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**THE ARTISTIC, SCIENTIFIC AND MORAL DIMENSIONS  
OF TEACHING  
-ESSENTIALS OF EXCELLENCE IN TEACHING-**

by

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**Keynote Address for the Excellence in Teaching Convention  
of the Singapore Polytechnic, 23 August 1990, Singapore.**

# THE ARTISTIC, SCIENTIFIC AND MORAL DIMENSIONS OF TEACHING

## - Essentials of Excellence in Teaching-

by

Chen Ai Yen  
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### INTRODUCTION

When I was first approached by Dr Doreen Cheong, Chairperson of the Organizing Committee of the Convention on Excellence in Teaching, to address you, I was tempted to decline straight away. The reason is: what do I have to offer by carrying coals to Newcastle, where there is already so much done to bring about excellence in teaching? And yet it is a flattering assignment, particularly when Doreen and John Ooi told me that I can also learn a great deal from you. So here am I, away from the whirlpool of IE activities to join you in two-days of quiet reflection and review about effective teaching.

We all agree that teaching is a complex activity demanding depth of subject matter knowledge, understanding of the learners and the learning process, and expertise in communication and management. Can teachers acquire this knowledge and expertise without any special training? Are teachers born or made? What are the characteristics of effective teaching? Are they similar to that of 'expert' teaching? What aspects of teaching are grounded in scientifically derived knowledge? What aspects show the disposition and talents of a teacher? And, what aspects reveal the judgment and character of a teacher?

### CONCEPTIONS OF TEACHING AND METAPHORS

These are some of the questions about teaching and teacher development raised by teachers and their critics through the ages. They are also questions raised by researchers who try to explain the characteristics of effective teaching and learning. The answers obtained so far are related to the inquirers' conceptions of teaching and the metaphors used. Some perceived teaching as a moral enterprise, others an artistic activity, and still others greatly uphold it as a scientific experiment or a series of classroom interventions. While these different perspectives provide a focus for inquiry, they tend to present too restrictive a point of view. It is more rational to examine all the three dimensions of teaching, that is, artistic, scientific and moral aspects in our reflection on excellence in teaching.

With a more wholistic view of teaching, one will not ask questions that deny the necessary multi-roles a teacher play in his or her everyday life, e.g. as a nurturer and helper, as a behaviour engineer or as a manager of learners and learning environments, as a transmitter of knowledge, skills and values, or, as a facilitator and a guide, or, as an entertainer all set to amuse and tickle the imagination of learners, or a conductor who orchestrates talents and blends student interests with learning tasks.

Despite an increasing amount of research done in the area of effective teaching and the 'expert pedagogue' in relation to student outcomes, no definitive statement can be made about excellence in teaching. However, there is substantial evidence to show that effective teachers make a difference to students' learning. There are certain general dimensions in effective teaching, such as the traits of teacher behaviour and kinds of teacher belief and expectation that seem to produce positive effects on students' learning.

## **FINDINGS FROM RESEARCH ON TEACHING**

Recent studies in the United States, Britain, Australia and Singapore have found sufficient evidence in relating 'expert' teacher behaviours to student achievement. Local research findings have produced further evidence to support the assertion that certain patterns of cognition and behaviour, and certain levels of morality are typical of the "expert pedagogue". These patterns can be categorised as the three essential dimensions of teaching - scientific, artistic and moral. And all are clearly evident in excellent teaching.

### **The Scientific Dimension of Teaching**

Research on teaching in the past two decades has shown that effective teachers have knowledge of the subject matter, human development and learning. Brophy and Everton found sufficient evidence to prove that teaching is applied science as there is a body of "specific, data based information that will enable them [administrators and teachers] to diagnose particular situations accurately and follow through with 'treatment' established as effective or at least probably effective in such situations" (Brophy & Everton, 1976). With such a database, the very effective and experienced teachers appear to have the capacities to be introspective and reflect on their own teaching acts. In Singapore, the "expert" teachers identified excel in content pedagogy. They are efficient learners themselves, having the appropriate study method for different subjects and skills. They are people-oriented and understand their students. "Expert" teachers not only perform at a higher level in carrying out systematic instruction, in communicating ideas and in assessing student needs and abilities but also in reflecting on their actions and how to improve upon them. Communication skills include those used in explaining concepts and in raising thought provoking questions, even in providing oral or written feedback. The judicious and systematic application of content and pedagogic knowledge to teaching and learning constitutes the scientific dimension of excellent teaching. Most of it is observable, verifiable and generalisable.

