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Case Study Theory

It is now well documented that students learn most effectively when actively involved in the learning process (Bonwell and Eison, 1991; Sivan et al, 2001). Active learning confers ownership of the learning process from the teacher to the student. The case study approach is one way in which such active learning strategies can be implemented in our institutions (Grant, 1997; Kuntz et al, 1998; Richards et al, 1999). .

The discipline of Materials Science and Engineering is ideal for using case study teaching because of the wealth of practical, real life examples that can be used to contextualise the theoretical concepts. Educational research has shown case studies to be a useful teaching activity. Grant (1997) outlines the benefits of using case studies as an interactive learning strategy, shifting the emphasis from teacher-centred to more student-centred activities. Raju and Sanker (1999) demonstrate the importance of using case studies in engineering education to expose students to real-world issues that they may be faced with in an engineering profession. Case studies have also been linked with increased student motivation and interest in a subject (Mustoe and Croft, 1999).

It is important to make a clear distinction between the type of learning described in this website and problem-based learning. The structure and format of our case studies can be likened to project-based learning as described by Savin-Baden (2003). Savin-Baden highlights the differences between problem-based learning and project-based learning and these can be summarised as follows,

Project-based learning	Problem based learning
Predominantly task orientated with activity often set by tutor	Problem usually provided by staff but what how they learn is defined by students
Tutor supervises	Tutor facilitates
Students are required to produce a solution or strategy to solve the problem	Solving the problem may be part of the process but the focus is on problem management, not on a clear and bounded solution
May include supporting lectures which equip students to undertake activity, otherwise students expected to draw upon knowledge from previous lectures	Lectures not usually used on the basis that students are expected to define the required knowledge needed to solve the problem

We have found the case-based approach useful to the discipline of Materials Engineering. This discipline involves both 'content and concepts' and students can be engaged in learning both through a balance of:

Traditional lectures: Content is transferred and concepts can be identified and discussed

Laboratory Activities: Concepts are explored and further content learnt

Small group Tutorials: Consolidation of learning and problems identified

Case Studies: Content put into context and concepts reviewed

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For further information on case study learning visit our **resources (/schools/metallurgy-materials/cases/cases-general/resources.aspx)** section, which give details of articles, books and relevant web-sites.

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