner summarised what he had learned as 'to think business'. In another school, the teacher reflected on how his own understanding of enterprise had evolved:

I suppose the way my understanding of enterprise has evolved is in terms of the business language you can use, the ideas of business model, the idea of testing everything through the thought process before actually trying it and even the use of balance sheets and that type of thing all done hypothetically before you actually start the business, that was new to me and the children of course.

Key Issues

- Teachers have gained considerable 'professional renewal' through their experience of working on enterprise. It has presented them with a challenge which they have responded to with energy and enthusiasm.

- Teachers have all understood more about what enterprise means and how it can fit into the curriculum.

5.2 Lessons Learned for the future

Teachers reported that there were three main areas where they would intend to improve on what they had done.

- a) Nearly all respondents said they would start the work earlier in the year, have early engagement with Junior Achievement or Young Enterprise and have either one joint company or two that were working on the same product. One teacher reflected a general view when she said:

I would like to run one company between the two schools that we are both producing the same thing and then we can compare the market of that product in the south against the marketing of that product in the north. I think it would be nice. It also lets them see that companies can branch out. We have run a company here in our own small community and let's see if we can be multinational, bi-national.'

It was clear that she wanted 'one unit rather than two separate entities.'

- b) A number of teachers said they would make more use of ICT, whether video-conferencing or better use of wikis. One of the teachers put it like this:

... to get the children maybe to have their initial planning stages up on the wiki would have been good. Rather than maybe just initially putting up a final finished, polished end product on the wiki. It maybe would have been nice to put up drafts onto the wiki and have the other side edit them and comment upon them. And then move towards a final draft in the end. That was another thing that came up which would have been good. So you could actually see the children's edits, if you like, a saved plan of work.

- c) Finally, there is always a tension between teacher control and pupil ownership in projects like this. For at least one teacher, his experience of working with the class led him to the view that the joint planning by the teachers at the outset needed to be more flexible because as he said the 'pupils often had better ideas than we did'. This is a measure of how far some teachers have gone in moving away from a view of the curriculum as prescribed and predetermined knowledge to one that fully accepts the potential contribution that pupils can make to their own learning.

Key Issues

- Nearly all respondents said they would start the work earlier in the year, have early engagement with Junior Achievement or Young Enterprise and have either one joint company or two that were working on the same product.
- Teachers want to explore deeper levels of collaborative work, making fuller use of all the ICT tools, including the Mac and iMovie.

6 Enterprise in the secondary sector

In the post-primary sector, a total of ten schools (five partnerships) participated. Two teachers from these ten schools had previous experience of Dissolving Boundaries but this was with other curricular areas, as collaborative enterprise in Dissolving Boundaries was a topic new to everyone. From the eight respondents to the online questionnaire in Moodle, the area of enterprise was completely new to two teachers, while the others had taught enterprise either in the academic Business Studies subjects or through the Leaving Certificate Vocational Programme (LCVP), Leaving Certificate Applied (LCA) or Transition Year projects.

6.1 A variety of enterprise projects

One partnership formed a mini enterprise company called RMC Designs - a North South Greeting Solution. In this partnership, the pupils from the south were in Transition Year and the Northern pupils were a group of Year 11 pupils studying Learning for Life and work as part of their GCSE curriculum.

This was one single company across the two schools. It involved the design and production of Valentine cards. Some pupils drew designs and scanned them in to the computer. Others searched the internet for suitable drawings and used Desktop Publishing package to produce them. The pupils used forums and Photo Gallery in Moodle to show the designs to each other.

One teacher described how the company was organised:

As regards roles in the company, these just evolved, we didn't approach it from the point of view that somebody was going to be the managing director or somebody was going to do this and that. From the outset everybody just worked together and each person was responsible for developing the card. You had to have a card to swap and that was basically it. When the pupils were doing their cards at the back of them they all wrote, "this card has been designed by such and such for RMC designs". We uploaded the cards but on the back it said especially designed by, they put their name for RMC designs, so they were all aware that even though the company was based on two school campuses, it was one company.

