

ST 1

LNMTI Observation Sheet for the Planning and Enactment of Mathematics Lessons

Student: Orlaith Horan Class Group: 1st years Date & Time: 24th March 2017 - 11.45am

Section A: Numeracy in Mathematics Content Domain: the mathematical content as represented by the Irish mathematics syllabuses at Junior/Leaving Certificate

Q1(a)

| Strand 1 | Strand 2 | Strand 3 | Strand 4 | Strand 5 |
|--|---|---|-------------------------------------|---------------------------------------|
| Probability and Statistics <input type="checkbox"/> | Geometry and Trigonometry <input checked="" type="checkbox"/> | Number <input type="checkbox"/> | Algebra <input type="checkbox"/> | Functions <input type="checkbox"/> |
| Reference to real life context | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | There was some connection Q1(c) to real-life established but greater scope possible Q1(d) | | |

Section B: Literacy and Numeracy Cognitive Processes: the extent to which students have opportunities to grapple with and make sense of the mathematics being taught

Q2(a)

| Understand 1 | Use 2 | Critically Appreciate 3 |
|--|---|--|
| Acquisition of new mathematical knowledge <input checked="" type="checkbox"/> | Application of new mathematical knowledge <input type="checkbox"/> | Recognise where mathematical reasoning can be used to solve problems <input type="checkbox"/> |
| Comment: The focus of the lesson was on students acquiring new knowledge relating to exterior + interior angles of triangles. Q2(b) Q2(c) | | |

q3a1 q3a2 q3a3

Section C: Mathematical Quality of Instruction: the enabling of literacy and numeracy skills development by the enactment of rich instruction while working with students and mathematics

q3a
(b)
(c)

| MQI Content Domain | Explanation | | Comment |
|--|---|---|--|
| Linking between representations | Captures an explicit link made by the teacher between representations of mathematical ideas. This can be visual (using graphs or physical models), numerical, algebraic, verbal | Present <input checked="" type="checkbox"/> 1 Not Present <input type="checkbox"/> 2 | Relaying primarily on visual and verbal representations. Greater scope to incorporate others e.g. table of values |
| Explanations | Describes the way in which the teacher (a) answers a question of clarification from a student or (b) explains why a mathematics procedure, solution etc. works | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | U. good explanations by Orlaith to students' questions. Needs to work on her own explanations and timing of them. |
| Mathematical Sense-Making | Focuses on the importance of number sense, reasonableness of a solution, mathematical definitions in the teaching and learning interaction | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Orlaith uses focused on developing students' understanding of the concept and then arriving at it to a certain extent. |
| Multiple Procedures or solution methods | The presence of different mathematical approaches to solving a problem from teacher or student | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | There was great scope to incorporate multiple approaches, not developed in lesson. |
| Patterns and generalisations | Describes the examination of an example and its development into a generalisation from teacher or student | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | This was very present in the lesson. However at times teacher led when it could have come from the students |
| Remediation of student errors and difficulties | Captures the way in which a teacher deals with a student misconception and difficulty with an area of mathematics | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Orlaith dealt with student misconceptions when they arose to a certain extent. Rule books to pay closer attention to |

Students' responses.

Q4

Section D: Literacy Forms: the various forms of communication in the classroom interaction to enable Literacy and Numeracy Skills development

↓ a1 Q2 Q3

| Literacy Form Domain | Explanation | | Comment |
|---|---|---|--|
| Spoken Language (a) <i>Mathematical language</i> | Focuses on the fluency of the teacher and the support given by the teacher to develop mathematical language use in the students. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Very good use of mathematical language by Orlaith and her students. |
| Spoken Language (b) <i>Teacher uses student mathematical contributions</i> | Describes how the teacher manages student answers/responses/work to advance the mathematics under instruction. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Orlaith incorporated students' response. Needs to pay closer attention to what they are saying and back up verbal with visual. |
| Printed Text | Focuses on the use of textbook, handout etc. non digital representational systems for mathematics such as hand drawn graphs, diagrams, tables etc | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Students had a handout to complete during the lesson and questions from textbook. |
| Digital Media | Use of PowerPoint, digital representational systems for mathematics (such as graphs/diagrams generated for example in GeoGebra) Calculator and internet | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Powerpoint prepared and utilised in the lesson. Could have incorporated calculator. |
| Broadcast Media | Use of video, film, newspapers, radio, television | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | No broadcast media present in lesson. |

