Subject Inspection of Technical Graphics and Design and Communication Graphics
REPORT

Jesus and Mary Secondary School
Enniscrone, County Sligo
Roll number: 65150K

Date of inspection: 21 April 2010
REPORT ON
THE QUALITY OF LEARNING AND TEACHING IN TECHNICAL GRAPHICS AND DESIGN AND COMMUNICATION GRAPHICS

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 Design and Communication Graphics and makes recommendations for the further development of the teaching of these subjects 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 the teacher, examined students’ work, and had discussions with the teacher. The inspector reviewed school planning documentation and the teacher’s written preparation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the principal and the subject teacher. The board of management was given an opportunity to comment in writing on the findings and recommendations of the report; a response was not received from the board.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

Jesus and Mary Secondary School currently caters for 274 students, 135 males and 139 females. First-year students are offered Technical Graphics (TG) as one of the optional subjects studied for the Junior Certificate examination. In the current school year 2009/10, a new system has been introduced whereby first year students sample each of the optional subjects for a three week module. Optional subjects are grouped into predetermined subject bands. One of these subject groupings sees Technical Graphics banded with Home Economics and Materials Technology (Wood). At the end of the sampling period the students are asked to complete a subject choice form where they can select one subject from each band. This form must be signed by parents. In addition to sampling the available subjects, students are supported by subject teachers and the guidance counsellor when making their optional subject choices. Parents are kept informed by means of an information evening. Providing students with the opportunity to sample optional subjects is highly desirable practice as it prioritises the needs of students and ensures that they are making informed decisions on subject choice.

In the senior cycle the Transition Year programme is provided as an option in addition to the Established Leaving Certificate and the Leaving Certificate Vocational Programme (LCVP). Students moving to either the Established Leaving Certificate or LCVP choose their optional subjects from preset bands of subjects. Students receive support at this important decision-making time from the guidance counsellor, the various programme co-ordinators and the subject teachers. An information night is held for parents where the programmes available in the school and subject choice are discussed. It is reported that good question-and-answer sessions are a feature of such meetings.
To further improve on these good arrangements for subject choice it is suggested that school management looks towards moving away from predetermined optional subject bands, at both junior and senior cycle level, and allowing students choose from an open menu of the subjects provided by the school. Subject bands would then be formed based on student preferences rather than preset groupings.

Junior-cycle TG is timetabled for four periods per week in second and third year. Students in first year are timetabled for two periods per week. The shorter contact time in first year results in an inadequate overall time allocation for the teaching and learning of the subject over the junior cycle years. It is recommended that TG should be timetabled for an average overall allocation equivalent to four periods per week over the three years of the junior cycle programme. This would bring the time allocation in line with established good practice for the subject.

All transition year students follow a Design and Communications Graphics (DCG) module on the use of SolidWorks software which consists of a double period per week for four weeks. This is a limited amount of time in which to achieve the expected learning outcomes. Consideration should be given to extending the duration of this module. Fifth year students are allocated four periods for DCG per week and sixth year students are allocated five periods per week. It is recommended that more time be allocated to the subject in fifth year to better facilitate the teaching and learning of the subject.

Students of both genders are equally represented in the school yet the number of females studying TG and DCG is low. At the time of the inspection there was only one female student studying DCG and seven female students in first year studying TG. Management expressed the opinion that the newly introduced system of sampling subjects in first year was responsible for the increased interest in TG among girls. Care must be exercised however, when selecting which subjects to band together for first years, not to reinforce stereotypical subject choices along gender lines. Management are urged to keep the situation under review and to seek other ways to encourage more females to study the subjects. A survey of female students in the school to determine their knowledge of the subjects and related attitudes could prove useful. All documentation and presentations concerning subject choice, including the school prospectus and the presentations given to parents during information nights, should be examined and amended if necessary to better promote the subjects to female students.

The subjects are taught in two adjoining rooms. One of these was originally a cloakroom and both the subject department and management are to be particularly commended for their work in transforming this space into a well equipped room containing twenty one desktop computers which are used for the delivery of the Computer Aided Design (CAD) element of the DCG course. The other room has a traditional drawing room layout with sloping desks and well organised storage facilities. The teacher has access to a laptop computer and a data projector in both rooms to assist in the delivery of lessons.