Then when it came to the selling, each school sold the other school's designs:

I suppose we became their supplier and they became our suppliers. Really it was just pupils who were particularly interested did it and then the others were feeling a bit left out and

then they joined in. It was so simple. Some pupils printed the cards, others put the fold on them, others displayed them on a board to show them to the school. And then we had the ones that were responsible for getting the envelopes, then the deliveries. Initially we planned that a boy would go around in a dinner jacket and he would go around and give the girls a kiss but that didn't materialize. That was the initial plan and then it evolved. A regimented business plan wouldn't have worked for my kids. I think what was nice was it was a great leveller because they all knew, well that was my card, it didn't matter how good they were at maths or ICT - they were all equally proficient at it and they had a product at the end of it.

Another partnership was an example of where two schools were linked but each looking for different outcomes. Progress in this partnership was also hampered by the fact that one of the schools was moving premises and was not available for communication during the first term. The Northern school was already part of a cross-community enterprise project with two other schools which collaborated to produce a Northern Ireland tourism guide aimed at young children. The southern school Transition Year students were participating in a Young Social Innovator project which involved contact with a local residential home for the elderly. Moodle forums were used only by the southern school to introduce pupils and also for southern pupils to comment on the Belfast product. This was also achieved through a videoconference between both schools. The southern school used the Flip camera and Mac to produce a short video explaining the concept of Young Social Innovators (YSI) and uploaded this to the Moodle podcast.

This partnership will not continue as the Belfast school has withdrawn from Dissolving Boundaries. However, a new partner will be found for the southern school.

A third partnership involved pupils from the Leaving Certificate Vocational Programme (LCVP) class in the Republic of Ireland and pupils from year 13 Applied Business in Northern Ireland. The focus was on 'Enterprising Business' and the 'Enterprising Manager' (i.e. units of study in Applied Business). One element saw both schools collaborating to identify the characteristics and attributes of an entrepreneur. Both schools had to arrange visits to enterprises, arrange for a speaker to visit the classroom and organise an enterprise activity and both of them benefitted from sharing ideas and advice. They also shared, through a videoconference, the expertise of a local trader who visited one of the schools. Students from the south attended The Entrepreneur Show in Dublin and produced a video showing their experiences there. Both schools organised enterprise activities in their own school including a football tournament, table quiz and bun sale.

In another link, pupils from an LCVP class in the Republic of Ireland and pupils from a year 13 Business Studies class in Northern Ireland formed a partnership and studied the topic of Women in Business, a topic common to both curricula. They concentrated on four business models - sole trader, limited company, partnership and franchise. Students in both schools visited and interviewed women entrepreneurs in the workplace. Women entrepreneurs were also invited into each school and were interviewed by both sets of students using videoconferencing. Students used Moodle forums to communicate socially and used wikis to profile the women entrepreneurs.

In the fifth enterprise link, a Northern post-primary school with several years' experience with Dissolving Boundaries in projects based on leadership and personal development, formed a partnership with a school whose staff were new to Dissolving Boundaries. Pupils from Leaving Certificate Applied worked with Year 13 pupils in Northern Ireland who were taking ICT as one of their A level subjects. These schools decided on a joint project to promote the Beautiful North West (of Ireland) through the production of a video. The first year was designated for training in the use of ICT applications and to get to know each other through face-to-face visits and videoconferencing.

Key Issues

- Even the partnerships that did not produce a product benefitted from sharing the resource of visiting entrepreneurs through video-conferencing.
- Some of the secondary links stressed the importance of enterprise in community as well as business.
- Timetabling issues made close collaboration more difficult for secondary schools than those in the primary sector.
- Teachers stressed the importance of planning, but also the need to adapt these plans as the year progressed in light of pupils' contributions.

6.2 What use did schools make of ICT?

Because Dissolving Boundaries is a multi-dimensional project incorporating a cross-border element, an ICT element and a curricular element, teachers were asked which of these appealed to them most. The majority of the teachers in the post-primary sector regarded the use of ICT as

an element which appealed to them a lot, but just two of the teachers regarded ICT itself as a 'major consideration' when deciding to participate in the Enterprise pilot project. The remainder regarded ICT as a facilitator for collaboration which they were quite happy to use. There were many applications of ICT available to these teachers and their pupils during the course of their enterprise work in Dissolving Boundaries throughout the year - videoconferencing, Moodle forums and wikis, Moodle blogs, podcasts and photo gallery, as well as a flip camera and iMovie applications which were new to Dissolving Boundaries and available only to Enterprise projects.