### **The Artistic or Aesthetic Dimension of Teaching**

Another much often discussed dimension of teaching is 'teaching as an art'. This metaphor has always been held in high esteem particularly in institutions of higher learning. Not only have academics frequently endorsed the teaching-as-art metaphor but in addition educational theorists have made a variety of attempts to apply aesthetic theory to educational phenomena. Among the specific applications proposed by educators are: the conception of educational evaluation as connoisseurship (Eisner 1977, 1979); experimenting with ways of heightening the artistry of teachers (Rubin 1981); and training teachers to be better performing artists (Rives 1979; Travers 1979). Even a prominent researcher who has devoted his career to applying behavioural science research techniques to the study of educational phenomena believes that scientific findings must be related to an underlying art of teaching (Gage 1978).

More than half a century before Eisner, others like Bagley argued that teaching can never become an applied science in the strict sense of the term; teaching's closest analogies are not with such technological arts as medicine or engineering but instead with such fine arts as music, painting, and acting. While the teacher-artist might make use of findings from the scientific study of teaching, this application is likely to focus on "the scientific study on the extra-teaching activities, as caring for the health (physical and mental) of the learners and measuring their progress" rather than on the techniques of teaching (Bagley, 1930, p.460). As a result, any technology of teaching is "supplementary rather than central in his [teacher's] equipment, while quite the opposite is true of the physician and the engineer (ibid, p.457).

Recent discussions of the art of teaching are occasionally more precise than Bagley's description of the sensitive soul's qualities and the origins of these qualities. Eisner suggests that there are at least four senses in which teaching can be considered an art. Teaching can be performed with such skill and grace that...the experience can be justifiably characterized as aesthetic (1979, p.153). Second, teachers, like fine artists, make "judgements based largely on qualities that unfold

during the course of action" (p. 154). Third, teaching is an art in the sense that "the teacher's activity is not dominated by prescriptions or routines but is influenced by qualities and contingencies that are unpredicted" (p. 154). And, last, teaching is artistic in that "the ends it achieves are often created in process" (p.154). The themes of aesthetics, improvisation, and creativity explicitly developed by Eisner and hinted at by Bagley are also central to the thinking of other contemporary educational theorists interested in the artistic basis of teaching (see Grumet 1983; Rubin 1981). In recent studies on the 'expert' English teacher further evidence has been found to support the claims of improvisation and creativity in teaching acts and styles (Chen & Yeo 1989, 90; Grossman, 1989 and Petri, 1989).

Teaching that is inductive and inquiry in nature usually encounter surprising responses and reactions from students. Experienced and "expert" teachers may have a knowledge base and a repertoire of skills that enable them to improvise answers, pose questions or guide unplanned learning activities. The way they improvise and create learning situations often reveal their principal conception of teaching and their personal style of communication, be it humorous, dramatic, liberal, *laissez faire* or executive. In such moments when things have to be done in an impromptu manner, the unique styles of the teachers are most apparent.

### **The Moral Dimension of Teaching**

Teaching is a moral enterprise. Tom (1984) provides a most convincing argument in pointing out that "almost every aspect of teaching involves a moral component, partly because teaching is by definition a social encounter and partly because the social encounter involved in teaching entails an intervention by one person in another person's intellectual and personal development" (p.95). Extending this point of view, Goodlad strongly argued for "a teaching profession grounded in the judgments that teachers in schools must make to maximise the education of all children and youths. These judgments are shared with others- administrators, parents, and citizens beyond the classroom..Virtually all of these judgments require special knowledge and, in the end at least, are normative. They involve values and valuing in addition to relevant knowledge" (p.125).

"Experts" teachers in Singapore are characterised by sound judgment and dedication to the subject and the students. Sagacious judgments include the amount and type of content to be taught to specific individuals, and groups of students, and appropriate pace."Expert" teachers are aware of the scope, depth, links and examination requirements of their subjects. In transforming this knowledge into teachable forms, they are able to motivate students to perform at a high level. They effectively communicate their enthusiasm for the subject and personal values in their lessons. They are dedicated to their jobs and show concern for their students, particularly in helping students imbibe life-skills (not just subject-specific skills) and in assisting weaker students to learn better (Chen, et al 1989,1990).

It is quite clear that the "expert" teachers identified appear to have uphold specific standards of the teaching profession: for example, being well-informed, having capacity for reflection, showing commitment to the students and subjects, care and concern for students with learning needs and problems, and fairness in evaluating student achievement. In diverse learning situations, they are noted for their ability to judge fairly regarding student needs and treat them accordingly irrespective of their own biases and feelings about the students. They assume responsibility to not only develop the students' minds but also their characters and values. From their reflections about the learning-teaching process, it appears that the expert teachers' ethical and moral sense of responsibility correspond to Fritz Oser's categories of moral cognition: normative morality, situational morality and professional morality (Oser, 1986, 89). Their decision making also involves values and standards regarding the education of children and youths (Goodlad, 1990).