

CHAPTER 1

RESEARCH CONTEXT

INTRODUCTION

Determining affective outcomes for students and hosts involved in school-sponsored workplace learning is a relatively little-researched area in education and organizational settings (Côté, 1999; Stern, 1999). This study investigates affective outcomes associated with high school students' participation in school-sponsored workplace learning and the associated host workplace mentoring roles. It traces the history of the development and implementation of school-sponsored workplace learning programs and examines the rationale for their introduction, especially that of their capacity to influence students' and host mentors' affect for school learning and workplace performance respectively.

In seeking these goals, this research takes the form of a modified case study of two years of a suburban neighbourhood high school's workplace learning program hosted by a national chain of supermarkets in Tasmania, Australia. Policies addressing youth development through workplace learning and the associated education and training reforms that have facilitated school-sponsored workplace learning programs are examined, and implications for future practice and the potential for further research in the affective dimensions of school – enterprise workplace learning relationships are discussed

This research does not take account of students' paid part time work that is undertaken independently of the individual student's school (Mortimer, Shanahan & Ryu, 1994). The workplace learning that is the subject of this research was unpaid and was sponsored by the neighbourhood high school.

SCHOOL STUDENTS AND SCHOOL-SPONSORED WORKPLACE LEARNING

Since the 1980s there has been increased interest in the inclusion of school-sponsored workplace learning in school curricula in Australia and comparable industrialised Western democracies (Ainley & Fleming, 1997; Carmichael, 1992; Cole, 1981; Misko, 1998; Saunders, Stoney, Weston, Benefield, & MacDonald, 1996; Stern, 1999; Straton & Murray, 1984; Wellington, 1993b). This increased attention to school-sponsored workplace learning was identified by Wellington (1993b) as the vocational imperative for schooling.

The vocational imperative in schools

Wellington (1993b) pointed out that the vocational imperative is not new to education. Rather, what has become topical says Wellington (1993b), is the changed and changing contexts through which school-sponsored workplace learning is viewed. These contexts are six-fold and include unemployment, employment patterns and practices, economic contexts, technological change, societal changes, and the political context (Wellington, 1993b). In establishing a research context for this study, Wellington's (1993b) six contexts underpin a consideration of changed labour markets precipitated by the emergence of the contemporary globalised economy, accompanying technological change in and between workplaces, and consequent changes in social and political contexts affecting young people's education and employment opportunities.

THE GLOBALISED ECONOMY AND TECHNOLOGICAL CHANGE IN AUSTRALIA

The symbiotic relationship between globalisation and technological change leads to their discussion here in tandem. As each has influenced the other, so it has facilitated the growth of itself and the other (Maglen & Shah, 1999). Without modern technology, globalisation would be less well developed and without globalisation, the continued application and development of technology would be slowed. Across the world the gestalt effect generated by the interaction of globalisation and technological change impacts nationally but it influences local education and training institutions

particularly and, as will be discussed below, tests people's capacity to respond positively to such changes.

Globalisation as a primary influence

Globalisation is a definable entity that is characterized by increased economic interdependence between nation-states (van Liemt, 1992). Free movement of goods and services across national boundaries attends globalisation; movement that operates in deregulated economic environments that encourage international competition and direct access for foreign investors to domestic production and markets (Resnick & Wirt, 1996). In turn, this leads to maximisation of enterprises' profit opportunities through the optimisation of technological change, most notably through advances in communications and transport, so that enterprises' location near markets becomes less important, particularly if much of the enterprises' activities focus is on intangibles such as service delivery (van Liemt, 1992; Resnick & Wirt, 1996).

In high labour cost, economically well-developed countries like Australia, governments, too, play a role in facilitating globalisation. The globalisation of economic activity in Australia, beginning in the 1970s and increasing through the 1980s, was encouraged by the introduction of government policies supporting deregulation of the national economy. This was manifested by reductions in industry protection and promotion of international competitiveness, thus breaking long-standing relationships between industry location and availability of capital and labour (for a summary see Crooks, Webb, Forster & Williamson, 1996).

Where international movements of capital are facilitated by deregulation of national financial markets, the more geographically restrictive production factor is that of the location of low cost and/or appropriately skilled labour. Therefore, enterprises tend to locate near sources of labour that suit their purposes in terms of costs or skills. Sometimes this will mean locating comparatively lower skilled manufacturing processes in newly industrializing countries, where labour is relatively cheap (Resnick & Wirt, 1996; Sengenberger, 1992; van Liemt, 1992), while more

highly skilled functions related to product design, development, and marketing are located in high labour cost countries that are often the marketplace for the product (van Liemt, 1992). Moreover, the location of labour is less restricted in electronic service delivery or the production of information and knowledge, particularly where the labour force serves global markets (Resnick & Wirt, 1996), although appropriate knowledge and skill levels may become a limiting factor in achieving full relocation of such labour into newly industrializing countries.

Equally, where highly skilled labour is required for all facets of production, such as in the aircraft manufacturing industry, there will be a tendency to exploit the greater technical skills afforded by the availability of a trained workforce by locating manufacturing in high labour cost locations in more developed countries and marketing globally (van Liemt, 1992). Thus, in economically developed high labour cost countries like Australia, globalisation leads to domestic labour market opportunities that demand high levels of knowledge and skill, while low skilled labour market opportunities are exported elsewhere.

Technological change as a primary influence

In addition to the effects of globalisation outlined above, changed and changing technologies have played a role in changing domestic labour markets in economically developed countries such as Australia. Of all technological change in the latter decades of the 20th century, the one most responsible for the present restructuring of labour markets is the development and take up of microelectronics in a wide range of industries. By tracing the development of microelectronics, Jones (1982) demonstrated that microelectronics has the capacity to change production, distribution and services through ‘... an exponential rise in output together with an exponential fall in inputs... [that has]...in economic history...no remote equivalent...’ (p. 107).

The introduction of microelectronics provided no corresponding trade-off in employment opportunities such as those that have occurred in past episodes of

technological change. For example, when enclosures of land displaced agricultural workers in the 18th and 19th centuries there were compensatory employment opportunities in emerging industries in the newly industrialising towns and cities of England (Addy, 1972; Hartwell, 1972), or through the employment opportunities generated by the introduction of steam-powered railways in the 19th century (Hartwell, 1972). Correspondingly, the demise of passenger railways in the 20th century was succeeded by the introduction of aircraft and mass-produced private motor transport that again provided compensatory employment (Jones, 1982).

The application of microelectronics to computers and through them to all aspects of industry and daily life has contributed to an increase in the productivity of every worker, however (Jones, 1982). This trend has displaced workers and has reduced employment opportunities because the fall in inputs associated with the rise in productivity through the application of microelectronics has led to few similarly-skilled employment opportunities being generated elsewhere. These changed employment markets have affected young people most because there are fewer entry-level employment-related training opportunities available (Commonwealth – State Apprenticeship Committee, 1984; Commonwealth of Australia, Department of Employment and Industrial Relations, 1977; Peoples, 1998), which has led to the ‘...gradual disappearance of many low-skilled jobs and decreasing opportunities for the employment of those lacking experience or adequate training’ (Misko, 1998: 1). Moreover, not only have the numbers of available jobs decreased through technological change, but also the quality of workplace performance has changed.

In combating the lower priced finished product afforded by cheaper labour in less developed countries and the economies of scale generated by longer production runs for global markets, enterprises in developed countries are seeking low-volume, high-return niche markets in economically developed countries based on ‘...quality and flexibility...the use of brand names and good after-sales service...’ (van Liemt, 1992: 458). This has led to the transformation of mass production into batch production of high quality goods and services that demands adaptable and multi-

skilled personnel. Thus, Australian enterprises have responded to competition from lower labour cost countries' enterprises by demanding higher levels of knowledge and skill from their domestic labour supply. Often this takes the form of value adding through multi-tasking and multi-skilling (Sengenberger, 1992; Holland & Dowling, 1998) that requires high levels of commitment to learning by workers.

Employee adaptability now influences enterprises' employment practices in high cost labour countries like Australia (Bamber, 1990; van Liemt, 1992; Misko, 1998; Sengenberger, 1992). To succeed in this new economic environment, enterprises have integrated the requirements for worker adaptability and multi-skilling into a changed personnel structure that maximises the enterprise's market responsiveness: the flexible firm (Atkinson, 1984).

THE FLEXIBLE FIRM

Atkinson's (1984) model of the flexible firm's organizational structure consists of a core of permanent, multi-skilled employees surrounded by a peripheral group of temporary employees. The core group drives the organization through its product and/or service design, development, and marketing functions. Core group employees' job security is determined by performance appraisal aligned to the core business. To meet labour demand peaks and/or changes in production, or to meet increased or new market demand, core group employees are supported by a peripheral workforce of temporary and contract labour. Peripheral employees' job security is determined by their product or service delivery to specification for a contracted fee with bonuses for delivery on time and penalties for late delivery (Atkinson, 1984). As contractors, employees in the peripheral group carry the responsibilities for the provision of their non-work costs such as training, holidays and sick leave (O'Connor, 1994a).

Peripheral employees may be skilled or unskilled (Maglen & Shah, 1999), and may themselves occupy core employment positions of the peripheral labour providers' organizations (van Liemt, 1992), but the defining feature of peripheral

employment is that of numerical flexibility. Peripheral employees are hired for specific purposes and then laid off when the production and/or service delivery objectives are met. Thus, contemporary core (full-time, permanent) employment opportunities emerge for skilled and experienced workers who are able to demonstrate a capacity to benefit from additional and/or complementary training, whilst those with limited capacity to participate in the core group are relegated to the periphery. Multi-skilling and flexible personnel organization has been adopted in Australia and elsewhere with considerable commercial success (Alexander, 1992; Das & Elango, 1995; Holland & Dowling, 1998; Sengenberger, 1992). Some examples are discussed below.