Videoconferencing, which is a synchronous activity, is difficult for post-primary schools to organise and coordinate due to the constraints of timetabling, and subject specific lessons at post-primary level. The most frequent users in the post-primary sector held a total of 13 videoconferencing sessions, some of which were practice sessions between teachers and members of the Dissolving Boundaries team. One partnership held ten videoconferences. The third partnership held eight sessions, again involving some practice sessions between teachers. One partnership held 2 videoconferences while one partnership did not make use of this facility at all due to broadband problems in the ROI school. This usage of videoconferencing compares to an average of 6.7 sessions for all Dissolving Boundaries post-primary schools.

Two of the partnerships used videoconferencing to introduce an invited guest speaker and share this resource with the partner school. Pupils from each school were invited to ask questions and many did. There was very positive feedback from all teachers, who saw the potential of videoconferencing to share resources.

One southern teacher commented:

A visit to the classroom from an entrepreneur is an essential part of the LCVP programme and this video-conference provided a very exciting way of achieving this aim as well as learning about new technologies. We really enjoyed participating and I spoke with the National Co-ordinator of the LCVP programme last night and told her how well the videoconference went and how beneficial it is for students. We're looking forward to having another session like it with an entrepreneur from our local area either late February or early March.

Other teachers concurred:

We have done two very successful video conferences too along the same lines. Our partner school had an entrepreneur visiting and we were able to participate from Dublin. The students really loved it and were totally engaged. Then last week we had our entrepreneur visit in. This entrepreneur was so impressed by the whole activity and really enjoyed the

interaction... The students love it and it certainly added a new dimension to the 'Visitor In' exercise.

And:

The videoconferencing facility really encouraged the pupils throughout the project. They enjoyed exchanging views with pupils in (the partner school).

Another partnership used videoconferencing to introduce pupils to each other, deliver a presentation on the work they were doing and hold a question and answer session at the end. One of the teachers described it as 'an interesting experience for both schools involved'.

Videoconferencing was used socially by the fourth partnership which organised a total of ten sessions.

The use of Moodle by post-primary schools was intermittent. Forums and blogs were used occasionally by some partnerships, but responses were often delayed. It is difficult to measure the communication level between post-primary pupils in this medium, as teachers sometimes report that their pupils use programmes such as instant messaging (MSN) or social network sites such as *Bebo* or *Facebook* to communicate with partner pupils. The photo gallery in Moodle was used by one partnership to display their proposed product, i.e. Valentine's cards. Another partnership used this gallery to post social photos. Overall, the secondary enterprise schools all used Moodle to the same extent as other new schools.

The Flip camera and iMovie editing software proved very popular with the majority of post-primary teachers, who also found the training delivered by *Studio On* in Belfast or the *Digital Hub* in Dublin to be 'extremely helpful'. Two teachers also felt that they could rely on their partner teacher to help them with this new technology. Two schools posted short videos on YouTube. One was a video made by one set of pupils to welcome their partner school and introduce them to the school. The second video presented interviews which pupils carried out with entrepreneurs.

Moodle podcast was used by one school to post short explanatory videos of what pupils were doing:

The use of Podcasts, movie editing and eventual posting of the video created by our students was a good focus for reflective thinking and planning. This forced the students to consider in more detail what the intended outcome for their project was and how to best

present this to others. This provided a rehearsal opportunity for a later presentation they had. The students thoroughly enjoyed the use of the camera, editing and outcome. It was an opportunity they otherwise would probably not have had. It has pushed home for the staff the ease with which a video presentation can be created and we would hope to include these in other subjects in the future.

Another teacher reported that the use of moving image lifted the whole lesson:

The kids are mad keen, when I lifted the Mac they would be, what are we looking at next? Just to get that keenness from them, it was like a carrot for the teacher and they were so attentive, it was great, very positive and it was a pity that we didn't have 15 Mac's for them all to use!