(a)

(b)

(c)

(d)

(e)

512

LNMTI Observation Sheet for the Planning and Enactment of Mathematics Lessons

Student: Niaht SextonClass Group: 1st YearsDate & Time: 7/03/2017

Section A: Numeracy in Mathematics Content Domain: the mathematical content as represented by the Irish mathematics syllabuses at Junior/Leaving Certificate

| Strand 1 | Strand 2 | Strand 3 | Strand 4 | Strand 5 |
|---|---|--|-------------------------------------|---------------------------------------|
| Probability and Statistics <input checked="" type="checkbox"/> | Geometry and Trigonometry <input type="checkbox"/> | Number <input type="checkbox"/> | Algebra <input type="checkbox"/> | Functions <input type="checkbox"/> |
| Reference to real life context | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Comment Niambh utilised a coin tossing activity to discuss theoretical vs. experimental probability and relative frequency. | | |

Section B: Literacy and Numeracy Cognitive Processes: the extent to which students have opportunities to grapple with and make sense of the mathematics being taught

| Understand | Use | Critically Appreciate |
|--|---|--|
| Acquisition of new mathematical knowledge <input checked="" type="checkbox"/> | Application of new mathematical knowledge <input type="checkbox"/> | Recognise where mathematical reasoning can be used to solve problems <input type="checkbox"/> |
| Comment: The primary focus of the lesson was on the acquisition of new knowledge relating to theoretical and experimental probability. This was undertaken using a coin tossing activity. | | |

Section C: Mathematical Quality of Instruction: the enabling of literacy and numeracy skills development by the enactment of rich instruction while working with students and mathematics

| MQI Content Domain | Explanation | | Comment |
|---|---|---|---|
| <i>Linking between representations</i> | Captures an explicit link made by the teacher between representations of mathematical ideas. This can be visual (using graphs or physical models), numerical, algebraic, verbal | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Niamh utilised a table/visual representation to capture the data being collected by the students from the coin tossing activity. |
| <i>Explanations</i> | Describes the way in which the teacher (a) answers a question of clarification from a student or (b) explains why a mathematics procedure, solution etc. works | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Present to a certain extent. Niamh's explanations need considerable work. They were primarily verbal and her own subject knowledge was leading. |
| <i>Mathematical Sense-Making</i> | Focuses on the importance of number sense, reasonableness of a solution, mathematical definitions in the teaching and learning interaction | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | This was present to an extent. Used reasoning re theoretical + experimental probability to explore outcomes. However greater consolidation of learning required. |
| <i>Multiple Procedures or solution methods</i> | The presence of different mathematical approaches to solving a problem from teacher or student | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | Problem-solving was not a core focus of this lesson. There was scope to incorporate. |
| <i>Patterns and generalisations</i> | Describes the examination of an example and its development into a generalisation from teacher or student | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | This was present to an extent through the coin tossing activity. However Niamh did not utilise opportunity effectively to generalise key concepts of the lesson. |
| <i>Remediation of student errors and difficulties</i> | Captures the way in which a teacher deals with a student misconception and difficulty with an area of mathematics | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Present to an extent. Niamh responded to student questions/interacted with them throughout the lesson. However, very able group and not challenged fully, accordingly no real misconceptions arose. |

Section D: Literacy Forms: the various forms of communication in the classroom interaction to enable Literacy and Numeracy Skills development

| Literacy Form Domain | Explanation | | Comment |
|---|---|---|---|
| Spoken Language (a) <i>Mathematical language</i> | Focuses on the fluency of the teacher and the support given by the teacher to develop mathematical language use in the students. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Nichm's use of mathematical language was good. However, there was greater scope to develop the pupils' fluency e.g. through the use of a word wall. |
| Spoken Language (b) <i>Teacher uses student mathematical contributions</i> | Describes how the teacher manages student answers/responses/work to advance the mathematics under instruction. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Some good questioning and responding to and using pupils' answers throughout lesson. However, lacked depth / consolidation of the key maths concepts. |
| Printed Text | Focuses on the use of textbook, handout etc. non digital representational systems for mathematics such as hand drawn graphs, diagrams, tables etc | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | A handout was provided for students with questions/table to complete. Students completed questions from the textbook also. |
| Digital Media | Use of PowerPoint, digital representational systems for mathematics (such as graphs/diagrams generated for example in GeoGebra) Calculator and internet | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | A Powerpoint presentation was prepared for the lesson, as connected to the students' handout. A core focus was the use of a table and completing the table. |
| Broadcast Media | Use of video, film, newspapers, radio, television | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | No broadcast media was utilised in this lesson. |