Personnel restructuring and reduced employment

Alexander's (1992) historical study of the Pasminco Metals electrolytic zinc smelter at Risdon near Hobart, Tasmania, provides an example of workforce restructuring rooted in the socio-demographic context of this study. During the 1980s, management restructured its personnel organization into core and peripheral labour structures consistent with Atkinson's (1984) model of the flexible firm. The net effect was that employment declined from 2,072 people in 1982 to 1,426 by 1990, while at the same time achieving a record production of 205,463 tonnes of zinc in 1990-1991 (Alexander, 1992).

Multi-skilling and reduced employment

Reorganization of personnel and multi-skilling were used to reform work practices at the formerly government owned Williamstown Naval Dockyard in Victoria, Australia. Privatisation in 1988 resulted in the adoption of multi-skilling that achieved an 800% improvement in productivity (Holland & Dowling, 1998). Inherent in this reform was the implementation of peripherally employed contract labour to meet fluctuations in labour demand (Holland & Dowling, 1998).

Labour hiring, shedding, and sharing

In the United States the motor vehicle manufacturer, Toyota, utilised the flexible firm model of personnel organization (Atkinson, 1984) by operating with a permanent core group of workers and a peripheral group of workers who were hired to meet peak labour demands and were laid off immediately the demand was satisfied (Das & Elango, 1995). Some other Japanese motor vehicle manufacturing enterprises used variants of Atkinson's (1984) model to meet increased labour demand and optimise idle labour through strategic alliances with other manufacturers. For instance, Honda employed short-term labour temporarily surplus to that of its competitor, Isuzu, to meet peaks in labour demand for its truck production facility. In another version of the application of Atkinson's (1984) model the electrical/electronics appliance manufacturer, Sony, transferred labour between its widely varied product lines, thus maintaining a competitive response to fluctuations of market demand for various products (Das & Elango, 1995).

The flexible firm and labour market implications for young people

The evidence above presents examples of several permutations of the application of Atkinson's (1984) model of the flexible firm, but the underlying employment trends are clear. Core employment requires high levels of self-motivation and workplace performance to maintain permanent status and, despite their temporary employment status, peripheral employees need similar levels of commitment to be re-hired and secure continuing employment.

The commercial success of Atkinson's (1984) model of the flexible firm suggests that will not be abandoned in the immediate future. The desire to establish these quantitative and qualitative changes in workplace personnel has implications for employment, education and training throughout the Australian labour market. Compellingly, the more flexible globalised employment regime carries significant implications for individuals. This is evident in the light of van Liemt's (1992) advice to the globalised worker:

To the individual worker the message is clear: keep investing in yourself, through regular training and retraining and encouraging others (your employer, the government) to provide you with the opportunity to do so. This increases your value to the firm where you are currently employed, enhancing your chances of remaining in or qualifying for the core workplace (p.466).

Moreover, globalised employment environments characterized by de-regulation and de-unionisation (O'Connor, 1994a) call for self-motivation in learning and highlight the need for workers to drive their learning in the workplace:

Thus, the new 'freedoms' and flexibilities offered under many of these arrangements is for many sections of the workforce to experience the 'flexibility' of weakened bargaining positions, lower wages, less but staggered hours of work, less work-related benefits, less job security, fewer career options and fewer opportunities to access education and training.... The new freedoms may not provide these workers with a secure, well paid job or employment-related training, but it certainly provides the 'right' to them, and requires that they actively seek out these opportunities (O'Connor, 1994a: 17).

Therefore, unlike their predecessors, young people entering employment and/or training in the globalised labour market need high levels of self-motivation that will carry them through a lifetime of self-initiated and self-managed learning. The reality of these claims is evident in Australian youth labour market trends over the last 30 years.

AUSTRALIAN YOUTH LABOUR MARKET TRENDS 1960s TO 1990s

Australian youth labour market trends from the 1960s to the 1990s showed increasing youth unemployment rates and a reduction of opportunities for early school leavers to enter and/or train for skilled work. In 1966, 3.2% of 15 to 19 year-olds were unemployed, in 1976 the rate rose to 18.5% unemployed, rising again in 1986 to 19.1% unemployed, and rising finally to 20.0% by 1995 (Peoples, 1998), a six-fold increase in 30 years. The upward trend in the 1990s Australian youth labour market was paralleled by other countries in the Organization for Economic Co-operation and Development (OECD), the unweighted averages of which rose from 16.3% in 1989 to 20.75% in 1997 (Bowers, Sonnet & Bardone, 1999). The rises in Australian youth unemployment were not evenly distributed across all industry sectors, however, and

the Australian youth labour market exhibited pockets of high and low employment for young people (Jamrozik, 1998).

The unevenness of the Australian youth labour market as defined by the Australian Standard Classification of Occupations (ASCO) industry sectors (Australian Bureau of Statistics, 1990) grew noticeably from 1966 to 1995. Only two industry sectors nearly held their share of the Australian youth labour market from 1966 to 1995: wholesale and retail trade, and recreation and personal services. Both of these sectors marginally fell in their share of youth employment from 18.1% to 17.3% and 11.9% to 10.8% respectively (Jamrozik, 1998). The magnitude of falling employment for young people in some industry sectors that traditionally offered opportunities for training and/or skilled work was quite striking, however. In the government administration and utilities sector, employment of 15 to 19 year-olds fell 10-fold from 15.1% in 1966 to 1.5% in 1995; in the finance and business sector seven-fold from 22.7% in 1966 to 3.0% in 1995; and in the manufacturing sector by two and one-half times from 13.0% in 1966 to 5.1% in 1995 (Jamrozik, 1998).

These Australian youth labour market trends are confirmed by Maglen & Shah (1999) whose restructuring of the ASCO defined industry classifications referred to above arguably affords a better view of contemporary industry sectors. Maglen and Shah's (1999) nine-fold classification structure is based on a three-tiered primary classification system of *symbolic analytical services*, *in-person service*, and *routine production service* that is secondarily subdivided into *advanced skilled*, *intermediate skilled*, and *elementary skilled* categories, thus providing a 3 x 3 classification matrix based on service/industry type and skill level. When Maglen and Shah (1999) aligned their restructured occupational classification with ASCO-defined employment data they found that Australian young people were over-represented in lower skilled occupations.

Yet, such relegation is a relatively new phenomenon in generational terms in Australia. As school leavers in the 1960s and 1970s the parents of today's young

people leaving school at the earliest opportunity could look forward to employment and/or training opportunities, often in apprenticeships in skilled trades. In the late 1980s to the early 1990s, however, young Australians' rate of participation in apprenticeships fell, compared to international benchmarks. For example, the proportion of Australian 18 year olds in apprenticeships or similar training fell from 12.3% in 1984 to 9.7% in 1994, while at the same time the OECD average remained relatively unchanged at 8.6% in 1984 and 8.9% in 1997 (Bowers et al., 1999). Thus, Australian rates of youth training by some form of apprenticeship fell from well above the OECD average to only marginally above it in a 10-year period. The effect of removing age restrictions for beginning Australian apprentices in 1992 (National Centre for Vocational Education and Research, 2001) possibly contributed to this fall in teenage representation in Australian apprenticeships by placing school leavers in competition with mature adults for apprenticeship places. Moreover, technological change and globalisation has contributed quantitatively and qualitatively to the reduction in young people's employment and/or training opportunities. Several examples are discussed below.

Reductions in training opportunities in the printing industry

Despite its temporal location beyond the recent past, the swift uptake of microelectronics from 1976 to 1983 in the Australian printing industry provides an example of reduced employment-related training opportunities associated with technological change. This industry was selected as an example of reduced employment-related education and/or training opportunities because its structural changes were substantially complete by 1983, thus isolating their effects from the confounding influences of the reformation of the Australian apprenticeship training system heralded by the Kirby Report in 1984 (Hermann, 1985). Thus, technological change can be assumed primarily responsible for these reductions in employment and training opportunities.

Employment displacement caused by technological change in the printing industry affected established workers and young people's entry-level employment

and/or training opportunities. In the Australian printing industry in 1976, there were 84 apprenticeship trades approved by the Australian Apprenticeship Advisory Committee (Commonwealth of Australia, Department of Employment and Industrial Relations, 1977) and, by the close of 1983, this number had fallen to 37 trades (Commonwealth – State Apprenticeship Committee, 1984).

In 1983, the Printing and Kindred Industries Union in Australia noted that ‘...the major impact of technological change has been to erode skilled employment opportunities in the industry in areas such as composition and platemaking’ (Australian Science and Technology Council, 1983: 156). The Union noted that their membership numbers fell by 13.5% from 59,159 in 1974 to 51,174 in 1980 (Australian Science and Technology Council, 1983). The Australian Science and Technology Council (1983) forecast that for the next decade (1984-1993), the printing industry would see a continuing decline in its workforce and traditional skill level, although it noted that there would be offsets accruing from increased output and re-training. It was thought likely, however, that these training strategies would benefit most those already in the industry (Australian Science and Technology Council, 1983). Confirmation or otherwise of these predictions is not included here because of the confounding effects of apprenticeship and training reform in Australia from 1984 onwards (Hermann, 1985; National Centre for Vocational Education Research, 2001).

Thus, by the mid 1980s the printing industry stood as an example of the increased productivity afforded by the implementation of new technology reducing or limiting opportunities for young people to enter the industry for employment and/or training. Moreover, political policies related to globalisation and technological change also contributed to the reduction in youth employment and training opportunities in government agencies.