In another school, the pupils used the camera to make introductory videos to send off to the other group. The use of this technology enhanced the teaching experience as the teacher commented:

I can say that without a shadow of a doubt it made it that much more engaging for the students. It provided new stimulus and provided a new kind of impetus for them. I think the existence of video and moving images certainly helped. Kind of sparked the imagination I guess.

A third partnership made use of moving image to capture scenery as part of their intended product for promoting tourism. One teacher from this partnership was very enthusiastic about moving image.

And through Dissolving Boundaries pupils have learned to use the Flip and editing on Apple and PC. Through the introduction of this enterprise dissolving boundaries project we have been encouraged to really up our game in terms of what we produce.

Other ICT applications, not specific to Dissolving Boundaries, were used by a minority of teachers and pupils including *Adobe Flash*, animation software; *Dreamweaver*, web design software and *Fireworks*, a web-graphics package, *MS PowerPoint* and *iChat* were also used. One school invested £5500 in ICT as a direct result of being involved in the Dissolving Boundaries project. Pupils really appreciated the fact that they were using software that they will be using in university and in the workplace.

Just one partnership used wikis to present work on enterprise. One of the teachers in this partnership admitted to being 'not into the computer'. But she and her pupils rose to the challenge. With training and also help from within the school, they produced very informative wikis.

Key Issues

- The use of moving image appealed very much to post-primary pupils.
- Videoconferencing was used to share the expertise of entrepreneurs.
- There was strong interest and pleasure in using the Flip camera and praise for its ease of use.
- Teachers and pupils gained from the challenge of using ICT.
- Collaborative ICT tools were not as popular as in the primary sector.

6.3 How did enterprise link with the curriculum?

As mentioned in the earlier section of this report on enterprise in primary schools, a revised curriculum has been introduced both north and south of the border over the last number of years. This new approach relates to teaching and learning in the post-primary sector also and here too the emphasis is on the development of skills and capabilities for life-long learning and for contributing effectively to society.

The ability to think both critically and creatively and to develop personal and inter-personal skills and dispositions is essential for functioning effectively in a changing world. Therefore, the development of Thinking Skills and Personal Capabilities is at the heart of the revised curriculum from Foundation Stage to Key Stage 4.

(CCEA, Northern Ireland)

Another important aspect of the revised curriculum in NI is the concept of connected learning.

Throughout their school careers, young people need to be motivated to learn and see the relevance and connections in what they are learning. An important part of that process is being able to see how knowledge gained in one subject area can connect to another and how similar skills are being developed and reinforced right across the curriculum.

(CCEA)

Comments from teachers indicate that enterprise projects in Dissolving Boundaries presented opportunities to pupils to develop a varied range of skills relevant to the curriculum. This was important as no teacher had time to add extra work to an already weighty timetable:

The curriculum determined the project. Given huge time constraints, it was imperative to me that the project would not entail extra work so we designed the project around our curriculum. Interviews with entrepreneurs, visits to the workplace and case studies are compulsory.

Types of business ownership tie in with the AS Business Studies specification. We also cover the impact of technology on business and cover a small element on communication, so putting the theory into practice was interesting.

As well as the business content in the various curricula, skills such as leadership, team building and taking account of other peoples' views were addressed. For one teacher who had already taught enterprise in previous classes, Dissolving Boundaries gave a new dimension:

The enterprise worked out very well and the students learned a good deal about enterprise and the structure, and how to manage an enterprise and so on. But I think they gained most from the cross border collaboration. It stands out as being the key aspect.

Another teacher was happy with the way the project tied in with his Transition Year programme:

Our Transition Year students were involved in this project, and they took part in the Young Social Innovators project this year. This provided a focus for preparatory and planning work as they were expected to present their work to others through this project. It provided the students with the opportunity of examining another enterprise and critically analyse that project to provide relevant feedback to the other students in the partner school.

The enterprise project also tied in with the GCSE Learning for Life and Work curriculum which comprises three modules, Personal, Social and Health Education, Global Citizenship and Employability.

Key Issues

- Projects tied in with all the various curricula which included in NI, AS Applied Business, AS Business Studies, GCSE Learning for Life and Work and in the Republic of Ireland: Transition Year, LCVP and LCA.
- Just one actual mini-company was formed.