The teacher has attended all subject-specific training provided by the Technology Subject Support Services (T4). As a tutor for the National Centre for Technology in Education (NCTE) he has prepared resources and taught courses relating to the use of SolidWorks as a teaching aid, networking of computers and advanced CAD. The commitment of senior management and of the TG/DCG teacher to continuing professional development (CPD) deserves acknowledgement.
PLANNING AND PREPARATION

Management facilitates subject department planning meetings twice per year. It is recommended that minutes be retained of these formal meetings as documentation of the work being done by the department as well as a record of future plans for the development of the subjects. These minutes should be shared with senior management.

The TG and DCG plans follow the SDPI template and planning is well progressed. Within these documents, schemes of work have been created for each year group and the content to be covered is in line with syllabus requirements. As a next step in the development of these plans, it is recommended that each topic be examined to establish the precise learning outcomes to be achieved by the students from that unit of study. Reference should also be made to teaching resources and methodologies as well as proposed methods of assessment for each topic. Currently the scheme of work for each year group spans a full year with no indication of the time allocated to each topic. It is suggested that these schemes would benefit from being divided into shorter time frames. This would facilitate more accurate tracking of progress through each programme of work.

Classes in TG and DCG are of mixed ability with access to higher level and ordinary level accommodated within each class group. Students are encouraged where possible to attempt examinations at higher level. There was a good level of planning evident to ensure that there is appropriate differentiation of work to allow students succeed at a level appropriate to their abilities. Students’ outcomes in the certificate examinations are analysed and compared to the national norms each year. This good practice provides a valuable insight into the standing of the subjects and can be used to inform future planning for the subjects.

The subject department produces a DVD for third year students which shows the procedures involved in solving a number of questions from past Junior Certificate examinations. Each student is given a copy of this DVD to aid them when preparing for their examination. Work is ongoing to provide a wider selection of question solutions for subsequent DVDs. This is a creative way of providing support for students when they are studying at home and is commended.

Both the rooms available for the teaching of the subjects have ample wall space and notice boards which are used effectively to display students’ class work. To further improve on these displays consideration should be given to the display of past DCG projects, solutions to examination questions modelled using SolidWorks, as well as some of the posters and worksheets that are available on the T4 website (www.t4.ie). This would introduce extra colour into the classrooms and would create added points of interest for the students. Furthermore such displays could raise awareness amongst students as to what the subject involves. A display of similar material, outside the classroom, could be used to raise the profile of the subject amongst the whole school cohort.

TEACHING AND LEARNING

All lessons observed had a clear learning intention but this was not always shared with the class. The teacher is encouraged to write the intended learning outcomes on the whiteboard at the beginning of the lesson. They can then be revisited throughout the lesson and ticked off as each is
achieved. Such a strategy would assist both the teacher and the students to focus on the specific objectives of the lesson and enable the success of the lesson to be easily evaluated.

Lessons were carefully structured and linked well with previous learning. Questioning techniques were good with the teacher using a combination of global and individual questions to aid the recall process, to reinforce existing learning and to advance student understanding. The repetition and further clarification of answers offered by students ensured that learning was consolidated. Care was taken to ensure that all students had adequate time to formulate their answers and they were effectively affirmed for their efforts.

The whiteboard was used extensively in the lessons observed. Drawings were built up during lessons and students then followed the different steps involved. In most instances the whiteboard work was drawn freehand by the teacher. It is recommended that the drawing instruments be used more frequently by the teacher in order to model good drawing techniques. This would help to ensure that the final drawing produced is in proportion and would guide the students’ work on their sheets more accurately.

In addition to using the whiteboard for the presentation of work it is recommended that the use of information and communications technology (ICT) be increased to support student learning. During lessons observed on the ellipse, solids in contact and orthographic projection there were many opportunities where the use of the computer and data projector could have further improved the students’ experiences of the material being learned. For example the modelling of solutions to questions using SolidWorks and the display of photographs to link class work to real life objects would greatly improve the presentation of lessons.