Reduced youth training in Australian federal and state government agencies

Government agencies' outsourcing and privatisation arising from globalisation has led to fewer employment-related training opportunities for young people in government agencies (Peoples, 1998). As outlined above, Jamrozik (1998) reported that Australian federal and state governments reduced their share of youth employment 10-fold between 1966 and 1995.

Lundberg (1998), however, pointed out that the fall in traditional apprenticeships in industries such as manufacturing have been offset to some extent by an increase in traineeships in service industries such as retailing where no training had been available previously. Nevertheless, the effects of these initiatives had minimally affected overall youth employment rates by the late 1990s (Maglen & Shah, 1999; Peoples, 1998).

Qualitative changes in labour market demands due to technological change

Even when young people find employment and/or training in industry it is likely that the traditionally performed tasks have changed qualitatively from essentially manual tasks involving hand to eye co-ordination to cognitively demanding tasks involving higher levels of abstraction through the manipulation of symbols (Brown, 1999). Composition in the printing industry is one example (Australian Science and Technology Council, 1983). Likewise, in manufacturing industries computerisation has led to many industrial machining processes being computer numerically controlled (CNC) (OECD, 1994). Consequently, where once a machinist would bring together cutting and/or abrading tools and work pieces through physical manipulation of machine handles, hand wheels, and levers, the CNC machine automatically carries out those functions after being programmed remotely by the machinist. Thus, the machinist is required to manipulate skilfully abstract symbols in Cartesian space *before* the machining process to ensure that the CNC machining is carried out successfully. CNC machining removes the direct sensory feedback that allows the machinist to vary the process appropriately *during* the machining process. Using CNC technology, the machinist stands disengaged and in a more abstract relationship

with the machine. The ability to conceptualise symbolically in Cartesian space and operate machines *through and with* a computerised system has become a more valued work skill than working through and with the traditional combination of procedural knowledge and hand to eye co-ordination.

AUSTRALIAN POLITICAL RESPONSES TO CHANGED YOUTH LABOUR MARKETS

From the 1980s there were attempts to address growing youth unemployment through numerous Australian federal- and state-sponsored training and labour market programs aimed at providing employment and/or training opportunities for unemployed youth (Routley, 1984; Tasmanian Employment Summit, 1989). There was resistance, however, from some young people to take up offers of training to improve their employability.

For example, reluctance to take up training opportunities occurred in the Education Program for Unemployed Youth (EPUY) in Tasmania in 1982 (Haslem, 1982). Some reasons for young people's reluctance to enrol were found to be the complexity of enrolment procedures, inadequate bureaucratic understanding about the personal characteristics of the target group of young people, and young people's perception of social stigma associated with the public image of labour market programs. Also in the 1980s some employers expressed reservations about participating in entry-level training and labour market programs, arguing that '...the most important factor [so far as employers are concerned] is the efficiency and productivity of labour market participants and their contribution to increased rates of economic growth' (Noakes, 1985: 27). Noted as well at the same forum was the reluctance of employers to commit to contracts of employment for labour market programs (Polites, 1985).

Nevertheless, some non-government agencies were supportive of youth training and employment initiatives, most notably the non-profit Dusseldorp Skills Forum. In 1989 the Dusseldorp Skills Forum established the Training in Retail and

Commerce (TRAC) workplace learning programs in a number of localities in New South Wales and some other states, including Tasmania (McMiken & Tower, 1994; Smith, 1994; Scharaschkin, 1995). These TRAC programs integrated senior secondary education with workplace learning in a planned, purposeful on- and off-the-job training program. Rates of completion in the range of 90% to 100% were reported for most TRAC subjects (McMiken & Tower, 1994).

There have been other successes, too, in youth labour market programs in Australia such as JOBTRAIN with a work placement; the National Skill Shortages Program; and the Australian Traineeship System (Crooks et al., 1996). All these programs resulted in 75% or more of participants being employed eight months after completion. Nevertheless, changed youth labour markets indicated that completion of post-compulsory schooling and/or training was becoming more often a requirement for young people's successful labour market participation. Accordingly, governments recognized their responsibility to prepare school students for a less certain future, particularly those from low socio-economic status (SES) backgrounds.

In Tasmania, for example, the Department of Education, Community and Cultural Development's (1996) *Towards the future...?* policy document predicted that while '...the students in government schools will increasingly be from impoverished socio-economic circumstances...' (Tasmania, Department of Education, Community and Cultural Development, 1996:19) there would be an increasing emphasis on improving student motivation for learning:

Students will need to be prepared for learning throughout their lives... They will often need to be able to work independently and in a self-directed way. Students' learning will need to be more self-regulated and self-controlled. Students will need to be personally motivated and responsible for their learning... (Tasmania, Department of Education, Community and Cultural Development, 1996: 34-35).

The policy document goes on to note that students will need to value learning highly if they are to take more responsibility for their learning (Tasmania, Department of Education, Community and Cultural Development, 1996). Thus school retention is

highlighted, particularly for students in government schools from lower SES backgrounds.

School retention in Australia as a response to changed youth labour markets

Growing social and political concern about the Australian youth labour market and the associated education and training issues outlined above led to large-scale federal government intervention. In 1994, the Australian government introduced the *Working Nation* policy (Keating, 1994) that provided for programs addressing youth education, training and employment whilst young people were enrolled at school.

Through *Working Nation* Prime Minister Keating (Keating, 1994) committed the Australian federal government to promote the trend to increase school retention rates so that the majority of young people finished 12 years of education. At the same time, Keating (1994) recognised that post-compulsory education at years 11 and 12 needed to accommodate the aspirations of students not wishing to follow the traditional post-compulsory school academic pathways. The *Working Nation* policy (Keating, 1994) envisaged that vocational education would play a role in achieving increased school retention rates for less academically inclined students and that their involvement in vocational education and training (VET) in schools would provide entry-level training opportunities.

Accordingly, *Working Nation* (Keating, 1994) built on and carried forward the work of the Kirby Report (Hermann, 1985), and the Carmichael Report (1992) in relation to training reforms and youth labour market related education. These measures were broad brushstrokes, however, and did little to engage a minority group of students whose relatively low school achievements placed them at-risk of not completing post-compulsory education and/or training (Anwyl, 1995). There were signs that *Working Nation* had failed to penetrate to the lower levels of socio-economic strata where young people most at-risk of not completing school or gaining employment and/or training were located. In 1998, four years after the introduction of *Working Nation*, the Tasmanian Education Council observed that ‘VET programs

are not noticeably having an impact on those students who are at-risk of [secondary] college drop out' (Tasmanian Education Council, 1998: 11). In the Australian context, this lack of retention at post-compulsory levels of schooling was not unique to Tasmania, however. Figures 1.1 and 1.2 summarise school retention rates for government schools and colleges in Tasmania and Australia over the five years 1994 to 1998.

Figure 1.1. Apparent school retention rates years 10-11

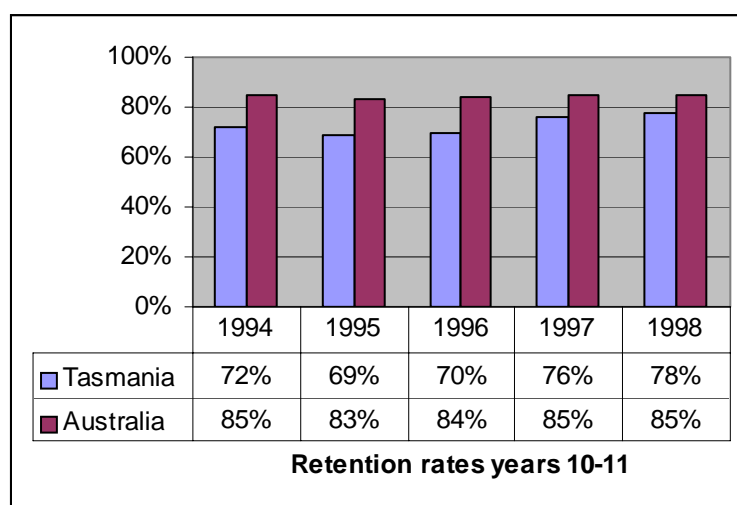
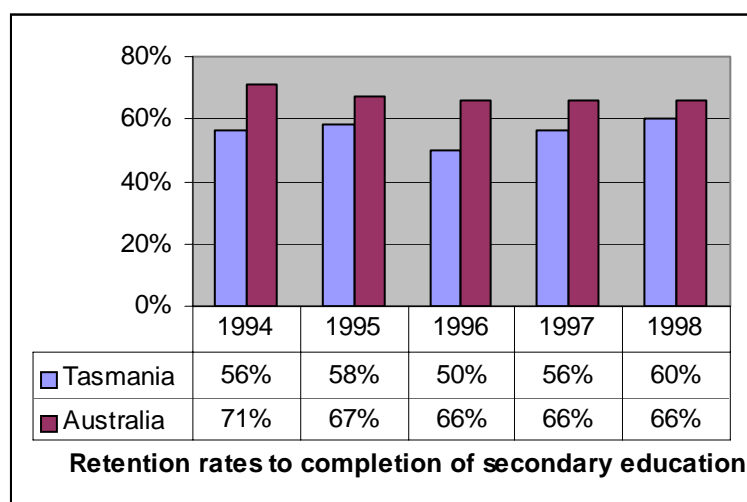


Figure 1.2. Apparent school retention rates to secondary education completion



Each figure depicts retention rates at one of two stages of post-compulsory education: the initial transition from year 10 to year 11 (Figure 1.1) and the completion of post-compulsory secondary education (Figure 1.2) (Tasmania, Department of Education, Community and Cultural Development, 1997a; Tasmania, Department of Education, Training, Community and Cultural Development, 1998a; Tasmania, Department of Education, 1999a).

