

An Roinn Oideachais agus Scileanna
Department of Education and Skills

Subject Inspection in Mathematics

REPORT

Ainm na scoile / School name	Ardee Community School
Seoladh na scoile / School address	Ardee Co Louth
Uimhir rolla / Roll number	91441T

Date of Inspection: 09-05-2019



**An Roinn Oideachais
agus Scileanna**
Department of
Education and Skills

SUBJECT INSPECTION

Subject Inspections report on the quality of work in individual curriculum areas within a school. They affirm good practice and make recommendations, where appropriate, to aid the further development of the subject in the school.

HOW TO READ THIS REPORT

During this inspection, the inspector evaluated learning and teaching in Mathematics under the following headings:

1. Teaching, learning and assessment
2. Subject provision and whole-school support
3. Planning and preparation

Inspectors describe the quality of each of these areas using the Inspectorate's quality continuum which is shown on the final page of this report. The quality continuum provides examples of the language used by inspectors when evaluating and describing the quality of the school's provision in each area.

The board of management was given an opportunity to comment in writing on the findings and recommendations of the report, and the response of the board will be found in the appendix of this report.

CHILD PROTECTION

During the inspection visit, the following checks in relation to the school's child protection procedures were conducted:

1. The name of the DLP and the Child Safeguarding Statement are prominently displayed near the main entrance to the school.
2. The Child Safeguarding Statement has been ratified by the board and includes an annual review and a risk assessment.
3. All teachers visited reported that they have read the Child Safeguarding Statement and that they are aware of their responsibilities as mandated persons.

The school met the requirements in relation to each of the checks above.

SUBJECT INSPECTION

INSPECTION ACTIVITIES

Dates of inspection	07-05-2019 and 09-05-2019
Inspection activities undertaken <ul style="list-style-type: none">• Review of relevant documents• Discussion with principal and key staff• Interaction with students	<ul style="list-style-type: none">• Observation of teaching and learning during nine class periods• Examination of students' work• Feedback to principal and relevant staff

School context

Ardee Community School is a co-educational school with a current enrolment of 889 students: 400 girls and 489 boys. The school participates in Delivering Equality of Opportunity in Schools (DEIS), the Department of Education and Skills action plan for educational inclusion. The school has classes for students with Autism Spectrum Disorder (ASD). All of the curricular programmes are provided and Transition Year (TY) is optional for students.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS:

Findings

- The quality of teaching and learning in the lessons observed was satisfactory overall; there was some good and exemplary practice noted but most lessons needed better planning for deep conceptual learning and for more active student engagement.
- The relationships between students and their teachers were positive in a majority of classrooms; however, at times there was a notable need for stronger student voice.
- There is very good subject provision and whole-school support for Mathematics.
- Junior Cycle uptake of higher-level Mathematics is good but there is a drop off in higher-level uptake in the Leaving Certificate.
- The mathematics teachers have extensively engaged with continuing professional development (CPD) but the use of this expertise was not sufficiently evident in the lessons observed.
- The members of the mathematics department work well as a team and the quality of the subject plan is good; the programme of work for the ASD classes is very good.

Recommendations

- A range of student-centred tasks and active methodologies that differentiate learning and allow students to develop a wide range of essential mathematical skills should be used in all lessons.
- The school improvement process should be used to include the student voice in informing lesson planning and students' learning experience in Mathematics.
- The members of the mathematics department should ensure that the professional learning from engagement with CPD is fully used to extend the range and quality of learner experience in Mathematics.
- School management should examine the factors affecting uptake of Leaving Certificate higher-level Mathematics to ensure that all students capable of attempting Mathematics at this level are enabled to do so.

