Chapter 1

Report of an Interdisciplinary Course in Product Design Education

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ABSTRACT

Interdisciplinarity refers to the process of addressing a topic or problem from the angle of different disciplines or sciences, not just one. Typically, those who promote interdisciplinarity argue that the complexity of modern societies demands an interdisciplinary approach to problem-solving. This claim has gained traction in the field of Product Design in recent years, with some scholars and commentators arguing that technological, social, and economic changes have made the process to develop new products more collaborative. At the same time, however, there is a sense that universities focus on training specialists, and that there is a need for new pedagogies. Interdisciplinarity, however, can be understood—and implemented—in different ways. Should students be trained in a wide range of subjects? Or so that they can function in an interdisciplinary team? Different views can result in substantially different educational experiences and sets of skills. This chapter outlines some aspects of the process to facilitate interdisciplinarity in a course involving product design and engineering students.

INTRODUCTION

As Boisot (1972) points out, definitions of interdisciplinarity are often either based on disciplinary perspectives or personal experience (p89). Therefore, in order to develop a proper understanding of interdisciplinarity, it is first of all necessary to develop an understanding of the discipline. That however, as it will be hopefully shown, is a more challenging question that may appear at first. From the different definitions given in the literature for example, it is impossible to determine if a discipline and a science are the same, or if one is a pre-requisite for the other (Apostel, 1972, p. 148).

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Note on terminology: As it will be shown later, in general, we can say that there is not a ‘black and white,’ clear division between what is interdisciplinarity and what is not. Instead there are different levels of disciplinary integration that different people/scholars call different names.

What Is a Discipline?

In its most general form, Marcel Boisot (1972), says that a discipline is concerned with objects, methods, procedures, and laws. In this case, objects refer to observable elements that constitute a phenomena. Thus, the aim of a discipline, is the explanation of such phenomena.

Leo Apostel (1972) on the other hand, treats sciences and disciplines as the same, and argues that a science, is in fact the product of a group of people, who engage in certain actions, leading to certain interactions, which are only possible by means of communications aimed primarily to the practitioners of the science themselves but also to the outside world. Apostel claims that a necessary requisite for a science to exists, is that it can be reproduced from one generation to another through education (p146). In Apostel’s conception, neither disciplines nor sciences do ‘exist,’ per-se. What exists, is just persons and groups of persons doing the same activities. Then the question is; what is the maximum level of difference in the activities practiced by two persons, which would still permit to say that they are practicing the same discipline?

Verhagen (1972) on the other hand, extends the concept of the discipline outside the scientific world, and says that in general, different trades or professions are characterized by the problem they try to solve, the products they create, and the techniques they employ. Moreover, highlights that in this conception, systematic scientific study is not a characteristic a discipline. Thus, a differentiation could be made between disciplines, and scientific disciplines (Verhagen, 1984, p. 95). In the modern University, the fields of study known as physics, chemistry, sociology, economy, etc. are what constitute different disciplines, each of which is hosted in a department or faculty.

Disciplinarity

Heckhausen (1972), defined disciplinarity as the specialised scientific exploration of a given homogeneous subject matter producing new knowledge and making obsolete old knowledge (p89). He adds that disciplinary activities, result in constant reformulations of the body of knowledge of the discipline.

The Path to Specialism

Boisot (1972), argues that breaking down knowledge derives from man’s ‘unconscious inclination’ to separate and classify the surrounding elements (p. 89). Both; education and research, obeying laws of division of labour, are subdivided. Most often for example, people study physics or even a branch of physics, but not science. Conversely, teaching is divided into specialised subjects such as: French, not languages.

Consequently, scientists have organized themselves into specialisms, some of which, after establishing having legitimate different concerns, having developed unique technical procedures, and continually recruiting students, have eventually acquired the status of disciplines or sub-disciplines themselves. It is perhaps pertinent to notice, as Whitley (1984) points out, that these disciplines and sub-disciplines, often end up competing against each other for dominance of disciplinary identity and goals (p. 18). It is also