6.4 Impact on pupils and teachers

Post-primary business studies can often be theoretical, particularly in grammar schools, but working with another school and having to communicate with other pupils, and in some cases, working with entrepreneurs and introducing them to the other school, meant that the theory of business translated into a very practical and real experience. This was a great benefit for pupils.

One teacher commented:

I wanted them to have the confidence to just be able to get up and talk in front of the class and be able to articulate themselves a lot better and sit down and plan, have an action plan, from start to finish and actually stay on task and do something. They also understood enterprise to mean having the idea was not enough but one had to have the confidence to carry this idea forward and keep it running. They achieved this.

Another teacher added:

I certainly hoped that they would improve their communication which I think has certainly happened as a direct result of their involvement in the project. I also think that, even from self discipline and time management, with regard to that they certainly learnt some lessons in terms of meeting deadlines and so on.

In response to the question on what left the 'biggest impression on the pupils', one teacher said:

Pupils could take a simple concept and turn it into a business to make money – this left the biggest impression on the pupils.

But it was working together as a team within their own classroom and with another school through ICT that made the biggest impression on the majority of pupils.

In the normal classroom situation there wouldn't be a lot of teamwork so working with each other would give them that and it was very beneficial and they enjoyed that too.

Teachers identified many other improved skills in their pupils as a result of participating in these enterprise projects:

- Greater communication,
- Improved confidence,
- Staying power and learning from mistakes,
- Have the confidence in yourself to let others take charge of certain tasks without being offended,
- Recognise people's strengths,
- Being creative - deciding on a marketing idea,
- Problem solving - how do we market, how do we advertise other than TV, how do we take orders, how do we sell?
- Thinking, organizational and planning skills - thinking outside the box and using initiative,

- Seeking and then acting on the views of others,
- Learning more about how business works.

Getting feedback from the other school was also an important element in one partnership even though the schools were not engaged in a joint project.

Of the eight teachers who completed the questionnaire, seven teachers felt that the topic of enterprise should play a greater role in the classroom and they would also value links with business as a way of improving the teaching of enterprise. All four teachers who were interviewed recognized potential entrepreneurs amongst their pupils, as the following comments from four different teachers indicate:

Just from speaking to the girls they certainly would be very keen on enterprise and I would every now and again ask them what they want to be and certainly some had said that they do want to run their own business.

Yes I would certainly say that exposing them to the entrepreneurs opened up that possibility (of running a business). Now a lot of them would still say, no I don't want to run my own business. But they recognise the value of entrepreneurial qualities and skills. But quite a lot of them would have said, I'd never thought I'd be a business person but I actually probably could be. So they would have picked that up.

... there were a number of students now who really stood out as being entrepreneurial in their approach and you know learning about entrepreneurial skills and showcasing their skills. So... we had a few kind of leaders who grew from the project.

For me the whole thing, it wasn't about making money, it was about developing the pupils because I think that just through that wee project for them themselves the life skills that have developed were more important but it also gave them an idea of who had that kind of drive in them to become an entrepreneur and I have about two or three boys who were definitely wheelers and dealers.

All teachers interviewed felt that their pupils had risen to the challenge posed by the enterprise projects. One teacher, whose pupils actually formed a company with their partner school, was particularly impressed by the way these pupils responded to the project and set out to make the enterprise work.

The challenge with my group is they are lazy lumps, they don't want to think, they don't want to do any work on a Monday morning and really it was good to motivate them. They liked the challenge and because no other Year 11 group was doing this they thought they were the "bees knees". They started to stop shouting over each other and instead of not being settled on a Monday morning the fact that, here, we have a business and we have a

date to have these done and we can't waste time, so that actually was a very good thing to focus on every Monday. I think that because they saw there was a finished article at the end that they could see from the start to finish give them a lot of satisfaction as well. They made money, they enjoyed it and they got recognition in the school and they got to meet the other kids and everybody thought they were special... I think it was a win, win situation.

Another teacher commented:

For some of them it would have been quite challenging, quite daunting. And quite intimidating meeting an adult at work and having to go and find this workplace and interview them. Yeah I suppose they probably would have found it quite challenging... but yes, they rose to it. I firmly believe if you prepare your students to succeed they will succeed. But if you send them off without any preparation they won't. And I would do quite a lot of preparation for both the visit out and the visit in...