DETAILED FINDINGS AND RECOMMENDATIONS

1. TEACHING, LEARNING, AND ASSESSMENT

- The quality of teaching and learning in the lessons observed was satisfactory overall. The quality varied significantly with good and exemplary practices observed in a significant minority of lessons. While some lessons observed were well planned, in most instances, lessons needed better planning for deep conceptual learning and for more active student engagement.
- The predominant teaching approach observed in lessons was teachers completing examples at the board followed by students working on similar exercises. There was significant scope in most lessons, to involve students more in their learning. It is recommended that a range of student-centred tasks and active methodologies be used to deliver all lessons.
- Students' individual needs were best met when the methodology used allowed them to be independent and to work at their own pace, with teachers providing assistance where necessary. Some teachers also provided more challenging work to students who had completed the initial lesson task assigned. In a few lessons, the extra work assigned was not sufficiently differentiated to provide additional challenge. Strategies that differentiate learning should be further used.
- Teacher instructions and explanations were clear and conceptual in some lessons. However, at times explanations were overly focused on procedure and there was a need for closer attention to be paid to the logic behind the Mathematics taught. In a significant minority of lessons, when questioned, students demonstrated difficulty in explaining their reasoning without teacher prompting. Alternatives, such as, well-scaffolded student tasks designed to facilitate the exploration of concepts should be considered.
- Very good levels of student engagement were evident in lessons where learners participated in brainstorm activities and when the learning related to students' own experience. In the majority of lessons, students listened well to teacher instruction but were mainly passive learners. Opportunities for students to problem solve, think for themselves, and discuss Mathematics should be provided in order to facilitate the development of a wider range of essential mathematical skills.
- Good use of questioning was evident in a minority of lessons. In these instances, higher-order questions were used to develop thinking, all students were involved, and questioning was used as one of a number of assessment strategies. In most of the lessons observed the questioning comprised one-to-one teacher-student questioning with few students answering and at times the teacher answering the questions themselves. Further use should be made of higher-order questioning strategies.
- In one lesson, highly-effective learning was noted. In this lesson, students demonstrated very high levels of interest and enthusiasm. They worked on each concept in a deep conceptual way and were comfortable in making mistakes and thinking through solutions. The lesson was exceptionally well planned to tease out the learning intentions and to place them in a meaningful mathematical context. Above all, the students were clearly enjoying Mathematics. Teachers should share and embed this highly-effective practice.
- The quality of students' work in the copybooks reviewed varied greatly. Some copybooks showed evidence of good student engagement, comprehensive notes, and valuable teacher monitoring. However, not all of the work in copybooks was of a high standard. It is recommended that teachers examine a sample of student copybooks from each class group

to evaluate the quality of students' learning and engagement with the classroom activities. This evaluation should be used to inform lesson planning.

- The relationships between students and their teachers were positive in a majority of classrooms. Learners responded very well in instances where a very high level of praise and encouragement was provided by teachers. However, there was scope for a better approach in a minority of teacher-student interactions and this should be addressed under the school's wellbeing policy.

2. SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

- There is very good subject provision and whole-school support for Mathematics. Timetable provision for Mathematics is excellent. All of the classrooms visited presented as bright, stimulating learning environments with a wide range of resources available. Very good access to digital technology is also provided for the subject.
- Students are assigned to mixed-ability mathematics classes in first year and are separated into levels from second year onwards. In second year, current practice sees the creation of one top higher-level class and the remaining higher-level students assigned to classes on a mixed-ability basis. This practice should be reviewed in order to ensure that the same high expectations for achievement are communicated to all higher-level students. There is good practice in assigning students to ordinary-level classes.
- The analysis of students' achievement in the certificate examinations and standardised tests indicates that Junior Cycle uptake of higher-level Mathematics is good. However, there is a drop off in higher-level uptake in the Leaving Certificate. Senior management should examine the factors affecting uptake to ensure that school systems and structures provide the conditions necessary for all students capable of attempting higher-level Leaving Certificate Mathematics to do so.
- The mathematics teachers have extensively engaged with CPD. In particular, most of the teachers participated in *Reflections on Practice*: an initiative to promote collaborative lesson planning. The members of the mathematics department should ensure that this expertise becomes embedded in classroom practice, and that it is fully used to extend the range and quality of learner experience in Mathematics.
- Throughout the evaluation, there was a notable need to improve the student voice in relation to lesson planning and students' learning experience in Mathematics. It is recommended that the school improvement planning process be used to provide opportunities to facilitate the inclusion of the student voice for this purpose. The student focus group meeting is suggested as an appropriate format for carrying out this work.

3. PLANNING AND PREPARATION

- The members of the mathematics department work well as a team. The minutes of meetings indicate good discussion around classroom practice. This worthwhile collaborative practice should be used to further embed student-centred methodologies in teaching and learning.
- The quality of the mathematics plan is good overall. The first-year plan represents an example of best practice with learning objectives connected to a range of student-centred methodologies, stimulating resources and modes of assessment. Some programmes of work are overly focused on content and need to provide further opportunities for the development of essential mathematical skills. The good practice outlined in some of the programmes should be extended to all.

- The mathematics teachers complete an analysis of students' achievement in the certificate examinations. However, this analysis is not sufficiently thorough or reflective to highlight issues that arise. The analysis should include a comparison against student intake data and a comprehensive reflection. Following this analysis, an action plan, with clear and achievable targets for improvement should be drawn up, implemented and reviewed in due course. This action plan should also take cognisance of the school's DEIS plan for attainment.
- The TY plan for Mathematics is good, overall. Teachers make valuable use of Project Maths lesson plans to deliver the TY programme. Additionally, the teachers collaboratively develop lesson plans for TY. However, the plan mainly comprises a list of Leaving Certificate topics and a module of Applied Mathematics. It is recommended that more non-examination material be included in the TY plan to add variety of experience for students.
- The mathematics plan for students of the ASD classes is very good. The programmes of learning are in line with the mainstream mathematics programmes and are adapted to students' individual needs. A wide range of valuable assessment modes and methodologies is also outlined. In keeping with very good practice the plan includes comprehensive and meaningful teacher reflection.

