

KEEP ON TRACK
PROJECT GUIDE TO
LITERACY AND
NUMERACY:



BACKGROUND TO KEEP ON TRACK:

The **Keep on Track Project** is a unique collaborative, cross curricular project connecting 15 schools from Galway to Dublin along the Inter City Rail Line, culminating in a launch day which will be held in the **Radisson Hotel in Galway on June 9th 2011 at 12 noon**, in which schools will present their Project Findings.

The schools involved in the project and the station they have adopted are as follows:

1. Scoil Chaitríona Renmore, Galway
2. Athenry Boy's N.S: Athenry
3. Attymon N.S, Attymon
4. Woodlawn N.S.: Woodlawn
5. St. Augustine's N.S., Clontuskert: Ballinasloe
6. St. Mary's N.S.: Athlone
7. Scoil Bríde: Clara
8. Scoil Mhuire: Tullamore
9. Scoil Bhríde: Tullamore
10. St. Joseph's N.S., Ballyadams: Portarlinton
11. St. Peter's Boy's N.S: Monasterevin
12. Scoil Bhríde Noafa: Kildare
13. Scoil Bhríde, Sallins: Sallins/Naas
14. Primrose Hill, Celbridge: Hazelhatch/Celbridge
15. Holy Spirit B.N.S.: Dublin

Each school has adopted a station to tell the rich story of that station in a variety of formats. Classes from Senior Infants to Sixth class are taking part in the project, researching materials and engaging in learning experiences relevant to their own curricular level.

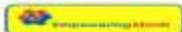
Schools compiled their work across all curricular areas and presented project materials and outcomes on a joint project blog, the first project of its kind in the country using the Scoilnet Blogs platform. www.keepontrack.scoilnet.ie



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Iarnród Éireann (www.irishrail.ie) as Keep on Track Sponsor and has made archive materials available to aid the implementation of the project and facilitated Railway Station visits from each school.

Myles McHugh, Service Planning Manager for Iarnród Éireann, said *“we are proud to have supported the Keep on Track project, and to facilitate a unique education project which will be of benefit to the schools involved individually and collectively. Railways are about connecting communities, and we hope the shared experiences and learning for the schools along the line involved will be rewarding for the children involved.”*



The project is also supported by the Education Centres in the relevant catchment areas: Galway, Athlone, Portlaoise, Kildare and Drumcondra Education Centres collaborated to enable schools and teachers in their region to participate.

Director of Galway Education Centre; Bernard Kirk says *“This project is the one of the most exciting project we have been involved with since I became Director of the Galway Education Centre over thirteen years ago. The reason is simple. The project has been conceptualised, organised and driven by a group of committed primary school teachers under great leadership from Kate Murray and Cathal O’Connell. The Keep on Track Project goes to the heart of CPD for teachers by facilitating the sharing of practical ideas, concepts and curriculum implementation among peers in a supportive, constructive and excellently led project. The website and the resources already created and available as part of the project, highlight the depth and breadth of the Revised Curriculum at its best.”*



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GALWAY EDUCATION CENTRE
Mairéad MacLiamáin & Colm Ó Gairbhí



A Workshop Day for Teachers took place in Athlone Education Centre on the 20th of January 2011. Each Education Centre facilitated their schools with regards to attendance on the day. NCTE, the National Centre for Technology in Education (www.ncte.ie) has committed to the project through the use of Scoilnet Blogs and also through access to Scoilnet Maps www.maps.scoilnet.ie This is the first opportunity for Primary Schools in Ireland to access this resource. In Galway, Josephine Vahey, of the County Library Service, aided schools by sourcing research material and class novels for the project.

The Keep on Track Project was chosen to represent Ireland at the Microsoft Innovative Education Forum in Moscow in March of this year. The purpose of this event was to promote international sharing of innovative practices of technology integration and provide Europe-wide networking opportunities among top innovators. It also focused international attention on the importance of technology innovation in education.

Dr. Kevin Marshall, Academic Programme Manager in Ireland stated that “Microsoft was proud to facilitate this exciting opportunity to bring the most innovative teachers from around the continent together to share their experiences and practice.”

