Subject Inspection of Materials Technology (Wood) and Construction Studies
REPORT

St Aidan’s Christian Brothers’ School
Collins Avenue, Dublin 9
Roll number: 604811

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REPORT ON THE QUALITY OF LEARNING AND TEACHING IN MATERIALS TECHNOLOGY (WOOD) AND CONSTRUCTION STUDIES

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in St Aidan’s Christian Brothers’ School. It presents the findings of an evaluation of the quality of teaching and learning in Materials Technology (Wood) and Construction Studies 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 teachers, examined students’ work, and had discussions with the teachers. The inspector reviewed school planning documentation and the teachers’ written preparation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the principal. 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

St Aidan’s Christian Brothers’ School offers Materials Technology Wood (MTW) as an optional subject in the junior cycle programme. An information evening is held in May, for parents of incoming first years, where subject choices are presented and explained. First year students are provided with an opportunity to sample their optional subjects from the start of the school year up to the October mid-term break. In effect, students receive two weeks of study in each of the optional subjects before they are asked to make their choices. This experience of the optional subjects is a valuable support to making a final choice. Further support, guidance and advice for students in making their choices is provided by the optional subject teachers. Consideration should be given to allocating the guidance counsellor some contact time with the students during the sampling period as an additional support since choices made at this stage can affect future career paths. Students are asked to record their preferred subject choices on a form which must be signed by parents. All reasonable efforts are made to accommodate students’ subject choices and it was reported that this system works well. In the current year, for example, all students who chose MTW were accommodated.

Students moving to senior cycle are offered three programmes, an optional Transition Year (TY), the Established Leaving Certificate and the Leaving Certificate Vocational Programme (LCVP). All transition year students study a CS module for three periods per week for a ten week module. Such a module provides students with valuable experience of the subject and assists them in making informed decisions on subject choices for senior cycle. Students preparing to enter fifth year are offered an open choice of optional subjects with option bands then designed based on student preferences. This is good practice. Support for students, in the form of advice on subject and programme choice, is provided by subject teachers and the guidance counsellor. Parents are
invited to attend an information evening where presentations are made by the principal, the guidance counsellor and the co-ordinator of TY and LCVP. The meeting includes discussion of the subjects and programmes on offer as well as a question-and-answer session. Parents are also supplied with a guide booklet compiled by the guidance department. These arrangements form a good model for the making of informed decisions.

MTW is allocation four periods per week at junior cycle and Construction Studies (CS) is allocated five periods per week at senior cycle. Time provision is sufficient for the completion of the respective syllabuses and schemes of work. Classes are well distributed across the week and the provision of double and single periods caters well for project work, practical work, drawing and theory.

The subject department has two rooms available to it for the teaching of the subjects. Junior cycle MTW is taught in one room with CS taught in a much larger room. These rooms have an interconnecting store room. The CS room has a broadband-enabled desktop computer which may be used by students for research. A data projector and laptop computer are available for use by the teacher to assist in the presentation of lessons. There are currently no information and communications technology (ICT) facilities available in the MTW room and it is recommended that the subject department should work towards developing such resources.

The wall space in the CS room is underutilised. Efforts should be made by the subject department to provide a more visually rich and stimulating learning environment for students. The displaying of colourful home-made and purchased wall charts, students’ scaled drawings and project work as well as solutions to examinations questions modelled using Solidworks would create points of interest around the room. Furthermore such displays would increase student awareness as to what is involved in the subject and could help to raise the profile of the subject in the school.

All MTW and CS classes are of mixed ability with access to higher and ordinary levels being accommodated within class groups. The principal carries out a yearly analysis of students’ outcomes in certificate examinations and compares these to national norms. The subject department is encouraged to use this analysis to inform future planning for the subjects.

Both teachers are members of the TechnoTeachers Association and have availed of subject-specific training provided by the Technology Subjects Support Service (T4). Management is commended for supporting, encouraging and facilitating the in-career development of the teaching team.

**PLANNING AND PREPARATION**

Time for subject planning meetings is facilitated by management at the beginning and end of each academic year. To enhance the development of this planning process it is recommended that the level of collaborative planning among the teachers of the technology subjects should be developed beyond the current limited arrangement. The teachers of the technology subjects should meet as a group with one of the strong themes running through future planning meetings being the development of stronger collaboration between the teachers of the subjects and the sharing of best practice in terms of teaching, learning and assessment strategies. A subject co-ordinator should be appointed and this position should be rotated. This practice would in due course provide all the teachers with experience of subject planning and coordination and thus develop the expertise available within the department. One of the duties of the co-ordinator
should be to retain records of subject meetings so as to clearly document development in the subjects. These should be filed in the planning folders and copied to management.