SB

LNMTI Observation Sheet for the Planning and Enactment of Mathematics Lessons

Student: Yvonne Rice Class Group: TY Date & Time: 9/03/2017, 10.20

Section A: Numeracy in Mathematics Content Domain: the mathematical content as represented by the Irish mathematics syllabuses at Junior/Leaving Certificate

| Strand 1 | Strand 2 | Strand 3 | Strand 4 | Strand 5 |
|--|---|---|--|---------------------------------------|
| Probability and Statistics <input type="checkbox"/> | Geometry and Trigonometry <input type="checkbox"/> | Number <input type="checkbox"/> | Algebra <input checked="" type="checkbox"/> | Functions <input type="checkbox"/> |
| Reference to real life context | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | Comment No reference at all made to real-life context(s) as appropriate to simplifying/factorising algebraic expressions | | |

Section B: Literacy and Numeracy Cognitive Processes: the extent to which students have opportunities to grapple with and make sense of the mathematics being taught

| Understand | Use | Critically Appreciate |
|---|--|--|
| Acquisition of new mathematical Knowledge <input type="checkbox"/> | Application of new mathematical knowledge <input checked="" type="checkbox"/> | Recognise where mathematical reasoning can be used to solve problems <input type="checkbox"/> |
| Comment: The focus was on students using prior knowledge of factorisation to simplify algebraic expressions. The focus was very much on the procedural, practice & questions, with very little scaffolding of student learning. | | |

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Section C: Mathematical Quality of Instruction: the enabling of literacy and numeracy skills development by the enactment of rich instruction while working with students and mathematics

| MQI Content Domain | Explanation | | Comment |
|---|---|---|--|
| <i>Linking between representations</i> | Captures an explicit link made by the teacher between representations of mathematical ideas. This can be visual (using graphs or physical models), numerical, algebraic, verbal | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | The focus was very much on procedural, no use of other representations |
| <i>Explanations</i> | Describes the way in which the teacher (a) answers a question of clarification from a student or (b) explains why a mathematics procedure, solution etc. works | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Explanations were present. However need improvement, focused on procedural and some errors made in explanations. |
| <i>Mathematical Sense-Making</i> | Focuses on the importance of number sense, reasonableness of a solution, mathematical definitions in the teaching and learning interaction | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | sense-making was present in the manner of drawing on prior knowledge. However great opportunity for sense-making was not exploited. |
| <i>Multiple Procedures or solution methods</i> | The presence of different mathematical approaches to solving a problem from teacher or student | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | The focus was very much on ideation/ing which facilitated method was possible and using stage to simplify expression. No opportunity provided for multiple procedures. |
| <i>Patterns and generalisations</i> | Describes the examination of an example and its development into a generalisation from teacher or student | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | The opportunity for patterns/generalisations was not exploited by the student-teacher in this lesson. |
| <i>Remediation of student errors and difficulties</i> | Captures the way in which a teacher deals with a student misconception and difficulty with an area of mathematics | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Student teacher attempted to remediate student errors but was very much done in a 'telling' way, and lack of delayed response at times. |

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Section D: Literacy Forms: the various forms of communication in the classroom interaction to enable Literacy and Numeracy Skills development

| Literacy Form Domain | Explanation | | Comment |
|---|---|---|--|
| Spoken Language (a) <i>Mathematical language</i> | Focuses on the fluency of the teacher and the support given by the teacher to develop mathematical language use in the students. | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | Poor use of mathematical language throughout lesson and inaccuracies evident e.g. teacher using 'equation' instead of 'expression' |
| Spoken Language (b) <i>Teacher uses student mathematical contributions</i> | Describes how the teacher manages student answers/responses/work to advance the mathematics under instruction. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Some use of students' responses and included through questioning. However, inability to respond appropriately to students' questions also evident. |
| Printed Text | Focuses on the use of textbook, handout etc. non digital representational systems for mathematics such as hand drawn graphs, diagrams, tables etc | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | The focus of the lesson was on the completion of a set of procedural questions given on a handout. |
| Digital Media | Use of PowerPoint, digital representational systems for mathematics (such as graphs/diagrams generated for example in GeoGebra) Calculator and internet | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | No digital media used in this lesson. However, the classroom does not have a computer/projector |
| Broadcast Media | Use of video, film, newspapers, radio, television | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | No use of broadcast media evident in this lesson. |