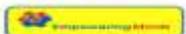
Keep on Track offered huge opportunities for teachers and students to engage with ‘real life’ learning experiences in a cross curricular manner. It also cements the collaboration between schools, Education Centres and the NCTE and provides a model for co-operation between schools and industry. The 21st century learning models engaged in by the students will be on display for all to see at the Keep on Track Launch in Galway next Thursday 9th of June. For more see www.keepontrack.scoilnet.ie



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Galway Education Centre
Múinteocht agus Gaileirí



KEEP ON TRACK: SUPPORTING LITERACY AND NUMERACY:



LITERACY:

During the course of the Keep on Track Project we have focused especially on Literacy and Numeracy, two areas which have been highlighted as areas for improvement in Ireland; see **Better Literacy and Numeracy for Children and Young People; A Draft National Plan to Improve Literacy and Numeracy in Schools**

http://www.education.ie/servlet/blobServlet/pr_literacy_numeracy_national_plan_2010.pdf

Aims

The following aims of the English language curriculum have been achieved during Keep on Track implementation:

- ✓ promote positive attitudes and develop an appreciation of the value of language -- spoken, read and written
- ✓ create, foster and maintain the child's interest in expression and communication



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Músaíochtaí agus Gaolta



- ✓ develop the child's ability to engage appropriately in listener-speaker relationships
- ✓ develop confidence and competence in listening, speaking, reading and writing
- ✓ develop cognitive ability and the capacity to clarify thinking through oral language, writing and reading
- ✓ enable the child to read and write independently
- ✓ enhance emotional, imaginative and aesthetic development through oral, reading and writing experiences.

Broad objectives

The following Broad Objectives (Primary School Curriculum: English) were achieved during the course of the project:

- ✓ gain pleasure and fulfilment from language activity
- ✓ develop the skill of listening actively and appreciate the significance of tone of voice, facial expression and gesture
- ✓ learn to understand the conventions of oral language interaction and use oral language in a variety of social situations
- ✓ expand his/her vocabulary and develop a command of grammar, syntax and punctuation
- ✓ become fluent and explicit in communicating ideas and experiences
- ✓ explore and develop ideas and concepts through talk, directed discussion and writing
- ✓ identify and evaluate the key points, issues and central meaning of a text or oral presentation and organise efficiently the information gained
- ✓ justify and defend opinions and present a coherent argument orally and in writing
- ✓ use oral language to manipulate images in problem-solving
- ✓ express intuitions, feelings, impressions, ideas and reactions in response to real and imaginary situations through talk, discussion and writing
- ✓ organise, clarify, interpret and extend experience through oral language activity and writing
- ✓ explore and express reactions to poetry, fiction and the arts, and refine aesthetic response through oral language activity and writing
- ✓ create, develop and sustain imaginary situations through talk, discussion and improvisational drama
- ✓ compose, relate and write his/her own stories and poems
- ✓ explore, experiment with and enjoy all the playful aspects of language



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- ✓ develop print awareness, an understanding of the purposes of print , and a control over the different ways meaning is derived from print
- ✓ develop a range of reading skills and abilities that would include phonemic awareness, word identification strategies and a growing sight vocabulary
- ✓ develop an appropriate range of comprehension strategies
develop an awareness of the richness and diversity of reading material available and read from a variety of texts of gradually increasingly complexity
- ✓ choose his/her reading material and engage in and enjoy sustained silent reading
- ✓ develop a sense of discrimination with regard to the use of language and images in the media
write for different purposes and different audiences
- ✓ write in a variety of genres appropriate to school and outside needs
- ✓ learn to edit and refine writing and develop a sense of appropriate presentation
- ✓ develop a personal style of writing and learn to distinguish and to use appropriate levels of formality
share writing and responses to reading experience with other children and adults
- ✓ use computer technology in learning to write and for information retrieval
- ✓ enhance reading and writing development through the involvement of parents or guardians.

Pg 10-12 Primary School Curriculum: English

Information and communication technologies

The ability to use information and communication technologies can also help to enhance the child's language development. It can be an important resource in developing reading, comprehension and information retrieval skills. The facility of word-processing can not only encourage and help the child in drafting, editing and rewriting but can underline the fact that this operation is an intrinsic part of the writing process. Because language is a feature of every curriculum area these and other applications of information and communication technologies to learning and teaching can have a relevance for the child's development throughout his/her school experience.