Figure 1.1 shows an overall retention rate from years 10 to 11 in the range of 70% to 85% for the period 1994 to 1998. A generally lower rate of retention for Tasmanian school students is evident, revealing a lower take-up of schooling beyond the compulsory years. From 1995, however, there was a steady improvement in Tasmanian retention rates and, when compared to the generally uniform retention rate for the rest of Australia, the difference in retention rates narrowed from 14 percentage points in 1995 to seven percentage points in 1998.

Figure 1.2 shows that retention rates to the completion of post-compulsory secondary education fell into a range between 50% to 71% for the period 1994 to 1998, a reduction of 14 to 20 percentage points from that achieved at the transition from years 10 to 11. Notably, the differences between Tasmania and the rest of Australia narrowed from 16 percentage points in 1996 to six percentage points in 1998, but there is a generally downwards trend in both jurisdictions. Thus, notwithstanding the absolute and relative improvements in school retention by Tasmanian government schools and colleges, about one-half to two-thirds of students in both jurisdictions completed secondary schooling to year 12 in the period 1994 to 1998. Consequently, despite government intervention and encouragement, one-third to one-half of students continued to leave school at some stage before the completion of their secondary education. Why does this happen?

Why school drop out occurs

The reduction in the Australian school retention rates to the completion of post-compulsory secondary education may be attributable to increased employment and/or

training opportunities, argues Lundberg (1998). Lewis and Koshy (1999) support this view, noting that the youth employment market determines school participation rates in Australia: the more jobs there are available for young people the less likely it is that they will stay in school beyond the compulsory school leaving age. Moreover, reduced school retention rates may be due to students' enrolment as apprentices or other forms of post-compulsory education or training at other educational institutions such as Technical and Further Education (TAFE) colleges or other training providers that are not included as retention in full-time schooling (Lamb, 1998).

Participation in apprenticeship should be acknowledged in this context, despite the overall declines in rates of retention to the completion of post-compulsory schooling noted above. In Australia, apprenticeships can be commenced from approximately 15 years of age, well before the usual age for completion of post-compulsory education at age 18 years (National Centre for Vocational Education Research, 2001). Australia tends to have a higher proportion of its young people in apprenticeship than other member countries of the Organization for Economic Co-operation and Development (OECD) and, apart from the Germanic-speaking countries, apprenticeship occurs more commonly in Australia than elsewhere (Ray, 2001). Bowers, et al. (1999) reported that 9.7% of Australian 18 year olds were in apprenticeships in 1997, compared to the OECD unweighted average of 8.9%. Despite these encouraging signs, however, these figures are of insufficient magnitude to explain the fall in school retention rates noted in Figure 1.2.

McDonald, Brownlee and Greenblat's (1994) research found that the two most frequently cited reasons for 15 to 19 year olds' lack of participation in education and training were '...a desire to start earning money (82%) and a lack of interest in schooling (75%)...' (p.33). In relation to the attraction of employment, this finding tends to support Lewis and Koshy's (1999) and Lundberg's (1998) arguments noted above. In the labour market conditions described above, however, early school leaving without further participation in education and/or training is unwise. Australian research shows that early school leaving results in increased chances of

being unemployed, lower earnings, and reduced job satisfaction (Marks & Fleming, 1999). It is the latter reason, ‘...a lack of interest in schooling...’ (McDonald et al., 1994: 33) that may provide information about students’ early school leaving and clues for action that can assist them in completing post-compulsory education and/or training.

Which students leave school early

Socio-economic status (SES) is implicated in predictions of which students will leave school early and which students will complete 12 years’ schooling. In Australia, there is a positive relationship between high SES and completion of 12 years of schooling (Commonwealth of Australia, Department of Employment, Education and Training, 1987). Australian students from higher SES backgrounds complete 12 years of education ‘...at about twice the rate...’ (Commonwealth of Australia, Department of Employment, Education and Training, 1987: 22) of students from lower SES backgrounds. This trend was confirmed in later research by Marks and Fleming (1999) who found that where school achievement was controlled, low SES students from ‘...less educated backgrounds are significantly likely to leave school early’ (p. 26). Correspondingly, McDonald et al. (1994) reported a significant relationship between low participation in education by 15 to 19 year-olds and their parents’ lower educational achievement and higher rates of unemployment. These findings support those of Anwyl (1995) and the Tasmanian Education Council’s (1998) observation noted above.

Low interest in schooling tends to mark low SES early school leavers for future difficulty in accessing further education and/training opportunities. McDonald et al. (1994) found that ‘...young people who later had low participation in education and training [after leaving school early] are those who, at school, were unlikely to be interested in school work, did not perform well, and were often in trouble’ (p. 33). Later research by Barry and Plecha (1999) in a post-secondary college setting found evidence that a majority of non-completing students (70%) were failure-orientated, suggesting that ‘...one way to “avoid” failure is to leave the setting where failure

occurs' (p. 6). Thus, it is apparent that action to encourage students' continued participation in school will circumvent later failure, and needs to take place at the school level. Whilst little can be done to counter students' desire for earning money in keeping them in school, perhaps the development of an interest in schooling may offer greater chances of success.

*STUDENTS' INTEREST IN SCHOOLING, SCHOOL ACHIEVEMENT, AND
SCHOOL RETENTION*

Discussion about interest in schooling is fraught with interpretive emphases about the term *interest* and its exhibition by learners. Its meaning is entangled in a semantic minefield of argument as to its relationship with intrinsic motivation (Deci, Vallerand, Pelletier & Ryan, 1991; Schiefele, 1991). Schiefele (1991) criticises shallow interpretations of interest in schooling, saying that '...it seems as if interest is nothing more than the lay term for intrinsic motivation' (p. 299). Schiefele (1991) perceives interest as being '...the relatively long-term orientation of an individual toward a type of object, an activity, or an area of knowledge' (p. 302), although he concedes that: 'General motivational orientations and specific interests are not mutually exclusive...' (p.304). Substantially though, Schiefele (1991) sees the synonymous relationship between interest and intrinsic motivation as too limiting and claims that '...intrinsic motivation research does not capture all of the essential aspects of interest' (Schiefele, 1991: 299).

Alternatively, Deci et al. (1991) link interest to motivation in self-determination theory. Their standpoint takes no account of Schiefele's (1991) criticism. Deci et al. (1991) say that 'Intrinsically motivated behaviors [*sic*] are engaged in for their own sake – for the pleasure and satisfaction derived from their performance. When intrinsically motivated, people engage in activities that interest them...' (p. 328). In their meta-analysis, (Deci et al., 1991) cite extensive research supporting self-determination theory based on this premise. Therefore, to progress this discussion, research evidence from both viewpoints relating interest and/or intrinsic motivation with students' higher achievement at school is acknowledged.

Studies by Schiefele (1991), and Schiefele and Csikszentmihalyi (1995), provide evidence about the effects of interest on achievement. In the following summaries, each study focused specifically on one learning area. Schiefele's (1991) study focused on the link between high- and low-interest affective states related to students' responses to text learning materials and Schiefele's and Csikszentmihalyi's (1995) study focused on interest and achievement in learning related to mathematics. Schiefele (1991) found that '...interest exerts greater influence at deeper levels of comprehension' (p. 306) and that: 'Interest correlated most strongly with use of elaboration and information-seeking strategies. It also exhibited a moderate relation to critical thinking' (p. 311). Schiefele and Csikszentmihalyi (1995) reported that in relation to learning in mathematics '...for 9th or 10th grade students interest is a better predictor of achievement than achievement is of interest' (p. 178). This observation lends support to Marks and Fleming's (1999) findings which imply the relative importance of interest compared to achievement in schooling as a determining factor in school retention.

In their meta-analysis of motivation and school achievement based on self-determination theory, Deci et al. (1991) concluded that

...students who are intrinsically motivated for doing schoolwork and who have developed more autonomous regulatory styles are more likely to stay in school, to achieve, to evidence conceptual understanding, and to be well adjusted than are students with less self-determined types of motivation (p. 332).

Thus, although coming from different standpoints in relation to interest and intrinsic motivation, these studies from Marks and Fleming (1999), Schiefele (1991), Schiefele and Csikszentmihalyi (1995), and Deci et al. (1991) converge on a single point: interested students will stay in school and achieve better than students who are not so interested in school learning. Therefore, it is reasonable to argue that interest and/or intrinsic motivation for school learning is predictive of achievement in school learning. Thus, a simple response to these findings would be to promote interest in schooling as a means of raising achievement and thereby increase school retention,

particularly for those whose interest in school has waned and are at-risk of not completing post-compulsory education and/or employment-related training.

Such is the goal of much research (e.g., Hektner & Csikszentmihalyi, 1996). This goal, however, is difficult to attain. Hektner and Csikszentmihalyi (1996) noted that ‘...research has shown that adolescents are typically not intrinsically motivated to do school work’ (p.4). This lack of motivation can be deeply rooted in students’ upbringing experiences and action at the school level may be influenced by factors such as the home environment. For example, Gottfried, Fleming and Gottfried (1998) found that a ‘...cognitively stimulating home environment [positively] impacts subsequent academic intrinsic motivation from childhood through early adolescence [ages 9 through 13]’ (pp. 1456-1457), regardless of SES. However, as reported by Marks and Fleming (1999) and McDonald et al. (1994) above, higher rates of early school leaving amongst low SES student groups at later stages of adolescence is either related to low school achievement (McDonald et al., 1994) or is not (Marks & Fleming, 1999), with the common factor for early school leaving being low SES.