Pupils also felt that they had learned from their contact with business people.

They learned about the skills of an entrepreneur and how to become an entrepreneur, about banking and about mortgages and insurance. They learned that you have to be a good risk-taker, need to have communication, creativity, self-motivation and team-work skills and that you also need to be flexible to be a good entrepreneur.

They learned that you need an idea to start a business, that you must come up with new ideas for your business to keep your customers interested and to keep up with competitors and that you must learn how to deal with the public.

In the socially orientated project in one Transition Year class, pupils gained:

... an appreciation for older people and their needs. It enhanced their respect and understanding of the needs for planning within the organization'.

6.4.1 Inter-cultural learning

Even though the cross-border element of the projects was a major consideration for just two of the teachers from the outset, all teachers agreed that significant appreciation of a different class in another part of the island had occurred as a result of participation. Schools were based in very different localities - inner-city schools, country town schools, suburban city schools, rural schools – so the “incidental learning” that took place was very valuable, as the following teachers' comments show:

The pupils loved the face-to-face meetings with the partner group, they loved the social side of the partnership. As would be usual for their age they took their chats to Facebook and Bebo etc. rather than on Moodle.

Again, just to have the experience of those girls' lives and hearing about them compared to ours was very useful. The background of some of the girls was different, so that was certainly very beneficial for them to know that.

The cross border element was definitely the most important. That definitely, purely for the nature of my pupils. Maybe if I taught in a different school, maybe a lovely grammar school where they had more exposure to people from different backgrounds but I thought that that was the most important thing for ours.

And the partner teacher corroborated the view about the importance of working with another school:

I think probably the cross border collaboration was the most important. Because I think it provided a certainly novelty to the project and to the way in which we did it. Because we can do mini companies every year with different groups several times a year but it doesn't have that external link. And I think that was important. That's what made it kind of intriguing for the students. And what motivated them.

Even though it is generally recommended that a partnership should be well-matched in terms of age and ability, this partnership, although of similar age, did not fit the criterion of similar ability, but this did not pose a problem, rather it was an advantage:

Ability wise, for our pupils, no it wasn't a match but in saying that, I am glad that we still got matched with them because they saw these other children and I think they kind of, it gave them an aspiration to maybe be a bit more particular to try and join in because the other children were superb, they were bright, clever kids with great social skills and if we were teamed with other children similar to themselves I don't think it would have helped them. So I think this was nice. I think they learned that the world is bigger than the area that they live in, it kind of enriched their lives a bit more, that they saw these other children who came from somewhere else, who were similar to them but who had totally different experiences in life... They had to work together and some of them have behavioural problems and they could not behave in the way that they did and they had to adapt their behaviour which they would have to do in the world of work anyway.

6.4.2 Learning outcomes for teachers

The majority of teachers involved in the post-primary projects had previously taught enterprise and all would have defined enterprise along the lines of 'creative risk taking and use of the imagination' or 'taking an idea and having the belief and confidence to turn it into a viable business opportunity'. According to Paterson (2009), the actual definition of enterprise education continues to pose problems. Some teachers see it as linked to community and citizenship, some see it as business related, others see it as an attitude permeating the whole curriculum

developing transferable or life skills. However, the definition of enterprise broadened for some teachers after taking part in this cross-border initiative. One teacher could now see the importance of persistence, flexibility and drive. Another now appreciated the importance of social enterprise rather than just business enterprise. Insight into the world of business on both sides of the border was also highlighted as a learning outcome for some teachers.

For other teachers, who had previously taught business studies, taking part in a cross-border initiative taught them a whole range of new ICT skills. Teachers saw this as a very important outcome:

In terms of the ICT, I am now able to use forums, wikis, video-conferencing, filming and editing, uploading to YouTube - things I never did before.

Another positive outcome for teachers was the satisfaction of seeing their pupils engage so enthusiastically with their enterprise projects:

My pupils gained so much confidence in their own abilities and did things they just would never have participated in e.g. film making, designing, asking people to buy their product. They also became more competitive and were more applied in their DB time. They took more of a pride in their work and felt 'special' because they were part of an elite project.