ST4

LNMTI Observation Sheet for the Planning and Enactment of Mathematics Lessons

Student: Kate Harvey Class Group: 5th Years Date & Time: 30th March 2017 10.30am

Section A: Numeracy in Mathematics Content Domain: the mathematical content as represented by the Irish mathematics syllabuses at Junior/Leaving Certificate

| Strand 1 | Strand 2 | Strand 3 | Strand 4 | Strand 5 |
|--|---|---|-------------------------------------|--|
| Probability and Statistics <input type="checkbox"/> | Geometry and Trigonometry <input type="checkbox"/> | Number <input type="checkbox"/> | Algebra <input type="checkbox"/> | Functions <input checked="" type="checkbox"/> |
| Reference to real life context | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Kate got students to identify potential real-life examples of exponential functions | | |

Section B: Literacy and Numeracy Cognitive Processes: the extent to which students have opportunities to grapple with and make sense of the mathematics being taught

| Understand | Use | Critically Appreciate |
|--|---|--|
| Acquisition of new mathematical knowledge <input checked="" type="checkbox"/> | Application of new mathematical knowledge <input type="checkbox"/> | Recognise where mathematical reasoning can be used to solve problems <input type="checkbox"/> |
| <p>Comment: This lesson was very much set up for students to figure out exponential functions for themselves and associated characteristics</p> | | |

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Section C: Mathematical Quality of Instruction: the enabling of literacy and numeracy skills development by the enactment of rich instruction while working with students and mathematics

| MQI Content Domain | Explanation | | Comment |
|---|---|---|--|
| <i>Linking between representations</i> | Captures an explicit link made by the teacher between representations of mathematical ideas. This can be visual (using graphs or physical models), numerical, algebraic, verbal | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Kate incorporated multiple representations moving from tables to graphing and incorporating algebraic representations |
| <i>Explanations</i> | Describes the way in which the teacher (a) answers a question of clarification from a student or (b) explains why a mathematics procedure, solution etc. works | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Excellent questioning by Kate of her students, responding to their questions. Explanations around key / concept needs some improvement |
| <i>Mathematical Sense-Making</i> | Focuses on the importance of number sense, reasonableness of a solution, mathematical definitions in the teaching and learning interaction | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | This lesson was designed for students to make sense of the concept themselves, where facilitation required on Kate's behalf. |
| <i>Multiple Procedures or solution methods</i> | The presence of different mathematical approaches to solving a problem from teacher or student | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | This uses not so present in this lesson but students were assigned different functions |
| <i>Patterns and generalisations</i> | Describes the examination of an example and its development into a generalisation from teacher or student | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Kate very much attempted this in her lesson. However, over-reliance on students working on their own/groups needs to think about students. |
| <i>Remediation of student errors and difficulties</i> | Captures the way in which a teacher deals with a student misconception and difficulty with an area of mathematics | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | U. good response to students' questions + errors throughout the lesson |

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a

4 **Section D: Literacy Forms:** the various forms of communication in the classroom interaction to enable Literacy and Numeracy Skills development

| Literacy Form Domain | Explanation | | Comment |
|---|---|---|---|
| Spoken language (a) <i>Mathematical language</i> | Focuses on the fluency of the teacher and the support given by the teacher to develop mathematical language use in the students. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Excellent use of mathematical language by the teacher and the students. Clear that this is part of Kate's practice. |
| Spoken language (b) <i>Teacher uses student mathematical contributions</i> | Describes how the teacher manages student answers/responses/work to advance the mathematics under instruction. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Kate was very much trying to use the students' work to arrive at generalisations around exponential functions. |
| Printed Text | Focuses on the use of textbook, handout etc. non digital representational systems for mathematics such as hand drawn graphs, diagrams, tables etc | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Students had a handout to guide them on working on constructing exponential functions needed more teacher input. |
| Digital Media | Use of PowerPoint, digital representational systems for mathematics (such as graphs/diagrams generated for example in GeoGebra) Calculator and internet | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Kate had a Geogebra file prepared but did not incorporate it would have been extremely beneficial. |
| Broadcast Media | Use of video, film, newspapers, radio, television | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | No broadcast media present. |