Socio-economic disadvantage, educational disadvantage, and early school leaving

Although the concepts of socio-economic disadvantage, educational disadvantage, and being at-risk of early school leaving are well represented in the literature, their precision in describing particular phenomena in education is challenged. Placier’s (1994) meta-analysis contested the linguistic assumptions that drive educational policy action in relation to socio-economic disadvantage and educational disadvantage. Placier (1994) claimed that such terms are stigmatising exercises by the dominant culture comprised of those who are *not* disadvantaged socioeconomically or educationally over a subgroup that *is* perceived as such. Further, said Placier (1994), policy action in this area of education is authenticated by a parade of stigmatising labels coming into and falling out of favour since the 1960s. However, consistent with the semantic difficulties surrounding the concepts of interest and intrinsic motivation, Placier’s (1994) interpretations are acknowledged but laid aside.

Alternatively, the widespread acceptance of the adequacy of terms objected to by Placier (1994) in the language necessary for action in this aspect of schooling is accepted. For example, Borman and D'Agostino's (1996) meta-analysis of 17 evaluative studies of programs for '...low achieving students from schools with concentrations of poverty' (p. 309) over the 30 years from 1965 found that such labelling enabled the identification of and subsequent action for socio-economically disadvantaged groups and their success in arresting declining student achievement. Ainley, Graetz, Long, & Batten (1995) corroborate Borman and D'Agostino's (1996) identification of the link between low student achievement and poverty. In the Australian context Ainley et al. (1995) accepted that '...low socio-economic status is associated with educational disadvantage' (p. 1). Ainley et al. (1995) identified several socio-economic factors that point towards educational disadvantage. These include: unemployment; single-parent families; low occupational status; family size; low parental education; low family income; status as a welfare pension recipient and health benefits card holder, Aboriginal and Torres Strait Islander descent; geographical isolation; family dislocation; abuse; homelessness; and truancy.

In this study, particular interest was taken in the definition of at-risk behaviours being those indicating students who are likely to leave school and/or further education and training early (Florian, 1997) or fail to gain adequate preparation for employment (Coleman & Hoffer, 1987; West, 1991). In these contexts, Irving (1993) succinctly defined at-risk students as '...those who are failing to respond to the traditionally delivered curriculum in a mainstream setting' (p. 8). Irving's (1993) 'failing to respond' leads to at-risk students experiencing low school achievement (Caldas & Bankston, 1997; Ekstrom, Goertz, & Rock, 1988; Wehlage, 1989; West, 1991) leading to their alienation from and disaffection with school (Anderson & Keith, 1997). Reasons for at-risk students' '...failing to respond...' (Irving, 1993:8) are manifold, but some can be attributed to the social and emotional contexts of students' out of school lives. At-risk students can be influenced by

several factors in their lives that impinge on their school achievement almost all of which can be linked to low SES.

Among these factors, West (1991) noted that low SES family characteristics exhibited by at-risk students include the lack of financial and physical resources to provide opportunities for cultural experiences that often relate to success in the traditional school program. Consequently, perceptions arise of irrelevancy in school studies that lead to a lack of motivation to achieve in school activities. Low motivation contributes to students' high rates of absence from school or truanting, thus often limiting at-risk students' school performance at one or more years behind the grade level and often results in an inability to set definite educational goals (West, 1991). Many of these factors are included in Ainley et al.'s (1995) compilation of socio-economic factors pointing to educational disadvantage cited above and were present in McDonald et al.'s (1994) empirical study cited above. These at-risk factors carry important implications for these students' educational achievements and subsequent life chances.

Individual and social implications for socio-economically disadvantaged students

Alienation and disaffection with school emanating from the factors identified by Ainley et al. (1995), McDonald et al. (1994) and West (1991) mark low SES students as among those most likely to leave school early and, as established above, join the ranks of the young unemployed aged 15 to 19 years. Moreover, socio-economically disadvantaged students' lack of achievement at school does not fit them as attractive candidates for employment-related training in a contracting youth labour market that is seeking evidence of potential for learning for effective workforce participation. Furthermore, as the at-risk characteristics outlined above (West, 1991) imply, socio-economically disadvantaged students sometimes fail to honour commitments because of their lack of planning and personal organization (Catrone & Sadler, 1984) and this is likely to extend to their employment and employment-related training.

Thus, socio-economically disadvantaged students have difficulty in establishing themselves independently in the community after leaving school.

Freeland (1999) determined that of the Australian 15 to 19 year-old cohort in 1998

...some 5.5 per cent of 15 to 17 year olds are 'at grave risk', and a further two per cent are 'at some risk'; while some 14 per cent of 18 and 19 year olds are 'at grave risk', and a further 9.5 per cent are 'at some risk' in the transition to adulthood (p. 15).

Therefore, individually and socially, the needs of at-risk students will impinge, over time, on the well-being of their communities. Given the importance of self-motivation for learning and consequent access to employment in flexibly staffed organizations (Atkinson, 1984), corrective action aimed at increasing young people's interest and participation in education and/or training is crucial if the social cohesion of democratic political systems is to be maintained (Williams, 2004).

SYSTEMIC AND SCHOOL-LEVEL RESPONSES TO STUDENTS AT-RISK

Schools can attempt to address some of the factors contributing to the at-risk profile described above, but need to be aware of the impact of some responses on the longer-term welfare of at-risk students. For example, one response schools make to at-risk students is to suspend those whose presence in the school is endangering or jeopardizing others' rights to safety and access to teaching and learning. Whilst the safety and rights of others must be respected, care needs to be taken with this action, however, as suspension can sometimes harden alienated and disaffected students' attitudes to school and can lead to escalation of their anti-social behaviour in other contexts with consequent impacts on the juvenile justice system (Irving, 1993; Western Australia, Education Department, 1984). Thus, it is important that schools address the needs of at-risk students before they drop out by encouraging them to stay at school and improve their interest for school learning. To achieve this and maintain at-risk students at school requires some sophisticated responses from the school system and its host communities (Cumming, 1998), although some have argued that differentiation of curricula to address the needs of at-risk students is counterproductive.

Anderson and Keith (1997) reported research indicating that increased academic coursework was effective in overcoming educational disadvantage, supporting Coyle-Williams' (1989) earlier argument that school reforms for non-college bound disadvantaged youth in the United States had not benefited them. These reforms had resulted in a focus on '...remedial, general, or basic level' (Coyle-Williams, 1989: 4) curricula that served to increase the pressure to drop out. However, Coyle-Williams (1989) advocated integration of academic and vocational course work to keep disadvantaged youth challenged and in education.

Thus, academically and vocationally-integrated education may provide alternative learning environments with potential to improve low SES students' school participation. The importance of alternative learning environments for low SES students is particularly evident where schools enrol them in high proportions. Research has found that high proportions of low SES students inadvertently foster a negative peer effect in their school learning environments that limits their attainment of positive educational outcomes (Caldas & Bankston, 1997). Moreover, Dowson and McInerney (1998) found that for low SES students the learning environment is important in establishing an interest in school learning:

...the academic motivation of students from low SES backgrounds may be more responsive to characteristics of their schooling environment than is the case for students from medium or high SES backgrounds' (p.18).

Recognition of the importance of favourable learning environments for low SES students may lead to an alternative approach for engaging them, an approach that will capture students' interest through negotiated alternative curricula that align more closely with their interests and abilities in ways that are socially and vocationally relevant (Irving, 1993). In so doing, schools come to more actively take account of students' affective development as a key to promoting their overall development (e.g., Hektner & Csikszentmihalyi, 1996).

One way of engaging students' interest through socially and vocationally relevant programs is workplace learning. By establishing learning environments off-

campus (Hoyt, 1978), low SES students exhibiting apparently low levels of interest and achievement can be exposed to different social contexts for learning (Stasz & Kaganoff, 1998), thus minimising negative peer interaction in the school culture (Caldas & Bankston, 1997; Dowson & McInerney, 1998). Also influencing this response is the precedent presented by the large number of school-sponsored workplace learning programs that have been used elsewhere as interventions to improve students' motivation and interest in learning (Ainley, 1996; Hayward & Tallmadge, 1995; Saunders et al., 1996; Wellington, 1993b).

In this regard, it is students' inclusiveness in, and engagement with, schooling that is important, not whether it is located on or off campus (Fullarton, 2002). Ainley (1996) makes the case for school inclusiveness being achieved through adopting school-sponsored workplace learning programs:

The basis of liberal democratic values is related to the academic culture. We cannot control the institutional framework that surrounds this culture and we need to recognise that it has its consequence in the form of academic failure. There are further and sustained consequences of this failure for individuals. Programs that can reduce failure need to be explored (p. 23).

Here, Ainley (1996) counsels for curriculum intervention as a means of promoting success for students whose academic performances are dogged by failure and whose '...further and sustained consequences...' (Ainley, 1996: 23) manifest themselves as frustration played out in lowered morale and diminishing motivation to do well at school. Ainley (1996) identifies school-sponsored workplace learning as one such intervention. Moreover, early curriculum intervention is desirable (Meyer, Harootunian, & Williams, 1991), particularly while '...students have some formal engagement with the education system, preferably school, but where applicable, TAFE [Technical and Further Education] or in a community setting' (Anwyl, 1995: 6).

Anwyl's (1995) call to intervene at the school level is supported by Tomlinson (1997) and Cumming (1998). Tomlinson (1997) noted that teachers were '...well aware that some students had become disaffected by 14 [years of age], and

could be motivated by job-related courses' (p. 81). Cumming (1998) reported views that

...for some students – especially those deemed to be “at-risk” – years 9 and 10 often constituted a last chance to gain unrestricted access to essential knowledge and skills that would equip them for their adult lives (p. 35).