The draft findings and recommendations arising out of this evaluation were discussed with the principal, deputy principal and subject teachers at the conclusion of the evaluation.

Appendix

SCHOOL RESPONSE TO THE REPORT

Submitted by the Board of Management

Part A: Observations on the content of the inspection report

The Board of Management of Ardee Community School accepts the report of the recent maths inspection. The Board acknowledges the need to address the uptake of Higher Level particularly at Senior Cycle and address the numbers taking Foundation Level.

The board acknowledges the need to create a balance between teacher led learning and student led learning to improve student learning and student outcomes.

Part B: Follow-up actions planned or undertaken since the completion of the inspection activity to implement the findings and recommendations of the inspection

We appreciate the comments and recommendations made in this inspection report. To this end we have decided on the following actions:

To address at various levels: Commencing September 2019, all students taking higher level will be in mixed ability classes, and all students from Junior Cycle Higher Level classes will automatically be assigned to a Leaving Certificate Higher Level class.

As a department we acknowledge the point made that mathematics teaching and learning may be mechanistic in nature. To address this, we will create a balance between “what to do” and “how” and “why”. On a practical level to achieve this we will implement the following for Year 1:

1. Introduce topics with greater conceptual understanding by using problem solving as an entry point.
2. We will use more hands-on-resources and engage the students more in investigative work.
3. Allow more classroom discussion with students presenting their work to their peers.
4. Focus more on questioning as opposed to question by using a more open-ended approach to our teaching and students’ learning.
5. Mistakes made by students will be used as points of learning and opportunities to explore understanding.

Following the introduction of the above we would hope that students will enjoy their mathematics classes, gain confidence in the subject, and in the future that this will contribute to a greater number of students, on the one hand, sitting Higher Level Leaving Cert, and on the other, less taking foundation level.

Moving forward after year 1 we have agreed that focus groups of students will be formed and students will be asked to offer opinions and suggestions on teaching and learning, developing what we already use for Lesson Study.

We shall also implement problem solving on a more regular basis, scaffolding problems to allow students to explore and develop understanding and consolidate their knowledge before formalising methods.

THE INSPECTORATE'S QUALITY CONTINUUM

Inspectors describe the quality of provision in the school using the Inspectorate's quality continuum which is shown below. The quality continuum provides examples of the language used by inspectors when evaluating and describing the of quality the school's provision of each area.

Level	Description	Example of descriptive terms
Very Good	Very good applies where the quality of the areas evaluated is of a very high standard. The very few areas for improvement that exist do not significantly impact on the overall quality of provision. For some schools in this category the quality of what is evaluated is outstanding and provides an example for other schools of exceptionally high standards of provision.	Very good; of a very high quality; very effective practice; highly commendable; very successful; few areas for improvement; notable; of a very high standard. Excellent; outstanding; exceptionally high standard, with very significant strengths; exemplary
Good	Good applies where the strengths in the areas evaluated clearly outweigh the areas in need of improvement. The areas requiring improvement impact on the quality of pupils' learning. The school needs to build on its strengths and take action to address the areas identified as requiring improvement in order to achieve a <i>very good</i> standard.	Good; good quality; valuable; effective practice; competent; useful; commendable; good standard; some areas for improvement
Satisfactory	Satisfactory applies where the quality of provision is adequate. The strengths in what is being evaluated just outweigh the shortcomings. While the shortcomings do not have a significant negative impact they constrain the quality of the learning experiences and should be addressed in order to achieve a better standard.	Satisfactory; adequate; appropriate provision although some possibilities for improvement exist; acceptable level of quality; improvement needed in some areas
Fair	Fair applies where, although there are some strengths in the areas evaluated, deficiencies or shortcomings that outweigh those strengths also exist. The school will have to address certain deficiencies without delay in order to ensure that provision is satisfactory or better.	Fair; evident weaknesses that are impacting on pupils' learning; less than satisfactory; experiencing difficulty; must improve in specified areas; action required to improve
Weak	Weak applies where there are serious deficiencies in the areas evaluated. Immediate and coordinated whole-school action is required to address the areas of concern. In some cases, the intervention of other agencies may be required to support improvements.	Weak; unsatisfactory; insufficient; ineffective; poor; requiring significant change, development or improvement; experiencing significant difficulties;