ST5

LNMTI Observation Sheet for the Planning and Enactment of Mathematics Lessons

Student: Heghan Matthews Class Group: 1st years Date & Time: 23rd March 2017 11.15am

Section A: Numeracy in Mathematics Content Domain: the mathematical content as represented by the Irish mathematics syllabuses at Junior/Leaving Certificate

| Strand 1 | Strand 2 | Strand 3 | Strand 4 | Strand 5 |
|--|---|--|-------------------------------------|---------------------------------------|
| Probability and Statistics <input type="checkbox"/> | Geometry and Trigonometry <input checked="" type="checkbox"/> | Number <input type="checkbox"/> | Algebra <input type="checkbox"/> | Functions <input type="checkbox"/> |
| Reference to real life context | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | There was reference to real life but much greater connection / interpretation could have transpired. | | |

Section B: Literacy and Numeracy Cognitive Processes: the extent to which students have opportunities to grapple with and make sense of the mathematics being taught

| Understand | Use | Critically Appreciate |
|--|---|--|
| Acquisition of new mathematical Knowledge <input checked="" type="checkbox"/> | Application of new mathematical knowledge <input type="checkbox"/> | Recognise where mathematical reasoning can be used to solve problems <input type="checkbox"/> |
| Comment: This lesson was focused on students acquiring new knowledge relating corresponding and alternate angles. | | |

3 **Section C: Mathematical Quality of Instruction: the enabling of literacy and numeracy skills development by the enactment of rich instruction while working with students and mathematics**

| MQI Content Domain | Explanation | | Comment |
|---|---|---|--|
| <i>Linking between representations</i> | Captures an explicit link made by the teacher between representations of mathematical ideas. This can be visual (using graphs or physical models), numerical, algebraic, verbal | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Limited linking between verbal and visual representations of angles. Greater scope possible in terms of multiple representations |
| <i>Explanations</i> | Describes the way in which the teacher (a) answers a question of clarification from a student or (b) explains why a mathematics procedure, solution etc. works | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Heghan was very responsive to students' questions. Needs to work on her own explanations and building them with students. |
| <i>Mathematical Sense-Making</i> | Focuses on the importance of number sense, reasonableness of a solution, mathematical definitions in the teaching and learning interaction | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Heghan did attempt to provide rationale. However teacher-led and procedural at times. |
| <i>Multiple Procedures or solution methods</i> | The presence of different mathematical approaches to solving a problem from teacher or student | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | There was scope to incorporate multiple approaches but this was not present. |
| <i>Patterns and generalisations</i> | Describes the examination of an example and its development into a generalisation from teacher or student | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | This was teacher led and there is greater scope to incorporate better explanation and generalisation through student discovery. |
| <i>Remediation of student errors and difficulties</i> | Captures the way in which a teacher deals with a student misconception and difficulty with an area of mathematics | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Good response to students' questions and errors. Emphasis on procedural rather than understanding. |

4 **Section D: Literacy Forms:** the various forms of communication in the classroom interaction to enable Literacy and Numeracy Skills development

| Literacy Form Domain | Explanation | | Comment |
|--|---|---|---|
| Spoken Language (a) Mathematical language | Focuses on the fluency of the teacher and the support given by the teacher to develop mathematical language use in the students. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Very good use of mathematical language and emphasis on students using appropriate language. |
| Spoken Language (b) Teacher uses student mathematical contributions | Describes how the teacher manages student answers/responses/work to advance the mathematics under instruction. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Present to a minor extent. Greater scope possible in terms of incorporating students' work. |
| Printed Text | Focuses on the use of textbook, handout etc. non digital representational systems for mathematics such as hand drawn graphs, diagrams, tables etc | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Handout prepared for the lesson. Needs to be mindful of language use. Not specific to Irish context. |
| Digital Media | Use of PowerPoint, digital representational systems for mathematics (such as graphs/diagrams generated for example in GeoGebra) Calculator and internet | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | PowerPoint presentation in use to support lesson. Greater use could have been made of more specific maths software. |
| Broadcast Media | Use of video, film, newspapers, radio, television | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | No broadcast media present in the lesson. |