Pg 9 Primary School Curriculum: English



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NUMERACY:

The structure of the curriculum:

The curriculum comprises five strands:

- Number
- Algebra
- Shape and space
- Measures
- Data.

Pg 3 Primary School Curriculum: Mathematics

Aims

The following aims of the primary mathematics curriculum were achieved during the Keep on Track Project:

- ✓ to develop a positive attitude towards mathematics and an appreciation of both its practical and its aesthetic aspects
- ✓ to develop problem-solving abilities and a facility for the application of mathematics to everyday life
- ✓ to enable the child to use mathematical language effectively and accurately
- ✓ to enable the child to acquire an understanding of mathematical concepts and processes to his/her appropriate level of development and ability
- ✓ to enable the child to acquire proficiency in fundamental mathematical skills and in recalling basic number facts.



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Broad objectives

The following Broad Objectives of the Primary school Curriculum: Mathematics were met:

Skills development

- ✓ apply mathematical concepts and processes, and plan and implement solutions to problems, in a variety of contexts
- ✓ communicate and express mathematical ideas, processes and results in oral and written form
- ✓ make mathematical connections within mathematics itself, throughout other subjects, and in applications of mathematics in practical everyday contexts
- ✓ reason, investigate and hypothesise with patterns and relationships in mathematics
- ✓ implement suitable standard and non-standard procedures with a variety of tools and manipulatives
- ✓ recall and understand mathematical terminology, facts, definitions, and formulae

Number:

- ✓ use acquired concepts, skills and processes in problem-solving

Algebra

- ✓ use acquired concepts, skills and processes in problem-solving

Shape and space

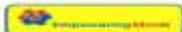
- ✓ develop a sense of spatial awareness
- ✓ investigate, recognise, classify and describe the properties of lines, angles, and two-dimensional and three-dimensional shapes
- ✓ deduce informally relationships and rules about shape
- ✓ draw, construct and manipulate two-dimensional and three-dimensional shapes



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Músaíochtaí agus Gaibhéal



- ✓ describe direction and location using body-centred (left/right, forward/back) and simple co-ordinate geometry
- use acquired concepts, skills and processes in problem-solving

Measures

- ✓ know, select and use appropriate instruments of measurement
- ✓ estimate, measure and calculate length, area, weight, capacity and average speed using non-standard and appropriate metric units of measurement
- ✓ estimate, measure and calculate angles, time, money and scale using non-standard and appropriate units of measurement
- ✓ recognise and appreciate measures in everyday use
- ✓ use acquired concepts, skills and processes in problem-solving

Data

- ✓ collect, classify, organise and represent data using concrete materials and diagrammatic, graphical and pictorial representation
- ✓ read, interpret and analyse tables, diagrams, bar charts, pictograms, line graphs and pie charts
- ✓ appreciate, recognise and express the outcomes of simple random processes
- ✓ estimate and calculate using examples of chance
- ✓ use acquired concepts, skills and processes in problem-solving.

Constructivism and guided-discovery methods

A constructivist approach to mathematics learning involves the child as an active participant in the learning process. Existing ideas are used to make sense of new experiences and situations. Information acquired is interpreted by the learners themselves, who construct meaning by making links between new and existing knowledge. Experimentation, together with discussion among peers and between the teacher and the child, may lead to general agreement or to the re-evaluation of ideas and mathematical relationships. New ideas or concepts may then be constructed. The importance of providing the child with structured opportunities to engage in exploratory activity in the context of mathematics cannot be overemphasised. The teacher has a crucial role to play in guiding the child to construct meaning, to develop mathematical strategies for solving problems, and to develop self-motivation in mathematical activities.

Pg 5 Primary School Curriculum: Mathematics



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Information and communication technologies

Computers have a place in the mathematics curriculum but must be seen as another tool to be used by the teacher and the child. Computers provide an alternative to pen-and-paper tasks, are stimulating for less able children, and provide interesting extension work for all levels of ability. There is a wide variety of computer applications available. Adventure-type programs, which require the child to solve specific mathematical problems in meaningful context, offer opportunities for the development of problem-solving skills. Paired or group activities encourage discussion and collaborative problem-solving. Data-handling programs allow children to manipulate and interpret data they have collected. The emphasis must always be on the process, for example collecting information, deciding on the relevance of questions, and interpreting results.

