CURRICULUM AND ASSESSMENT: HITTING GIRLS TWICE?

Some of the discussion in this chapter is about the average female. If she exists at all, the female who is average in all respects is likely to be comparatively lonely. We need to remember when making comparisons between the average female and the average male that, for each different variable being considered, there are overlapping male and female distributions.

As demonstrated by Mary Gray (1994), this means that all of the males and females in the shaded region of Figure 1 can in some sense be regarded as “matched pairs.” It is the different tails of the distributions which impact on, and are reflected in, the mean (average) gender difference. For example, the Assessment of Performance Unit (APU) in the United Kingdom (cited in Girls and Mathematics, 1986) found that the top 30 percent of achievers accounted for most of the gender differences in performance in their investigation of 11- and 15-year-old students. In line with a number of overseas studies (for example, Hyde, Fennema, & Lamon, 1990), New Zealand researchers (Blithe, Clark, & Forbes, 1993; Morton et al., 1993) have also found that males either dominate the highest grades or dominate both the highest and lowest grades (giving male and female mark distributions as illustrated in Figure 1).

Whether we are developing teaching methods, curricula, or assessment procedures in mathematics, if these are primarily targeted to students in Group 2 above then they may disproportionately disadvantage females who dominate Group 1 (and vice versa). It is unlikely any single technique will suit all groups of learners. Indeed, women themselves cannot be classified as one homogeneous group. Women from different socio-economic backgrounds, different cultural and ethnic groups bring to their mathematics different prior knowledge, different attitudes, and different expectations.

Gila Hanna’s (1988) study of performance of students in a number of countries on a similar mathematics test showed gender differences varied between countries. Maria Tregalos, when talking about Mexican women, stated (1993) that their position in mathematics relative to males was more extreme according to social class. In New Zealand studies, the performance of Maori (indigenous New Zealanders) in mathematics examinations has been markedly lower than that of New Zealanders of non-Maori (generally European) descent (Manatu Maori, 1991). Although Maori often have low socio-economic status, when this factor is controlled for differences in performance remain which may be attributed to cultural factors (Forbes,

Blithe, Clark, & Robinson, 1990; Garden, 1984). When compared to almost all other groups (except Pacific Island students), Maori girls have the lowest achievement in mathematics (Forbes, 1992; Forbes & Mako, 1993). We need to be aware that many women have a number of factors of disadvantage impacting on their mathematics learning.

Particularly in the formative years when we are aiming not only to impart those mathematics skills needed as a base for life-long learning but also to inspire, motivate, have fun, and develop a love of mathematics, in my view it is essential that a variety of teaching activities, a broad inclusive curriculum, and a mix of assessment methods be used. Unfortunately this has not often been the case in the past. This chapter looks particularly at the one single assessment procedure which has dominated mathematics learning, the timed written test, and compares it with other procedures which may favor females more. Curriculum issues are also raised, and it is conjectured that at the interface between curriculum content and assessment these combine to doubly disadvantage females.