5T6

LNMTI Observation Sheet for the Planning and Enactment of Mathematics Lessons

Student: Elaine Kiely Class Group: 1st years Date & Time: 14/03/2017 11.40am

Section A: Numeracy in Mathematics Content Domain: the mathematical content as represented by the Irish mathematics syllabuses at Junior/Leaving Certificate

| Strand 1 | Strand 2 | Strand 3 | Strand 4 | Strand 5 |
|--|---|---|--|---------------------------------------|
| Probability and Statistics <input type="checkbox"/> | Geometry and Trigonometry <input type="checkbox"/> | Number <input type="checkbox"/> | Algebra <input checked="" type="checkbox"/> | Functions <input type="checkbox"/> |
| Reference to real life context | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Greater connection to real life could have been established in terms of what a pattern might be representing. | | |

Section B: Literacy and Numeracy Cognitive Processes: the extent to which students have opportunities to grapple with and make

sense of the mathematics being taught

| Understand | Use | Critically Appreciate |
|--|--|---|
| Acquisition of new mathematical Knowledge <input checked="" type="checkbox"/> | Application of new mathematical knowledge <input checked="" type="checkbox"/> | Recognise where mathematical reasoning can be used to solve problems <input checked="" type="checkbox"/> |
| Comment: This was a very good lesson centred around the concept of a constant-rate of change in a pattern to give a linear function. Students were figuring out and applying their knowledge and had to use reasoning to understand what was taking place. | | |

3

Section C: Mathematical Quality of Instruction: the enabling of literacy and numeracy skills development by the enactment of rich instruction while working with students and mathematics

| MQI Content Domain | Explanation | | Comment |
|---|---|---|---|
| Linking between representations | Captures an explicit link made by the teacher between representations of mathematical ideas. This can be visual (using graphs or physical models), numerical, algebraic, verbal | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Very good - used images of a pattern, converted info to a table and then plotted graph. |
| Explanations | Describes the way in which the teacher (a) answers a question of clarification from a student or (b) explains why a mathematics procedure, solution etc. works | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Good explanations by teacher and very good probing of students to develop understanding. |
| Mathematical Sense-Making | Focuses on the importance of number sense, reasonableness of a solution, mathematical definitions in the teaching and learning interaction | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Very much focused on students making sense of the mathematics and what they are learning. |
| Multiple Procedures or solution methods | The presence of different mathematical approaches to solving a problem from teacher or student | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Students were encouraged to develop their own pattern and build on this. Very skilful use of alternative patterns by the teacher. |
| Patterns and generalisations | Describes the examination of an example and its development into a generalisation from teacher or student | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Student teacher chose examples of students work to put on board. Great discussion and generalisation from chosen examples. |
| Remediation of student errors and difficulties | Captures the way in which a teacher deals with a student misconception and difficulty with an area of mathematics | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Very good response by student teacher to students' questions and errors being made. Asks students questions to clarify thinking. |

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4 Section D: Literacy Forms: the various forms of communication in the classroom interaction to enable Literacy and Numeracy Skills development

| Literacy Form Domain | Explanation | | Comment |
|---|---|---|---|
| Spoken Language (a) <i>Mathematical language</i> | Focuses on the fluency of the teacher and the support given by the teacher to develop mathematical language use in the students. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Very good use of mathematical language by the student teacher, leading by example and expectation established that students use language. |
| Spoken Language (b) <i>Teacher uses student mathematical contributions</i> | Describes how the teacher manages student answers/responses/work to advance the mathematics under instruction. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Very good use of student work to support/develop lesson and managed in a good way throughout. |
| Printed Text | Focuses on the use of textbook, handout etc. non digital representational systems for mathematics such as hand drawn graphs, diagrams, tables etc | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Lesson was building on a previous handout. Very good of project Maths whiteboard template for table graph. |
| Digital Media | Use of PowerPoint, digital representational systems for mathematics (such as graphs/diagrams generated for example in GeoGebra) Calculator and internet | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | used Project Maths resource (PowerPoint) effectively to support lesson through development of table, graph. |
| Broadcast Media | Use of video, film, newspapers, radio, television | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | No presence of broadcast media. |

