Supporting LGBTI+ Young People in Ireland

JUNIOR CYCLE MATHEMATICS

Rationale:

This mathematics specification provides students with access to important mathematical ideas to develop the mathematical knowledge and skills that they will draw on in their personal and work lives. This specification also provides students, as lifelong learners, with the basis on which further study and research in mathematics and many other fields are built.

Mathematical ideas have evolved across societies and cultures over thousands of years, and are constantly developing. Digital technologies are facilitating this expansion of ideas and provide new tools for mathematical exploration and invention. While the usefulness of mathematics for problem-solving is well known, mathematics also has a fundamental role in both enabling and sustaining cultural, social, economic, and technological advances and empowering individuals to become critical citizens.

The specification is underpinned by the conception of mathematics as an interconnected body of ideas and reasoning processes that students negotiate collaboratively with teachers and their peers and as independent learners. Number, measurement and geometry, statistics, and probability are common aspects of most people's mathematical experiences in everyday personal, study, and work situations. Equally important are the essential roles that algebra, functions and relations, logic, mathematical structure, and working mathematically play in people's understanding of the natural and social worlds, and the interaction between them.

The mathematics specification builds on students' prior learning and focuses on developing increasingly sophisticated and refined mathematical understanding, fluency, reasoning, computational thinking, and problem-solving. These capabilities enable students to respond to familiar and unfamiliar situations by employing mathematics to make informed decisions and solve problems efficiently.

The specification supports student learning across the whole educational system by ensuring that the links between the various components of mathematics, as well as the relationship between mathematics and other subjects, are emphasised. Mathematics is composed of multiple but interrelated and interdependent concepts and structures that students can apply beyond the mathematics classroom.

For example, in science, understanding sources of error and their impact on the confidence of conclusions is vital; in geography, interpretation of data underpins the study of human populations and their physical environments; in history, students need to be able to imagine timelines and time frames to reconcile related events; and in English, deriving quantitative, logical and spatial information is an important aspect of making meaning of texts. Thus the understanding of mathematics developed through study at junior cycle can inform and support students' learning across the whole educational system.

Aim

The aim of junior cycle mathematics is to provide relevant and challenging opportunities for all students to become mathematically proficient so that they can cope with the mathematical challenges of daily life and enable them to continue their study of mathematics in senior cycle and beyond. In this specification, mathematical proficiency is conceptualised not as a one-dimensional trait but as having five interconnected and interwoven components:

- conceptual understanding—comprehension of mathematical concepts, operations, and relations
- procedural fluency—skill in carrying out procedures flexibly, accurately, efficiently, and appropriately
- strategic competence—ability to formulate, represent, and solve mathematical problems in both familiar and unfamiliar contexts
- adaptive reasoning—capacity for logical thought, reflection, explanation, justification and communication
- productive disposition—habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence, perseverance and one's own efficacy.

Structure

The learning outcomes in the junior cycle Mathematics specification are organized in five strands. The unifying strand with its five cross-cutting element underpins the learning outcomes in the four remaining contextual strands.