The MTW plan which is at a very early stage of development indicates the topics to be covered with year groups during the course of their studies. These programmes of work should be further developed and include more detail. Best practice identifies learning outcomes for the students from each topic along with details on how the achievement of these learning outcomes could be assessed. Successful teaching methodologies that encourage active learning should be included as well as details on resources available for each topic. The work for the year should be divided into manageable portions to allow accurate tracking of progress. The subject plan should also include reference to student access to the subject, class organisation, health and safety arrangements, and arrangements for including students with special educational needs (SEN). Further information on what should be included in a subject department plan is available on the School Development Planning Initiative (SDPI) website (http://www.sdpi.ie/subject_planning.html).

The CS plan follows the SDPI template and planning is progressing well. Schemes of work in line with syllabus requirements have been developed within this document. These schemes would also benefit from a more detailed analysis to include student learning outcomes for each unit of study, the resources available for the teaching of each topic, teaching methodologies and the planned methods of assessment.

There is scope to use the information gained from the yearly analysis of students’ outcomes in certificate examinations to inform planning for teaching and learning. Student uptake of higher level and trends in the grades achieved at both levels should be used in a comparative analysis with national norms. School contextual factors should be taken into account as well as teacher reflection on where and why issues arise. Positive trends and good practice, as well as areas for development identified as a result of the reflection and analyses, should be recorded and used to inform planning and to extend good practice as appropriate.

The school’s health and safety statement contains specific reference to the woodwork rooms. Good safety practices were implemented in all lessons observed during the inspection. In order to build on these good practices it is recommended that the teaching team carries out a risk and hazards analysis of both rooms. A document should be drawn up which identifies all significant hazards associated with the woodworking machines and portable electric hand tools. In tandem with this the control measures put in place to reduce risk should be listed. The most recent safety audit report, dated 2004, should be used as a template for this document and should be reviewed on an annual basis. Useful safety resources and information are available on the T4 website (http://www.t4.ie/topics_health.htm).

The demarcation of safe operational areas (SOAs) around machines should be carried out urgently. The rationale for such SOAs and the implications for movement and behaviour in the vicinity of machines should be explained to students. To further improve safety awareness it is recommended that the amount of machine-specific safety signage on display be increased. Safe-use rules should be displayed adjacent to each machine and the safety rules for the woodwork room should be displayed prominently in both rooms. It is suggested that the workshop rules which are already available in the school safety statement (Appendix 4) should be adapted for this purpose.
TEACHING AND LEARNING

All lessons observed during the course of the inspection had clear aims and learning outcomes which were shared with the students at the outset. To further build on this good practice the aims of the lesson could be written on the chalkboard and ticked off as each is achieved. These can then be used to keep the lesson on track and towards the end of the lesson assist reflection on the progress achieved.

Well paced introductions ensured good continuity with previous lessons. Very good use was made of varied questioning techniques to elicit information from students. Global questioning was used to initiate discussion and individual questioning was effectively used to identify students’ depth of knowledge. Higher-order questioning was skilfully used to revise previous learning and to introduce new concepts. In the teaching of a CS lesson observed a brainstorming session was well used to explore safety, efficiency, location and design issues relating to fireplace and flue construction. Questioning was used to guide the students’ thought processes with the result that the students drew from their life experiences to deliver credible solutions to the problems posed. Care was taken to include all students in such question-and-answer sessions and they were appropriately affirmed for their answers. This is good practice and helps in the creation of a more dynamic learning atmosphere.

The linking of theoretical information with physical examples was observed in a junior cycle lesson visited. The lesson, on the cross-section of a tree, was greatly enhanced by displaying a large section of a log cut from a tree felled on the school grounds. The log, which clearly showed the cell structure of the wood, was used to good effect. A clear, labelled diagram of a tree cross-section drawn on the chalkboard further scaffolded student learning.

The MTW practical class observed was well organised. Good student routines were evident in setting up for the particular lesson and in the clearing up at the end, indicating consistency in lesson structure. Such routines promote responsibility for creating an ordered learning environment among students and are very good practice. During the lesson students were engaged in the completion of project work. It is suggested that, to further improve this project work, a stronger emphasis be placed on the design process. Students can find the process of design difficult and therefore the development of their ability to modify designs or to produce individual solutions to a set design problem should be fostered at an early stage. This is an important area of the student learning experience and is central to the aims of the syllabus. Furthermore it is suggested that efforts should be made to include a wider range of materials in student project work and to create projects which are less dependant on medium density fibreboard (MDF) for their construction.