Therefore, action is required to maintain at-risk students in compulsory schooling so that they have access to ‘...meaningful and productive learning experience’ (Cumming, 1998: 35), and through that the development of an interest in school learning.

In this study, implementation of a curriculum intervention took Ainley’s (1996), Tomlinson’s (1997), and Cumming’s (1998) cues. It aimed to align more closely with students’ interests and abilities (Irving, 1993) by developing job-related courses (Tomlinson, 1997) through a workplace learning partnership with industry. This study took account of similar school-sponsored workplace learning initiatives elsewhere: school Compacts in the United States and the United Kingdom (Saunders et al.; 1996 Wellington, 1993a); Career Academies in the United States (Hayward & Tallmadge, 1995; Kemple, 1997) and the reformed vocational education and training curricula for Australian senior secondary schools established through the Carmichael Report (1992). Accordingly, the following research question guided investigation in this aspect of the study:

Research Question 1: Does participation in school-sponsored workplace learning improve socio-economically disadvantaged high school students' motivation for school learning?

Thus, the research context for this aspect of the study was established through a partnership between a high school enrolling students of compulsory school age and a national chain of supermarkets, both operating in the state of Tasmania, Australia. This partnership entailed students from high school being placed for one day per week for 10 weeks in the host supermarkets and the host enterprise’s training college

for training in the vocationally orientated enterprise-based Certificate I in Retail (Sales and Service) Skills.

The subject school and its demographic context

Blue Gum High School in Tasmania was the subject school and unit of analysis for research into the affective outcomes for school students involved in school-sponsored workplace learning. It is a government high school for junior secondary students aged 12 to 16 years compulsorily enrolled in grades 7 to 10 in the state of Tasmania, Australia. It is located in Stringy Bark Municipality on the urban fringe of one of the state's four cities. Blue Gum High draws its students from a nominal catchment comprising a mix of suburban, town and rural localities that are predominantly situated within Stringy Bark Municipality.

At the 1996 Australian census, 15,236 persons lived in the school's nominal catchment. Of these, approximately 81.85% (12,471 persons) lived in Stringy Bark Municipality and 18.15% (2,765 persons) lived in neighbouring places (Australian Bureau of Statistics, 1998). The population distribution is not uniformly dispersed across this area, however. There were concentrations of population, most notably in Stringy Bark Municipality where two public housing communities accounted for 48.90% (7,451 persons) of the nominal catchment population of 15,236 persons and 59.75% of the String Bark Municipality's population of 12,471 persons (Australian Bureau of Statistics, 1998).

Blue Gum High School opened in 1975 to provide comprehensive junior secondary schooling grades 7 to 10 (ages 12 to 16 years old) for students from the two public housing communities mentioned above and neighbouring places in the nominal catchment area. The researcher was a member of the school's foundation staff. It is an emphatically inclusive school and seeks to involve all students in school learning. Consequently, it conducts and maintains facilities and programs for its students that extend beyond the normal curriculum offerings in high schools, including a school farm (Garth, 1998).

Action aimed at addressing educational disadvantage at Blue Gum High School began quite early in the school's life. In 1979, the school was the focus of a major curriculum intervention intended to address the needs of its students when a group of grade 9 students' year-long curriculum centred on planning, building and selling a house (Docker, 1980). Low SES was already a significant factor in the school's educative role, and Docker (1980) observed the influence of a negative peer effect on students' achievements that has since been verified in low SES schools elsewhere (Caldas & Bankston, 1997).

At the completion of the house project, Docker (1980) noted that students involved in the project exhibited changed attitudes to school learning and made statistically significant improvements in their levels of numeracy development. Although Docker (1980) did not specify the nature of the attitudinal changes, he attributed these changes to '...the ability of pupils to see that their efforts and their learning were part of a real undertaking; [and that there was] a reasonably good chance of success – at least they sensed that there were no expectations of failure...' (p. 24). Hence, Docker (1980) saw that the learning focus provided by the house project overcame the limitations of the traditional subjects-based secondary curriculum's fragmentation and consequent lack of coherence, noting that:

From the point of view of low achievers, it could be argued that they are exposed to a series of fragments which are hardly representative of any real body of knowledge and from which often no sensible, overall pattern is apparent (Docker, 1980: 23).

Although no further curriculum interventions on such a scale are documented, educational disadvantage was acknowledged at Blue Gum High in 1998. Teachers' and students' personal relationships were nurtured through an extensive pastoral care and peer support system aimed at ameliorating the effect of low SES on students' school motivation and achievement (Garth, 1998). As will be shown below, students' low SES backgrounds noted by Docker (1980) had persisted through to the 1990s. The majority of the school's student population was from socio-economically disadvantaged neighbourhoods, and this socio-economic disadvantage was associated

with educational disadvantage (Ainley, et al., 1995). The interrelationship between these factors of socio-economic disadvantage, educational disadvantage and the at-risk status of Blue Gum High School's students is developed below.

Socio-demographic characteristics of Blue Gum High's nominal catchment

The several socio-economic contextual factors contributing to educational disadvantage are listed above (Ainley et al., 1995). Taking employment as an indicator of socio-economic well-being through its effect on '...personal income...self-esteem...and...social standing and reputation...' (Kennedy, Wood, & Cotgrove, 1989:33), the two public housing communities comprising almost half the nominal catchment population returned well below normal employment rates at the 1996 census. Unemployment rates for these two communities was some two to three times higher than the Tasmanian average: adult unemployment was 32.9% compared to 11.0% for the state of Tasmania, while at the same time youth unemployment in the age range 15 to 24 years was 45.5% compared to 19.6% for Tasmania. (Australian Bureau of Statistics, 1998). Significantly, however, the 1996 *Census of Population and Housing Index of Relative Socio-Economic Disadvantage* for Stringy Bark Municipality was calculated at 825, the lowest in Tasmania (Australian Bureau of Statistics, 1998).

Stringy Bark Municipality's index of relative socio-economic disadvantage

The Australian Bureau of Statistics' (1998) *Index of Relative Socio-Economic Disadvantage* has a standardised mean value across Australia of 1000 and a standard deviation of 100; 95% of the Index scores lie between 800 and 1200. The Index scores are not interval measures and thus cannot be compared to earlier or future indexes. The average statistical local area (a local government area-based measure) *Index of Relative Socio-Economic Disadvantage* for Tasmania was 968 (the second lowest of all Australian states and territories). Stringy Bark Municipality's index of 825 placed it well within the lowest 10% of indexes within Tasmania (<925) and nationally (<924).

The *Index of Relative Socio-Economic Disadvantage* ‘...is derived from attributes such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations’ (Australian Bureau of Statistics, 1998:3). It provides an acceptable substitute for more intensive individual data collection on students’ SES (Ainley et al., 1995). Ainley et al. (1995) found that the correlations between individual measures of achievement and the area based *Index of Relative Socio-Economic Disadvantage* ranged from .36 to .40, which, in fact, tended ‘...to underestimate the strength of the relationship between socioeconomic status and achievement’ (p. 72). However, in the interests of less intrusive probing of the school’s families’ SES that may have yielded more information on some of the indicators of SES listed above (Ainley et al., 1995), the *Index of Socio-Economic Disadvantage* was accepted as a satisfactory criterion upon which claims for the educationally disadvantaged status of students from Blue Gum High School were based (Ainley et al., 1995).

As detailed below, several other socio-demographic indicators are used to develop this point. These include the effects of the Tasmanian government’s school zoning policy and its resultant social residualisation of the Blue Gum High School student cohort, the implementation of the Tasmanian Department of Education’s program for Maintaining At-risk Students in Secondary Schools (MARSSS) (Tasmania, Department of Education, 1999b) and the antecedent Tasmanian Department of Education and the Arts’ teacher transfer policy (Tasmania, Department of Education and the Arts, 1994).

Tasmanian government school zoning policy and educational disadvantage at Blue Gum High School

Until 1982, the Tasmanian Education Department strictly applied a zoning system for enrolling students at neighbourhood schools that tended to maintain a comprehensive social character in secondary schools. In 1982, the Tasmanian government removed zoning restrictions on school enrolments. In Hobart, *The Mercury* newspaper reported that the Tasmanian premier had announced that ‘...parents would now have

open preference [of schools], subject to vacancies at the school chosen... [and that]...the new policy would operate immediately' ("School Zoning Axed," 1982).

This reform retained nominal school catchment areas through the Tasmanian premier's assurance that '...children in the vicinity of a school would have attendance priority where vacancies occurred over children from other areas applying to attend' ("School zoning axed," 1982). By 1998, the adoption of this policy had exacerbated the concentration of students of lower SES implicit in Docker's (1980) research some 20 years earlier. Table 1.1 summarises the relative distributions of residences for students attending Blue Gum High School in 1998 (Garth, 1998). As will be shown below, implementation of the no-zoning policy tended to residualise the student cohort of Blue Gum High School through greater proportions of students from lower SES backgrounds enrolling at the school.

Table 1.1 *Places of residence for 1998 Blue Gum High School student cohort*

Students' place of residence	Proportion of students in the Blue Gum High School cohort (443 persons)
String Bark Municipality's two public housing communities	77.65% (344 persons)
Elsewhere	22.35% (99 persons)

Thus, in 1998 Blue Gum High enrolled a seemingly disproportionately high level of students from the two public housing communities, given their 48.90% share of the population distribution for the entire nominal catchment area detailed above. Larger families of high school aged children in the two public housing communities may account for this, but arguably the Blue Gum High School cohort had been subject to social residualisation through the lifting of school zoning in 1982. The phenomenon of social residualisation of schools into higher and lower SES student

cohorts through unrestricted enrolment has been observed elsewhere and has been shown to affect qualitative aspects of schools' student profiles.