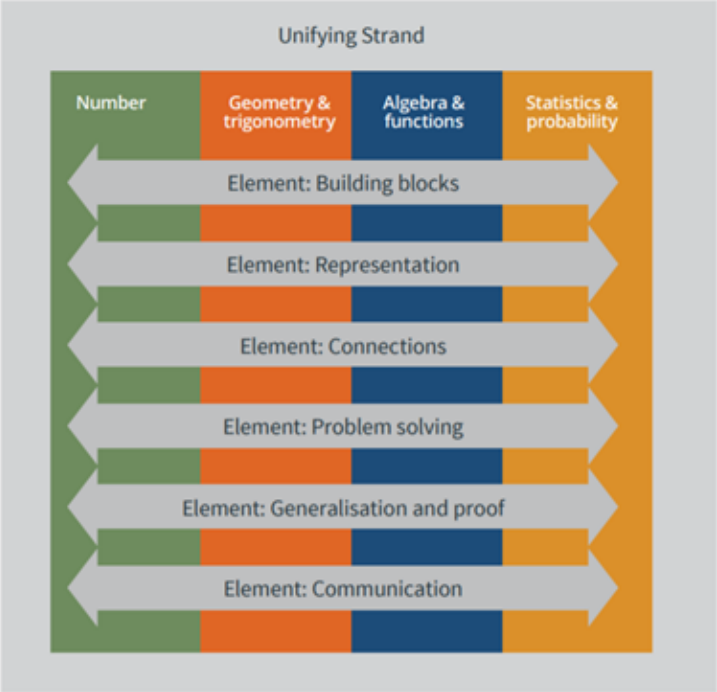

Figure 1: The four strands in junior cycle Mathematics

There is potential for teachers to include LGBTI+ content and perspectives into their teaching and assessment of learning outcomes in junior cycle Mathematics. Sample learning outcomes with scope for inclusion of LGBTI+ content and perspectives include:

Unifying strand

ELEMENT: Connections
U.6 make connections between mathematics and the real world

Statistics and probability strand

SP.3 carry out a statistical investigation which includes the ability to:

a. generate a statistical question

b. plan and implement a method to generate and/or source unbiased, representative data, and present this data in a frequency table

c. classify data (categorical, numerical)

d. select, draw and interpret appropriate graphical displays of univariate data, including pie charts, bar charts, line plots, histograms (equal intervals), ordered stem and leaf plots, and ordered back-to-back stem and leaf plots

Ideas for Teaching and Learning:

Facilitate your students to:

- Engage with mathematical problems and statistics with LGBTI+ representation and relevance, for example: Mr X & Mr Y want to know how much a staycation in Kerry will cost if...', 'Anna's mums are trying to calculate...' See also: https://www.stonewall.org.uk/system/files/maths_home_learning_pack_secondary.pdf

- Devise and swap their own mathematical problems inclusive of LGBTI+ voices and identities. Depending on your class, you might want to prompt them with an example, such as: An adult cinema ticket is €9.50; a child ticket is €9.00. A family of two mothers and three children go the cinema, how much do they spend on tickets?

- Discuss LGBTI+ mathematicians: Make reference to the contributions of LGBTI+ mathematicians and LGBTI+ figures in related disciplines, such as Alan Turing (mathematician and codebreaker), Tim Cook (CEO of Apple), Sophie Wilson (British scientist and computer engineer) and Lynn Conway (American scientist).

- Create graphs to represent data presented in a recent research report on the wellbeing of LGBTI+ young people in Ireland, for example BeLonG To (2021) LGBTI+I+ life in lockdown, one-year later, available: https://www.belongto.org/wp-content/uploads/2021/06/LGBTI+I-Life-in-Lockdown-1-Year-Later_BeLonG-To-Youth-Services.pdf

- Examine LGBTI+ data presented in relevant Central Statistics Office (CSO), for example, Pulse Surveys, marriages registrations, etc (see next page).

An Phríomh-Oifig Staidrimh
Central Statistics Office

Marriages 2020

Number of Marriages

9,209
Opposite-sex marriages

170
Male same-sex marriages

144
Female same-sex marriages

Average Age for Opposite-Sex Weddings

Male **37.8** Years

Female **35.7** Years

Average Age for Same-Sex Weddings

Male **40.0** Years

Female **40.0** Years

Most popular Forms of Ceremony for Opposite-Sex Marriages

3,295 (35.8%)
Roman Catholic ceremonies

3,779 (41.0%)
Civil ceremonies

Most popular day to wed

FRIDAY
3,313 ceremonies

Least popular day to wed

SUNDAY
298 ceremonies

Most popular month to wed

DECEMBER
1,627 ceremonies

Least popular month to wed

APRIL
57 ceremonies