Information and communications technology (ICT) was used to present concise notes during a CS theory lesson. It is suggested that the use of this technology should be increased so as to display video clips, digital photographs of construction elements, three-dimensional drawings of building components and two-dimensional scaled drawings. In many cases the carefully planned use of these resources can greatly improve the students’ learning experience.

The terminology associated with MTW and CS was used continually during the teaching of lessons and this allowed students to listen to instructions and assimilate subject-specific terminology while working on their own tasks. This good practice enhanced both teaching and learning. Students demonstrated that they could communicate effectively using this terminology.
Best practice saw new terminology written on the chalkboard/whiteboard which was then taken down by students. This forms a good support for the development of literacy skills.

The atmosphere in the lessons visited was positive and encouraging. A good rapport was evident between teachers and students. This was sustained by the constant movement of the teacher to monitor safety, to assess progress and to offer individual help and tuition.

ASSESSMENT

Examinations are held in early December, Easter and at the end of the school year for first, second, transition and fifth year students. Junior Certificate and Leaving Certificate students sit informal tests in December and have ‘mock’ examinations in the spring. Reports are sent home to parents twice per year and parents of students in each year group are invited to attend one parent-teacher meeting during the year. These arrangements are satisfactory. The format of the meetings with transition year students differs slightly as students are expected to attend the meeting with their parents. They are also expected to bring all their project work to this meeting where it is discussed in detail. It was reported by the principal that this meeting structure is very effective.

The student drawing portfolio system currently in operation needs to be urgently reviewed. It is recommended that each student keeps an individual folder of his own drawings and that this folder be stored in the classroom. Teachers should also subject portfolios to regular monitoring and provide students with developmental feedback on their work. A certain percentage could be allocated to drawing portfolios when arriving at a final grade for students’ December, Easter and summer examinations. This arrangement would reward students for their work throughout the year and would further encourage them to keep their portfolios in good order. All scaled drawings should be annotated giving information on construction, material types and material sizes. The regular insertion of such notes on the drawings will assist the student to remember these details. It is suggested that providing a list of important scaled drawings that need to be practised and learned would also be a beneficial support for students.

Student attendance was checked and recorded in all classes visited. Homework is allocated and corrected regularly at senior level with students encouraged to self-assess their performance on a certificate examination question given for homework using the official marking scheme. This is good practice as it ensures that the students become familiar with the workings and weightings of the marking scheme. From observation of students’ journals it was clear that homework is allocated less regularly at junior level. Homework supports the work students do in class and is an important part of the learning and assessment process. It is important, therefore to regularly assign homework, to provide students with developmental feedback on the quality of their work in a timely manner and to keep a record both of homework completed and not completed.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:

- First year students sample each of the optional subjects before they make their subject choices.
- The teaching time allocated to the subjects is good with the lessons well distributed across the week.
• Classes are of mixed ability with access to higher and ordinary levels being accommodated within class groups.
• Teachers have availed of subject-specific in-service provided by the Technology Subjects Support Service (T4).
• The lessons observed had clear aims and learning outcomes which were shared with the students at the beginning of class.
• Varied questioning techniques were used to good effect throughout the lessons.
• Theoretical knowledge was well linked to practical examples.
• There were good routines evident during lessons for the management of practical classes.
• The terminology associated with the subjects was used constantly by both the students and the teacher in the lessons observed.
• The self-evaluation of student work is encouraged at senior cycle.

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

• The subject department should look towards developing ICT facilities in the MTW room.
• Department plans should follow the SDPI template. The schemes of work within these plans should be modified to give details on student learning outcomes for each topic as well as teaching methodologies, resources and assessment.
• Efforts should be made to provide a more interesting and stimulating learning environment for the students in the CS room.
• A risks and hazards document should be developed by the subject department, safe operational areas (SOAs) should be marked in both rooms and there should be an increase in the display of safety signage.
• The portfolio system currently in operation needs to be changed; there is a need for more frequent monitoring and a proportion of the final marks in house examinations should be based on work done during the year.
• Homework should be allocated more regularly to junior cycle students with more developmental feedback on returned work.

A post-evaluation meeting was held 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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