The development of students’ freehand sketching skills is an important element in the teaching of the DCG syllabus. This skill needs to be developed from an early stage in the junior cycle years. The subject department has a good system whereby space is deliberately left at the side of each drawing sheet for such sketching practice. From the observation of students’ work, however, it was clear that students would benefit from developing their freehand sketching techniques further. It is recommended therefore that opportunities be taken in lessons, at appropriate times, to promote the development of these skills among students.

Whole class teaching, group work and individual tuition were observed during the inspection. At the kernel of each of these techniques was a good level of student participation in lessons. The underlying principles involved were explored with students before they were asked how to complete each step in solving a problem. This approach is commended as it helps to develop understanding of the subject matter as well as encouraging independent thinking and learning.

In the lessons visited, students appeared to have an established routine with regard to entering the room and getting set up for their drawing lesson and as a result very little teaching time was lost at the beginning and end of lessons. A relaxed atmosphere was encouraged by the good rapport evident between the students and the teacher. All interactions were positive and respectful with classroom discipline being sensitively maintained at all times. Teacher movement around the classroom helped to keep students on task and allowed the teacher to provide targeted support to individual students where required.
ASSESSMENT

Examinations are held at Christmas and summer for first, second, fourth and fifth year students. Students sitting certificate examinations have an assessment half way through the first term and sit Christmas and mock examinations. Reports are sent home to parents after each assessment. The parents of students in each year group are invited to attend one parent-teacher meeting during the year. These arrangements are satisfactory. Parents of sixth year students are invited to attend two such meetings, one after the mid-term assessments and the other after the mock examinations. The format of the meetings with sixth year parents differs slightly as students are expected to attend the meeting with their parents. It was reported by the principal that this arrangement is proving very effective and has improved attendance at meetings.

A sample of student portfolio work across all year groups was examined during the evaluation. In most instances appropriate levels of subject material was covered and students’ drawings were of a good quality. Some portfolios however contained a significant number of incorrect and incomplete drawings. It is recommended that portfolios be subjected to regular monitoring and that students receive written feedback on their sheets which affirms good work and indicates areas for improvement. It is also recommended that a proportion of the marks awarded to students at Christmas and summer be based on their portfolio work. This gives students credit for the work carried out during the term and provides them with an incentive to maintain their folders to a high standard.

At the end of most lessons with first, second and third year students the teacher selects sheets as exemplars of good work. These sheets are then pinned up on a specific notice board and remain on display for a number of lessons. This practice is effective as a means of encouraging and motivating students and of developing awareness amongst students as to what constitutes good quality work.

From observation of students’ journals it was clear that homework is not allocated regularly. Homework supports the work students do in school and is an important part of the learning process. It is important therefore that homework is allocated, collected and corrected regularly and that students receive written feedback, of a developmental nature, on their work.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:

- The school has recently moved to a system whereby first year students sample each of the optional subjects before they are asked to make their subject choices.
- The resources made available to the subject department are very good.
- The school has converted a cloakroom into a well equipped room for teaching the Computer Aided Design (CAD) element of the DCG syllabus.
- The teacher has engaged in extensive CPD.
- Lessons were well structured with good continuity and links to previous learning.
The subject department produces a DVD for third year students which shows the procedures involved in solving a number of questions from past Junior Certificate examinations.

There were good routines evident during lessons for the management of work.

There was a high level of student participation in all lessons observed.

The rapport between students and the teacher was found to be very good.

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

- Management is urged to seek ways to encourage more females to study the subjects.
- Schemes of work should be modified to include the proposed learning outcomes for each topic as well as the teaching methodologies to be used, the resources available and the proposed methods of assessment.
- There should be an increased use of ICT to support student learning.
- Efforts should be made in TG and DCG lessons to further develop students’ sketching skills.
- As part of continual assessment, portfolios should be frequently monitored with a proportion of the marks then allocated to Christmas and summer assessments.
- Homework should be allocated more regularly and students should receive developmental feedback on their work.

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

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