ST7

LNMTI Observation Sheet for the Planning and Enactment of Mathematics Lessons

Student: Hollie Archer Class Group: 2nd Years Date & Time: 24th March 2017 - 1.35pm

Section A: Numeracy in Mathematics Content Domain: the mathematical content as represented by the Irish mathematics syllabuses at Junior/Leaving Certificate

| Strand 1 Probability and Statistics <input checked="" type="checkbox"/> | Strand 2 Geometry and Trigonometry <input type="checkbox"/> | Strand 3 Number <input type="checkbox"/> | Strand 4 Algebra <input type="checkbox"/> | Strand 5 Functions <input type="checkbox"/> |
|---|---|---|---|---|
| Reference to real life context | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Hollie was revisiting sets in the context of probability strand. Very good examples but in the context of probability strand. Very good examples + links to real-life made but could have underpinned lesson. | | |

Section B: Literacy and Numeracy Cognitive Processes: the extent to which students have opportunities to grapple with and make sense of the mathematics being taught

| Understand | Use | Critically Appreciate |
|--|--|--|
| Acquisition of new mathematical knowledge <input type="checkbox"/> | Application of new mathematical knowledge <input checked="" type="checkbox"/> | Recognise where mathematical reasoning can be used to solve problems <input type="checkbox"/> |
| Comment: Hollie was revisiting sets in the context of probability. Students were required to apply previous knowledge to new context. | | |

3 Section C: Mathematical Quality of Instruction: the enabling of literacy and numeracy skills development by the enactment of rich instruction while working with students and mathematics

| MQI Content Domain | Explanation | | Comment |
|---|---|---|---|
| <i>Linking between representations</i> | Captures an explicit link made by the teacher between representations of mathematical ideas. This can be visual (using graphs or physical models), numerical, algebraic, verbal | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Present to extent - mainly relying on verbal and visual representation. Greater scope to link given topic. |
| <i>Explanations</i> | Describes the way in which the teacher (a) answers a question of clarification from a student or (b) explains why a mathematics procedure, solution etc. works | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Good - very good explanations by Helle, very much trying to make it relevant for students. Very good at responding to students. |
| <i>Mathematical Sense-Making</i> | Focuses on the importance of number sense, reasonableness of a solution, mathematical definitions in the teaching and learning interaction | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Present to an extent but Helle was trying to do too much in one lesson so feedback loop and she didn't draw/utilise their prior knowledge enough. |
| <i>Multiple Procedures or solution methods</i> | The presence of different mathematical approaches to solving a problem from teacher or student | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | Different approaches were not explored. More may have been scope if a problem-solving approach had been adopted. |
| <i>Patterns and generalisations</i> | Describes the examination of an example and its development into a generalisation from teacher or student | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | This was not present. The lesson very much became about recall of prior knowledge + practice of questions. |
| <i>Remediation of student errors and difficulties</i> | Captures the way in which a teacher deals with a student misconception and difficulty with an area of mathematics | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Helle responded well to student errors and misconceptions. |

Section D: Literacy Forms: the various forms of communication in the classroom interaction to enable Literacy and Numeracy Skills development

| Literacy Form Domain | Explanation | | Comment |
|---|---|---|---|
| Spoken Language <i>(a) Mathematical language</i> | Focuses on the fluency of the teacher and the support given by the teacher to develop mathematical language use in the students. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | very good use of mathematical language by Hollie and her students. Emphasis placed on them developing vocab. |
| Spoken Language <i>(b) Teacher uses student mathematical contributions</i> | Describes how the teacher manages student answers/responses/work to advance the mathematics under instruction. | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Hollie relied largely on questioning students about prior know ledge and getting students to readdress. However a lot of the lesson was teacher good telling. |
| Printed Text | Focuses on the use of textbook, handout etc. non digital representational systems for mathematics such as hand drawn graphs, diagrams, tables etc | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | Some incorporation of textbook but lesson was driven by a PowerPoint presentation. |
| Digital Media | Use of PowerPoint, digital representational systems for mathematics (such as graphs/diagrams generated for example in GeoGebra) Calculator and internet | Present <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> | A PowerPoint presentation was utilised throughout the lesson to guide students /provide key tasks/questions |
| Broadcast Media | Use of video, film, newspapers, radio, television | Present <input type="checkbox"/> Not Present <input checked="" type="checkbox"/> | No broadcast media present in lesson. |