Problem-solving

Developing the ability to solve problems is an important factor in the study of mathematics. Problem-solving also provides a context in which concepts and skills can be learned and in which discussion and co-operative working may be practised. Moreover, problem-solving is a major means of developing higher-order thinking skills. These include the ability to analyse mathematical situations; to plan, monitor and evaluate solutions; to apply strategies; and to demonstrate creativity and self-reliance in using mathematics. Success helps the child to develop confidence in his/her mathematical ability and encourages curiosity and perseverance. Solving problems based on the environment of the child can highlight the uses of mathematics in a constructive and enjoyable way.

Integration in mathematics

Mathematics pervades most areas of children's lives, whether they are looking at and responding to structural forms in the visual arts curriculum or calculating how to spend their pocket money. For children to really understand mathematics they must see it in context, and this can be done through drawing attention to the various ways in which we use mathematics within other subjects in the curriculum. SESE provides ample opportunities for using mathematics, for example recording results of experiments in science or creating maps in geography, while a sense of time and chronology is essential in history. Collecting data for analysis is also an



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important feature of SESE and provides the child with real-life examples of data with which to work. Physical education offers myriad opportunities for measurement as a natural part of the activities, for example timing races or measuring the length of jumps. Creating symmetrical and asymmetrical shapes in a gymnastics lesson can also offer real use of mathematical concepts. Mathematical language occurs in all areas of the curriculum, for example in long and short notes in music or using the correct words to describe shapes in visual art activities. Many teachers make use of rhymes, songs and games to reinforce concepts of number and shape, and this can be achieved in English, Irish or using a modern European language where appropriate.

Pg 7-9 Primary School Curriculum: Mathematics



KEEP ON TRACK:

RECOMMENDATIONS COMPLETED:

The 2009 National Assessments of Mathematics and English Reading des, 2010b teachers who engage in regular professional development (Eivers et al.,2005), who report high levels of satisfaction with ICD attended (Shiel et al., 2006),who regularly assess pupils using a variety of methods (Eivers et al., 2005), or who use formative assessment (Black & Wiliam, 1998) are those whose pupils tend to display superior achievement.” (p. 11)

Looking at the recommendations of the report, these are the areas that Keep on Track has succeeded in achieving during the course of the project.

Recommendations Achieved:

Education system

- ✓ **Future curriculum changes should identify key cross-curricular skills (to help address curriculum overload) and should outline in very practical terms what is meant by the social constructivist perspective underpinning the maths curriculum.**

Keep on Track is cross curricular project. Each subject in the curriculum has been addressed by the sixteen schools involved.

- ✓ **Each CPD provider should provide adequate coverage of the core topics of literacy and numeracy, and only offer courses directly relevant to education.**

During the CPD Day in Athlone, teachers were given training not only in IT skills necessary for completing the project but also in the practical ways these could be applied to literacy and numeracy.

School and teacher

- ✓ **Many teachers need to update their maths lessons to reflect modern teaching methods, particularly in relation to problem-solving and calculator use.**

During the project, teachers employed use of various technologies to aid the implementation of Mathematics. Students used hand held technology to access Train Timetables, used spreadsheet programmes to record and create charts and developed problem solving skills in relation to many strands of the curriculum.



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SOURCES USED:

- www.into.ie/ROI/LiteracyandNumeracy/.../LiteracyNumeracy_JanFeb2011.pdf
- [http://www.ibec.ie/IBEC/DFB.nsf/vPages/Education_and_training~Key_issues~literacy-and-numeracy-plan-28-02-2011/\\$file/Literacyplan_IBECresponse.pdf](http://www.ibec.ie/IBEC/DFB.nsf/vPages/Education_and_training~Key_issues~literacy-and-numeracy-plan-28-02-2011/$file/Literacyplan_IBECresponse.pdf)
- http://www.ncca.ie/en/Curriculum_and_Assessment/Early_Childhood_and_Primary_Education/Primary_School_Curriculum/Assessment/Assessment_Guidelines/
- Irish Primary School Curriculum: Mathematics
- Irish Primary School Curriculum: English

REPORT COMPLETED BY KATE MURRAY. 6.06.2011



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