Implementing key skills in post-primary education in Ireland through systemic reform

Majella O’Shea
Today

Approaches to key skills development in Ireland

• Different approaches and entry points – general background
• Spotlight on one programme of change – already implemented
• Applying the learning to ongoing reform
• Hearing from stakeholders
• Questions
Why key competences (skills)?

- Review of upper secondary education 2004/2005
- Consultation – key skills
- Development of a key skills framework
  - European discussions on key competences (following Lisbon)
  - OECD DeSeCo Project (2005) – 3 broad categories
  - Moseley – review of 35 frameworks
  - And informed by other frameworks – Quebec, New Zealand and others
What competences?

- Curriculum development
- Learning outcomes
- Work with schools
- Embed key skills
  - In the curriculum
  - In teaching and learning
  - In assessment
Impact on policy – upper secondary

• Embedding key skills in all new syllabuses
• Impact on assessment – through the learning outcomes
• Part of the education language
• But - reform has been slow at upper secondary – No crisis!

Mathematics reform – *Project Maths*
New phase of curriculum reform at lower secondary

- Political drive for change
- Launched in October 2012
- Significant reform programme
- Key skills a significant aspect of the reform
- Major reforms to assessment proposed
- Phased from Sept 2014 to 2020
Key skills of junior cycle

- Informed by the work at senior cycle
- Teachers and learners involved in naming the skills
- Now an expected element of reform
- Key skills are uncontested
- Visible subjects and courses as they are reviewed
The story of *Project Maths*
Developing subject-based key competences through holistic reform.

Aoife Kelly
Post-primary mathematics education featured a highly didactic pedagogy with mathematics being taught in a procedural fashion with relatively little emphasis on problem solving. (Inside Classrooms, Lyons and Lynch, 2003)

Other Concerns:
• uptake of Higher level mathematics
• backwash effect of a predictable high stakes exam
• lack of conceptual understanding
• enjoyment of maths and attitudes.
## Key Changes

<table>
<thead>
<tr>
<th>Syllabus</th>
<th>Assessment (Final Exams)</th>
<th>Teaching and Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change at Junior Cycle and Senior Cycle</td>
<td>No choice</td>
<td>Formative assessment</td>
</tr>
<tr>
<td>Learning outcomes</td>
<td>Removal of problematic predictability</td>
<td>Investigation</td>
</tr>
<tr>
<td>Emphasis on higher order skills and conceptual understanding</td>
<td>Assessed problem-solving and application</td>
<td>Comparing strategies</td>
</tr>
<tr>
<td>Five connected strands of study</td>
<td>Unfamiliar situations</td>
<td>Less focus on right answers</td>
</tr>
</tbody>
</table>
New assessment model..

From....

\[ a(-2, 6) \] and \[ b(4, 3) \] are two points.

Plot \( a \) and \( b \) on a co-ordinate diagram.

Find the slope of \( ab \).

To...

Five lines \( j, k, l, m, \) and \( n \) in the co-ordinate plane are shown in the diagram.
The slopes of the five lines are in the table below.
Complete the table, matching the lines to their slopes.

<table>
<thead>
<tr>
<th>slope</th>
<th>line</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>( \frac{1}{8} )</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>( \frac{1}{4} )</td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td></td>
</tr>
</tbody>
</table>
Changed emphasis in the classroom...

From....

Find the area and perimeter of the following shape

5m

To....

Rosie is designing a paddock for her horse.
• She wants a paddock that is in the shape of a rectangle.
• She wants a paddock that will give her horse the largest possible area.

Rosie has 16 units of fencing to use. The sides of the paddock must be made up of whole units. On graph paper, show all the four-sided paddock designs that Rosie can make with 16 units.

Is there a general rule for figuring out which type of design will give the largest area for any length of fence?
Implementation

Pilot 24 schools

- Phasing in over a three year period
- Intensive school-based support

National Roll-out

- Phasing in over a three year period
- Teacher support
Obstacles

• Teacher Readiness
  • Teacher led to student-centred
  • Content knowledge and maths knowledge for teaching (MKT)

I had more confidence (with old syllabuses)—I knew the full story; the exam reflected teaching and there was predictability for both student and teacher. (Maths teacher comment)

• New assessment methods
Enablers

• Strong political will and stakeholder collaboration
• New assessment methods
• Listening to feedback from teachers and acting on it
• Teacher supports
Early results...

• students doing activities which help them develop key competences in maths. Especially in initial schools (NFER, 2014)...
• ...but, traditional approaches still prevail
• increase in uptake of Higher Level maths
• ERC 2015
  • more anxiety in initial schools
  • slight improvement in problem-solving
What teachers say...

In the long run it’s positive, the kids can see the relevance of maths to their lives. It was hard at the start but once everything settles down I wouldn’t go back. My methods have totally changed since Project Maths came in.

Project Maths needs project-based assessment...there is a need to change the way it is examined.
School Experiences of *Project Maths*

Sandra Fay, St. Marks Community School, Tallaght
Challenges at school– level

- time tabling
- team teaching organisation
- IT resources
- training facilitation
- meeting time allocation
Approaches that worked

- Create an environment where students can make connections across the subject and other subjects
- Create rich tasks and encourage students to use different strategies
- Encourage students to discuss maths and justify their solutions
- Use group work, project work and investigational tasks
- Build formative assessment in to the day to day practice of the classroom
Strategies for developing a whole school approach to key skills

• Collaboration among the department
• Intensive school support
• Supportive leadership
• Using IT to support learning
Panel session – experience of *Project Maths*
The Benefits of Competency-Based Education for teachers and students

Majella Dempsey
Nowhere does the quality of a school system exceed the quality of its teachers

Andreas Schleicher 2014
The learning outcomes, set out by the Council, encompass the standards of teaching, knowledge, skill and competence together with the values, attitudes and professional dispositions which are central to the practice of teaching.

Knowledge  [Breadth and Kind]
Skill  [Know-How, Range and Selectivity]
Competence  [Context, Role, Learning to Learn, and Insight]

(Teaching Council, 2010)
Initial Teacher Education
Real world - some challenges!
Teachers and learners co-construct a culture whereby rote learning is the preferred option.

They go through things really well and they explain things really well and they have their own notes that they give to us that we fill in as well and if we have any problems we ask them and they go through exam papers and then they help you.
Rote learning

I would read over, like all the history notes – I would read over an essay, because I have all my essays prepared, so I would read them then I would write, write, write and then I would put them away and put a question out to do on the essays and then I would see if I could write it out or do you know alter each essay or alter each question, the same with English and stuff like that. (Student describing how they learn)
In Biology the teacher gives out literally what you need to know in the chapter in like two A4 pages, it is a lot easier than reading fifteen pages, so you just read the notes.

(Learning in senior cycle, 17 year old)
What works?

- Curriculum
- Teaching
- Learning
- Assessment

Key Competences
Panel session - Teacher support needs
Video
Where we are now ....

Key skills are

• part of the education language and the political language
• impacting on all school curriculum reform
• significant component of systemic reform at junior cycle
• impacting on ‘some’ teacher education programmes
• impacting on new assessment approaches
But ......

Strong resistance to assessment change by teachers is impacting on the reforms.
Junior Cycle Reform – what have we learned from Project Maths?
KEY SKILLS OF JUNIOR CYCLE

- STAYING WELL
- MANAGING MYSELF
- WORKING WITH OTHERS
- COMMUNICATING
- MANAGING INFORMATION & THINKING
- BEING CREATIVE

LITERACY

NUMERACY
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