An Roinn Oideachais agus Eolaíochta

Department of Education and Science

Subject Inspection of Technical Graphics and Technical Drawing
REPORT

Jesus and Mary Secondary School,
Gortnor Abbey, Crossmolina,
County Mayo
Roll number: 64630T

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AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA | DEPARTMENT OF EDUCATION AND SCIENCE

REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN TECHNICAL GRAPHICS AND TECHNICAL DRAWING

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Jesus and Mary Secondary School. It presents the findings of an evaluation of the quality of teaching and learning in Technical Graphics and Technical Drawing and makes recommendations for the further development of the teaching of this subject in the school. The evaluation was conducted over one day during which the inspector visited classrooms and observed teaching and learning. The inspector interacted with students and teachers, examined students' work, and had discussions with the teachers. The inspector reviewed school planning documentation and teachers' written preparation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the principal and subject teachers. 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.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

Students upon entry to Jesus and Mary Secondary School select optional subjects from four pre-set subject option bands. At the end of first year each student will drop one optional subject. Prior to 2006/2007 students selected option subjects from three pre-set bands and continued to study these subjects for junior cycle. The school management is to commended for reviewing curriculum provision to allow students experience more optional subjects. For senior cycle, students are presented with an open choice of subjects and they prioritise those subjects that they wish to study from a list. This student-centred approach to subject choice is to be commended as best practice. While acknowledging the fact that current pre-set bands were developed in consultation with last years first years, it is recommended as part of the school development planning process in Jesus and Mary Secondary School that the school management in conjunction with the wider school community should review how optional subjects are presented to incoming first years. It is recommended that the more student centred approach of an open choice of optional subjects should be considered.

At present neither Technical Graphics nor Technical Drawing forms part of the Transition Year (TY) curriculum. As the TY curriculum should include a subject-sampling layer it is recommended that Technical Graphics or Technical Drawing should be included in the curriculum for TY as a stand-alone subject or as part of a practical studies module.

There is an appropriate time allocation for Technical Graphics and Technical Drawing in junior and senior cycle.

The vast majority of students studying Technical Graphics and Technical Drawing in Jesus and Mary Secondary School are boys and very few girls choose to study the subject in the school. It is suggested that the school management and the technical graphics and technical drawing teachers should ascertain why so few girls choose to study the subject in the school.

There are two rooms used to teach Technical Graphics and Technical Drawing. One room is dedicated to Technical Graphics and Technical Drawing and is very well resourced in terms of equipment and teaching resources. The tables have been modified to include a sloping surface and there is storage room for drawing equipment at each desk. There are storage presses for student portfolios and there is a wide variety of wooden and plastic models for Technical Graphics and Technical Drawing. The second room used for Technical Graphics and Technical Drawing is the old library and is also used as a general classroom. The school management has recently purchased a new whiteboard with drawing instruments and a class set of table mounted drawing boards. This is to be commended. While the room is large much of it is taken up with old bookshelves. Where possible it is suggested that the main room should be used for all technical graphics and technical drawing lessons. It is also acknowledged that Jesus and Mary Secondary School currently has an application with the building unit of the Department of Education and Science that includes provision for a new technical graphics and technical drawing room.

The technical graphics and technical drawing teachers are informed of students with special educational needs and those requiring learning support at the start of each year. This is to be commended as best practice as it allows teachers to plan and prepare for such students in each class.

PLANNING AND PREPARATION

The teachers of Technical Graphics and Technical Drawing meet formally three times per year and also meet on an informal basis each week to discuss issues of relevance in their subject area. Agendas are set and minutes of key decisions taken for each formal meeting are kept in the subject department file. These are also copied to the school principal. The agenda for each meeting is set by the subject teachers, it is suggested that the in-school management team should set one or two common items on the agenda for each subject department. As the teachers of Technical Graphics and Technical Drawing have not as yet developed a subject plan, it is suggested that the school development planning initiative (SDPI) templates for subject plans could inform items for inclusion on the agenda of formal subject department meetings.

The technical graphics and technical drawing teachers have developed long term schemes of work for each year group. These detail the general subject areas to be covered with each class and dates for revision and assessment. It is suggested that these should be included in the subject plan for Technical Graphics and Technical Drawing. From a review of the subject plan for senior cycle it was evident that the entire syllabus is not covered. Ten of fourteen topic areas are covered. While students are only required to answer questions covering eight topic areas for State examinations it is recommended that the entire syllabus should be taught.

The technical graphics and technical drawing teachers are also encouraged to continue to develop common schemes of work for each year group. It is suggested that these schemes of work should include detail of the theorem, principle or construction under study. Although progress for each year group is recorded in the teachers' journal it is suggested that this could be combined with the scheme of work for each year group. This will allow teachers to record any issues that have arisen

during the teaching and learning of the topic and will assist in planning revision lessons and also assist in planning for subsequent years.

The technical graphics and technical drawing teachers are to be highly commended for developing a collection of teaching and learning resources. These vary from overhead transparencies of, theorems and geometric constructions to 3-D models and posters. Such resources provide a stimulating learning environment for students and help students' understanding of the subject.

TEACHING AND LEARNING

It was evident from classroom observation that the teachers had planned and prepared for the lessons observed. In some of the lessons observed teachers had prepared teaching and learning aids appropriate to the subject matter under study including overhead transparencies and 3-d models.

In the senior-cycle lessons observed the teacher had a clear focus and aim for the lesson and this was outlined to the students at the start of the lesson. This is to be commended as best practice as it is important to provide students with clear learning outcomes for each lesson. In the junior-cycle lesson observed the aim of the lesson was not set at the start of the lesson. Students although they completed the drawing of a pictogram were not made aware that the focus of the lesson should have been on the correct use of T-square and set-square and the use of construction lines to complete the pictogram.