*SOCIAL RESIDUALISATION OF SCHOOLS AND ITS EFFECT ON SCHOOL
LEARNING*

Removal of school zoning allowed Tasmanian government schools to compete for enrolments. Just as the school choice reform introduced in New Zealand several years later provided an open market for school enrolments (Lauder, Wylie, & Parker-Taunoa, 1990), the Tasmanian reform maintained students' rights to enrol at their local school, although it did not implement a New Zealand-style ballot to cope with excess enrolment demand at any given school (Lauder et al., 1990). The management of this issue seemed to be dealt with informally through school principals' establishment of local waiting lists.

In 1991, the researcher was shown one such waiting list of potential out of zone enrolments by a principal of a Tasmanian high school attracting out of zone enrolments in excess of its capacity. By 2004 this practice had become accepted, as confirmed by the reported comment by a Tasmanian Department of Education official. He was reported as saying that while 'Children are not required to go to the nearest school... principals had become adept at collaborating to ensure students in their area were catered for, or encourage families to take their children to the nearest school if necessary' (Spurgeon, 2004b: 9). By encouraging some '...families to take their children to the nearest school if necessary' (Spurgeon, 2004b: 9), school principals in Tasmania were acting informally in a similar manner to their New Zealand counterparts' formal selection practices (Marginson, 1997b). Thus, in Tasmania from 1982 '...in every government school the parents chose the school, but in some government schools the schools also chose the parents' (Marginson, 1997b: 177).

A school's ability to choose the parents of its students can markedly affect its capacity to mould its student cohort to conform to certain socio-economic

characteristics that may enhance its prospects of high achievement in its students (Sparkes, 1999). The inevitable result of this action is the social polarisation of school cohorts through the development of schools enrolling unrepresentatively high numbers of students of high SES on the one hand and low SES on the other (Lauder et al., 1999).

By 1998 the removal of the Tasmanian government school zoning policy had resulted in a marked over representation of low SES students enrolled at Blue Gum High School. In 1998, 1,218 persons of high school age ranging from 12 to 16 years old resided in Blue Gum High School's nominal catchment area (Australian Bureau of Statistics, 1999) of whom 36.37% (443 persons) attended Blue Gum High School (Garth, 1998). The remaining 63.63% (775 persons) apparently exercised their mobility option and enrolled at either government schools or non-government schools elsewhere. Arguably, the effect of this leakage intensified the concentration of students from low SES backgrounds enrolled at Blue Gum High School. Research summarised below shows that such social residualisation occurs because of the greater mobility of students from higher SES backgrounds.

Removal of zoning, student mobility, and the student profile at Blue Gum High School

In opting to join the majority of 12 to 16 year olds in Blue Gum High School's nominal catchment area who enrolled in schools other than Blue Gum High noted above, it is unlikely that such action would have been taken by students from lower (SES) backgrounds residing in the two public housing communities in Stringy Bark Municipality. Studies in New Zealand, Australia and elsewhere support this view. Lauder et al. (1990) found enrolment patterns in New Zealand's open education market had polarised student cohorts according to SES. They reported that:

Students from professional and managerial middle class backgrounds are able to exercise greater choice and are more likely to travel greater distances to enter schools with high SES mixes. Furthermore, it appears that the choice to travel away from local, working class schools is more likely to be made by those from the upper end of each social class group. The effect of this movement has been to exacerbate the polarisation in school intakes that already existed on the basis of residential segregation (p. 131).

Moreover, the non-government school option is unlikely to have been taken up by students from lower SES backgrounds residing in Stringy Bark Municipality's two public housing communities. Using data from the Australian Bureau of Statistics' 1996 census *Index of Relative Socio-Economic Disadvantage* (Australian Bureau of Statistics, 1998) to determine SES, Mukherjee (1999) found that those students from the lowest SES decile overwhelmingly enrolled at government schools. This cohort's enrolment rate in government secondary schools was approximately 83%, while approximately 14% enrolled in non-government Catholic secondary schools and approximately 3% enrolled at independent non-government secondary schools. It was only in the cohort from the highest SES decile that secondary enrolments in independent schools exceeded those of government and non-government Catholic secondary schools (Mukherjee, 1999). Such social residualisation in schools can lead to negative effects on students' learning.

In an Australian study, for example, Young and Fraser (1993) reported that SES corresponded to secondary school achievement in science. They showed that '...students attending schools in more affluent areas tended to outperform students from poorer schools' (Young & Fraser, 1993: 281), and that students from lower SES backgrounds improved their science achievement where there was increased use of laboratory classes and practical science learning. In another Australian study sensitivity to the schooling environment, both social and physical, was noted as a factor in the academic motivation of students from low SES backgrounds (Dowson & McInerney, 1998). In their Louisiana, U.S. study, Caldas and Bankston (1997) confirmed strong evidence of negative peer effect. They found that even though individual students' SES has a small effect on school achievement, '...the effect of schoolmates' family social status is significant and substantial...' (p.275) in its negative affect on individuals' school achievement additional to that arising from their low SES. This social status effect, Caldas and Bankston (1997) point out, is not merely one of a poor/non-poor dichotomy, but is more closely bound up in the educational and occupational status of students' families. As noted by Weiner

(1990), ‘...school motivation cannot be divorced from the social fabric in which it is embedded...’ (p. 621).

Thus, students from low SES backgrounds need more practical, interactive presentation of school work (Young & Fraser, 1993), greater systemic recognition of the schooling environment’s influence on academic motivation (Dowson & McInerney, 1998), and a wider range of social contacts at school (Caldas & Bankston) if they are to approach the learning achievements of their peers from higher SES backgrounds. Yet the concentration of lower SES students in some schools militates against these actions and the *fait accompli* presented by it constrains the achievement of ideal outcomes. This is demonstrated by considering the effects on Blue Gum High School’s student cohort by its concentration of students from low SES backgrounds.

Social residualisation and schooling at Blue Gum High School

The phenomenon of social residualisation resulting from an open market in government school enrolment has been noted in places other than New Zealand (Lauder et al., 1990) albeit with some differing conclusions as to its impact on students’ schooling. In the United States, for example, Cookson (1994) found that

In terms of school improvement, choice has secondary effects that can raise the levels of schools’ academic climates. In terms of equity, we have found that, depending on the plan, choice can result in greater or lesser integration, or have very little effect at all (p. 98).

As argued by Lauder et al. (1990), however, the raising of academic climate in one school through the adoption of a market-based model of resource allocation must lead to its diminishment in another school nearby. Just as all schools would like to be performing at above average levels of achievement, students with a lesser ability to contribute to a school’s academic achievement must enrol somewhere. Evidence from research into the implementation of open markets for schooling in England demonstrated the loss of student achievement benefit associated with comprehensive schooling (Gerwitz, Ball, & Bowe, 1995).

Gerwitz et al. (1995) found that the ‘...processes of the English [open schooling] market seem to be... contributing to a process of “decomprehensivization”’ (p. 188) of secondary schooling. Gerwitz et al. (1995) argued that for working-class students the process of decomprehensivization removes the achievement benefit of comprehensive schooling where higher ranges of expectation and achievement apply. Sparkes (1999), however, reported that evidence from England was not clear about the effects of an open market in schooling. In some instances, social segregation of school intakes has reduced, although Sparkes (1999) cited data that tended to support the notion of a rise in social segregation in English secondary schools from 1994 to 1999. Whatever the situation, however, Sparkes (1999) reported that the segregation of school students by ability level could affect students’ attainment:

Pupils of average ability attending a school where high proportions of pupils are of high ability tend to attain more highly and have higher earnings as adults than comparable students in classes where there are high proportions of low ability pupils (Sparkes, 1999:32).

Thus, there is sufficient evidence to suggest strongly that the adoption of open enrolment policies in government schools leads to polarisation of school cohorts according to SES and that it affects low SES students’ school performance. The ways in which these effects manifest themselves in teaching and learning have been established in several studies (Caldas & Bankston, 1997; Dowson & McInerney, 1998; Young & Fraser, 1993) and were present at Blue Gum High School in 1998. Evidence supporting this assertion is presented below.

Social residualisation and the MARRRS program at Blue Gum High School

From the foregoing, it is apparent that Blue Gum High School enrolls a high proportion of students from the two public housing communities in Stringy Bark Municipality. From census information related to unemployment rates and other social indicators (Ainley et al., 1995; Australian Bureau of Statistics, 1998), it is likely that these students are from low SES family backgrounds that include components ‘... such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations’ (Australian Bureau of Statistics, 1998: 3). As indicated above, these low SES students’ presence together on the school

campus tends to negatively affect their school achievement (Caldas & Bankston, 1997; Dowson & McInerney, 1998; Sparkes, 1999), and places them at risk of not participating in post-compulsory education and/or training (West 1991). That these factors were interacting negatively in Blue Gum High School in 1998 is illustrated by its presentation of higher than usual numbers of students for inclusion in the Tasmanian Department of Education's *Maintenance of At-risk Students in Secondary Schooling* (MARSSS) program (Tasmania, Department of Education, 1999b).

The Department's policy reasons for students' inclusion in the MARSSS programs included low literacy and numeracy skills, evidence of classroom aggression, evidence of general aggression, evidence of low self-esteem, multiple suspensions from school, and persistent school refusal and/or chronic absenteeism (Tasmania, Department of Education, 1999b). Evidence of the numbers of students from Blue Gum High School included in the MARSSS program in 1998 (Garth, 1998) indicates the extent of these characteristics' presence in the school cohort. A summary of Blue Gum High School's MARSSS student numbers and their place of residence is presented in Table 1.2.