And similarly from another teacher:

Using the webcam and holding a video-conference. It was terrific for students to experience and really energised me too. I'm a business teacher, and video-conferencing is on the Leaving Cert syllabus, so the students were able to realise from practical experience the benefits of it in action. Students were also very interested in all aspects of technology and were very aware of the audience of students in the other school when writing reports, so the quality of their work improved".

One of the motivating factors in getting teachers to participate in the DISSOLVING BOUNDARIES Enterprise pilot was the opportunity for their own professional development. In terms of ICT, this impacted on several teachers, who felt that they benefitted from learning the new technology. In one partnership, one teacher visited the partner school twice to give extra training to his partner in the use of the Flip camera and iMovie. Sharing ideas was also part of professional development and plans for the future of the project included implementing some of the ideas from the partner school.

Another teacher admitted that inviting another teacher into her classroom, albeit virtually, was a challenge:

I found it for me professionally very good, that I had to set things up and invite somebody into my room. We all know as professionals we don't really like people watching us teach.

One teacher thought the project connected her more with the real world of work:

I felt it was a very useful thing to make more of an effort to get the entrepreneurs in as that was really what our project was and get the reality of working a business and operating a business and letting the girls see that. Promoting all the benefits and certainly just get more of a reality for myself rather than just relying on the text books so that certainly was a very beneficial thing.

Key Issues: Secondary pupils

- The theory of business translated into a very real experience for pupils and teachers.
- Working together as a team within their own classroom and with another school through ICT made the biggest impression on the majority of pupils.
- Many affective skills were learned such as better communications, greater confidence, staying power, flexibility.
- Pupils also felt that they had learned many business skills from their contact with business people, skills such as problem-solving, organizational skills, how to become an entrepreneur, how to keep your customers interested and to keep up with competitors.
- Potential entrepreneurs were recognized in many classrooms.
- Pupils rose to the challenge posed by the enterprise projects.
- Pupils' horizons were broadened from contact with pupils in a different part of the island.

Key issues: Secondary teachers

- Teachers' definition of enterprise has broadened.
- Teachers' ICT skills have improved.
- Teachers were motivated by the enthusiasm of their students.
- They developed professionally by working with a colleague in another school.

6.5 What changes for the future?

Eight of the ten teachers who took part in this initiative had no previous experience of Dissolving Boundaries and therefore all three aspects of the programme were new to them, i.e. working with a partner school in a different jurisdiction, working with new technology and working on a joint enterprise project. This was a steep learning curve to which teachers responded, in the main, very enthusiastically.

Time constraints in the post-primary sector, different timetables, pressure of examinations all need to be taken into consideration when planning for a collaborative project such as the Enterprise project. Some teachers realized that the plans they made had been a bit unrealistic and needed to be adjusted as the year went on. They will be more realistic in year two. Other points made by teachers related to the need to be more definite about the allocation of time to the project, and also to make communication more regularized. Starting earlier was also suggested:

Start a bit earlier, get our entrepreneur in earlier, perhaps organise a face-to-face meeting at the start to build the links with the schools.

Two of the partnerships, who had not carried out a joint business venture, are considering taking this approach in year two.

A third partnership, which had a mini-company at each school is now looking at forming one company where both sides actually buy into the one company through investment, purchase of shares. They would get teachers and other pupils to pay a pound for a share so that they start off with some money and they have share holders.

This partnership also suggested a Trade Fair day where a number of different school groups get together. It would include teaching pupils the processes required and how to improve their own employability by auditing their skills and using the project to action plan areas for improvement. Assistance from Junior Achievement and Young Enterprise could be very valuable in this area. These organizations were very much utilized by the primary sector but, to date, have not been engaged by the schools in the post-primary sector.

Becoming more familiar with the new technology and availing of it more, e.g. video conference facilities, podcasts and forums, was also put forward by several teachers as a change that would be considered for the coming year.

Key Issues

- Teachers thought that it would improve their work if there was an earlier start to the collaboration.
- They wanted more regularized communication through Moodle and videoconferencing.
- They supported the idea of developing Joint business ventures.

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