In the lessons observed a variety of teaching methodologies was used. In one lesson observed models were used to help students visualise and better understand a solids in contact problem. In another lesson observed the teacher sketched a key property of conic sections on the board to prompt students in solving the problem. In both instances the geometric problem was solved through discussion between teacher and students. At all times student responses were explored and developed. Students were encouraged to develop alternative solutions to problems and in a number of instances the teacher provided alternative solutions to students. There was discussion around the most appropriate solution for the problems at hand. Such strategies to develop student understanding of Technical Drawing are to be highly commended as they develop and encourage independent thinking and highlight to students the importance of key principles, theorems and constructions in Technical Graphics and Technical Drawing.

In the lessons observed there was very good use of the chalkboard to model how problems should be solved and in these lessons the teacher modelled best practice in relation to neatness, accuracy, and quality of draughtsmanship. When the whiteboard is used for technical graphics and technical drawing it can be more difficult to model best practice and therefore it is suggested that when whiteboards are used to teach Technical Graphics and Technical Drawing that the teachers involved should develop rules in conjunction with students for the use of different colours on the board to represent construction lines and visible lines.

The technical graphics and technical drawing teachers used the technological terminology associated with Technical Graphics and Technical Drawing continually during all lessons and students communicated effectively using this terminology.

The school has developed procedures for effective learning. These detail the procedures that students must follow before, during and after class. When followed by all students and teachers

these procedures assist in classroom management and create a positive teaching and learning environment for all. In all lessons observed there was evidence of effective use of these procedures. In all lessons observed classroom discipline was sensitively maintained through constant movement around the room and engaging with students by monitoring and assessing their work.

A very good rapport was evident in all lessons observed. Students readily engaged with all classroom activities and the teacher appropriately affirmed their contributions.

The quality of students' drawing portfolios was of a standard consistent with the range of abilities in the classes observed and was commendable. The content of junior- and senior-cycle student portfolios was appropriate to the year group and the syllabus. It was evident from student portfolios that topics are introduced using basic principles, theorems and constructions and that these are developed further through examination questions. This is to be commended as very good practice.

There are examples of student drawings on display in the main drawing room. It is suggested that this practice should be further developed both inside and outside of the classroom. It is suggested that the technical graphics and technical drawing teachers should put student drawings on display in areas outside of the classroom, on a dedicated technical graphics/drawing notice board for example. It is suggested that this notice board should be in an area where the entire student body can view it. This will project a more positive image of the subject and help serve as a stimulus and source of motivation for the present cohort of students.

ASSESSMENT

Non-examination students have formal examinations at Christmas and at the end of the school year in each subject. Examination classes have examinations before the first mid-term break and also have mock examinations in February. The results of all tests are sent home to parents. Where there is more than one class group common tests are set.

From an examination of a sample of student drawing portfolios it was evident that they are checked on a regular basis with constructive feedback provided. This is to be commended as best practice, as the feedback provided to students in drawing portfolios is essential when revising for examinations.

Homework is not assigned on a regular basis to all year groups. Students may be asked to complete sections of a workbook in first and second year or be asked to start or complete a past State examination question in third year and senior cycle. Homework is given every two to three weeks. Although the school homework policy does not detail how often homework should be given it does state that "*students are expected to learn work done in class irrespective of whether they are given homework or not*." As technical graphics and technical drawing classes are spread out throughout the week and students will not have the subject every day it is recommended that homework should be given after each class and as outlined in the school's policy should be used "*to supplement and consolidate the work done in class".* It is suggested that that in addition to starting or completing questions students should be given questions to revise and develop further the material studied in each lesson.

Teachers provide ongoing feedback to parents on student progress through the student journal and through parent teacher meetings. In addition under-performing students or those who are having

difficulties are identified through the year head structure in the school. Meetings are held with such students to support them in addressing any difficulties they might have.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:

- There is an open choice of optional subjects for senior cycle
- The main technical graphics and technical drawing room is well resourced and equipped
- The technical graphics and technical drawing teachers are informed of students with special educational needs and those requiring learning support at the start of each year
- The technical graphics and technical drawing teachers have developed a collection of teaching and learning resources which are used effectively
- Most lessons observed had a clear aim and focus
- Effective teaching methodologies were observed in most lessons observed that engaged students and helped to develop their understanding
- There is a clear focus on the basic principles, theorems and constructions when introducing each topic
- Student drawing portfolios are checked on a regular basis with constructive feedback provided.

As a means of building on these strengths and to address areas for development, the following key recommendations are made:

- Technical Graphics or Technical Drawing should be included in the curriculum for TY as a stand-alone subject or as part of a practical studies module
- The technical graphics and technical drawing teachers should develop a subject plan and a common short-term scheme of work for each year group
- The scheme of work for senior cycle should cover the entire syllabus
- Every lesson should have a clear focus and this should be outlined to students at the start of the lesson.
- Homework should be given on a more regular basis and should be used to revise material covered in class and to further extend students.

Post-evaluation meetings were held with the teachers of Technical Graphics and Technical Drawing and with the principal at the conclusion of the evaluation when the draft findings and recommendations of the evaluation were presented and discussed.

Appendix

School Response to the Report

Submitted by the Board of Management

Area 1: Observations on the content of the inspection report

Report Agreed

Area 2: Follow-up actions planned or undertaken since the completion of the inspection activity to implement the findings and recommendations of the inspection

Teachers are currently implementing the findings in relation to homework, and covering the entire syllabus.
The learning outcomes for each class are now clearly stated at the beginning of each lesson.
The subject plan will now become the focus of future subject department meetings.
Management will explore the possibility of offering the Technical Graphics module in Transition Year.