Table 1.2 *Places of residence and students involved in the Blue Gum High School MARSSS program*

Place of residence	Percentage of students in school cohort	Percentage of students in the MARSSS program
Two public housing communities in Stringy Bark Municipality	77.65 (344 persons)	92.86 (52 persons)
Elsewhere	22.35 (99 persons)	7.14 (4 persons)
Totals	100.00 (443 persons)	100.00 (56 persons)

Table 1.2 shows that 56 Blue Gum High School students were identified as at-risk and were in the MARSSS program in 1998. Of these 56 persons, 92.86% (52 persons) resided in the two public housing communities and 7.14% (4 persons) resided elsewhere. Compared to the relative enrolment proportions depicted in Table 1.2, the approximate ratio of public housing students involved in the MARSSS program, 13:1 (ratio 52:4), exceeded expectations based on their enrolment proportion of 3.4:1 (ratio 344: 99). The difference between these proportions was statistically significant at the .05 rejection region ($\chi^2 = 8.5325$, $df = 1$, $p = .00$). Moreover, Blue Gum High School's proportion of MARSSS students of 12.64% (56 persons of 443 persons) compared unfavourably with a state-wide proportion of 7.20% (1,493 persons) of grades 7 to 10 students (20,734 persons) (Tasmania, Department of Education, 1999b). Again, the difference between these proportions was statistically significant at the .05 rejection region ($\chi^2 = 18.9427$, $df = 1$, $p = .00$).

Thus, the rate of representation of all Blue Gum High School students in the MARSSS program was 1.75 times the state-wide average and within the Stringy Bark Municipality's two public housing communities' student group, students were 2.1 times more likely to be included. Arguably, not all students at schools like Blue Gum High School are at-risk (Marsh & Williamson, 1998). In fact, for the students from elsewhere (non-public housing) in the nominal catchment area for Blue Gum High School the proportion in the MARSSS program was 4.04%, (4 persons of 99) well below the state-wide sample average of 7.20% (1,493 students of 20,734). The difference between these proportions was not statistically significant at the .05 rejection region ($\chi^2 = 1.4727$, $df = 1$, $p = .23$). Nevertheless, despite the presence of contrary data from individuals, subsequent treatment of further data collection is reported with the school as the unit of analysis. Hence, additional evidence of social residualisation affecting Blue Gum High School's SES is contained in the teacher employing authority's transfer policy (Tasmania, Department of Education and the Arts, 1994).

Social residualisation and recognition of Blue Gum High School as a difficult to staff school

The teacher employing authority's transfer policy provision for compulsory teacher transfer into Blue Gum High School for a maximum three-year teaching assignment indicated that the teacher employing authority found it a difficult to staff school (Tasmania, Department of Education and the Arts, 1994). Blue Gum High School's suburban location tended to discount isolation as a factor in teachers' reluctance to take up appointments there. Arguably, the qualitative aspects of the student cohort discussed above contributed to their reluctance. In this instance teachers' dissatisfaction arising from the difficulties of teaching educationally disadvantaged students from low SES backgrounds is a more likely reason for their reluctance to take up appointments at Blue Gum High School.

Much teacher dissatisfaction in low SES schools arises from the increased effort necessary for student behaviour management (Churchill, 1998; Department of Education, 1999) in inventing novel learning environments (Young & Fraser, 1993), and in countering negative peer group influence (Caldas & Bankston, 1997; Dowson & McInerney, 1998; Sparkes, 1999). The notion that students' low SES backgrounds constrains their school achievement and limits teachers' satisfaction in teaching is implied by the Transfer Policy's identification of a three-year limit on teachers' assignments, after which a transfer to a more favourable school is assured (Tasmania, Department of Education and the Arts, 1994).

Thus, in 1998 Blue Gum High School's student cohort showed negative student characteristics of a magnitude greater than that being found elsewhere in the Tasmanian government school system. There were students who were '...failing to respond to the traditionally delivered curriculum in a mainstream setting' (Irving, 1993: 8) and therefore action was taken to address this failure to respond. As indicated above, in this instance a school-sponsored workplace learning program offering a broadened curriculum for grade (year) 10 students was established. Within its age-group context, this program was offered to all students, not just those

identified formally as being at-risk, thus minimising the stigmatising effect of special programs for particular students (Pauly, Koop & Haimson, 1995).

Curriculum extension: The workplace learning program

The workplace learning program that is the subject of this study was piloted in 1998. It complemented extant career education programs that involved classroom teaching of two 25-hour classroom units of work-related learning supplemented by guest speakers providing insights into career opportunities for students and a mock job interview program with a local community service organization. All students were offered a one-week work placement based on its traditional unplanned, outcomes-neutral format (see Misko, 2000 for a description of school-sponsored work experience in Australia)

The extant program described above satisfied the systemic requirements for student certification in career education and job-readiness and aligned with the social cognitive career theory of Lent, Hackett and Brown (1996). It provided opportunities for self-efficacy development through workplace learning experiences that sometimes translated to mastery (hands on) workplace learning outcomes, generating expectations that resulted in the development of goals for future action (Lent et al., 1996).

Under the auspices of the school's Assisted School Self-Review (ASSR) process (Tasmania, Department of Education, Community and Cultural Development, 1997b; Curriculum Corporation, 2000), however, a school- enterprise workplace learning relationship was established. In September 1998, a group of 10 self-selected grade 10 students began 10 days' workplace learning at six neighbouring stores of a national supermarket chain. Each student was timetabled off school classes for one day per week and instead of attending school that student attended the enterprise's training college and/or supermarket for off-the-job and on-the-job workplace learning over a period of 10 weeks.

Whilst the program had the immediate effect of training students for specific workplace roles in supermarkets, its contribution to students' educational development was seen to be the more legitimate reason for the school's involvement in the program. Anecdotal evidence from teachers at the conclusion of the pilot program was positive in that during the program the participating students appeared to be more motivated and engaged in their school learning. Moreover, the program resulted in two students gaining full-time post-grade 10 employment with options for further training in 1999 with the host supermarket (Purity/Roelf Vos, 1999).

These factors led to a growing school community acceptance of the program and, in 1999, it was extended to 30 students in grade 10 as part of the schools' community partnership agreement (Tasmania, Department of Education, Community and Cultural Development, 1997b). The anecdotal evidence of the favourable impact on students' affectivity noted in the 1998 cohort precipitated the more formal study of the 1999 cohort reported here.

To provide measures of the affective outcomes from the program, the 1999 cohort was more intensively studied for changes in students' motivation for school learning. The 30 grade 10 students who participated in workplace learning with the host enterprise during 1999 formed the Experimental subsample, and they were compared for changes in their motivation for school learning with their non-participant grade 10 peers who were the Control subsample. Chapter 3 provides details of the research design employed for this purpose. Meanwhile, consultations with the host enterprise revealed interest in investigating the presence or absence of affectivity attending workplace mentoring roles in the host workplaces.

HOST WORKPLACE MENTORS AND SCHOOL-SPONSORED WORKPLACE LEARNING

The host workplace learning enterprise was a national chain of supermarkets with six supermarkets and the enterprise's training college located in suburbs and towns within a 20 kilometre radius of Blue Gum High. All these locations were within

public transport access from Blue Gum High. Having regard to the limited propensity to travel for educational opportunities by students from lower SES backgrounds (Lauder et al., 1990), 20 kilometres travel to and from workplaces once per week was considered a reasonable expectation.

Host enterprise workplace learning context

From 1999, the host workplace learning enterprise was accredited by the Australian National Training Authority as a Quality Endorsed Training Organization (QETO) (Purity/Roelf Vos, 1999) and under the Australian open market system for vocational education and training was empowered to design and deliver nationally accredited training programs suited to its enterprise (Marginson, 1997b; Tasmanian State Training Authority, 1998). In keeping with its QETO status, each of the host enterprise's supermarkets had a qualified workplace trainer on staff and an area training supervisor managed the training in all six supermarkets hosting the work placements.

Although the primary evaluative focus for this study was changes in students' motivation for school learning and the secondary the acquisition of specific job-related knowledge and skills, the cognitive focus of the program was located in workplace learning in retail operations. Consequently, the entire responsibility for structured workplace learning was delegated to the employer because of its possession of the knowledge and skills to be taught (Institute for Working Futures, 1995). This action allowed students to assume the standing of unpaid entry-level employees undertaking structured workplace learning and, importantly, provided access to the host enterprise's quality assurance procedures for workplace learning.

The host enterprise's early adoption of reformed workplace learning practices was facilitated by its adoption of agreed modes of recognition of training throughout Australia in the early 1990s (Institute for Working Futures, 1995; Vocational Education Employment and Training Advisory Committee, 1991). Its subsequent attainment of QETO status for 1999 (Purity/Roelf Vos, 1999) acknowledged its

earlier achievements and allowed it to develop its training programs to match its corporate goals. Consequently, its training program provided for students a consistency of workplace learning experience unmatched in conventional workplace learning environments capable of hosting up to 10 students simultaneously. Moreover, the host enterprise's consultation and involvement of its staff in reaching its workplace performance benchmarks had allowed acceptable and achievable workplace goals to be established. These performance benchmarks are incorporated into the host enterprise's corporate goals. They include:

- Descriptions of service standards or job performance [that] are determined by those doing the job...(Institute for Working Futures, 1995: 4),

and are supported by action to:

- Tie individual performance to continuous business performance improvement...
- Promote and continually improve competitive performance and service excellence...
- Offer nationally recognised qualifications...
- Support and promote other outcomes focussed [*sic*] strategic management activities' (Institute for Working Futures, 1995: 6-9).

These outcomes related directly with host mentors' relationship with school students in the workplace. Thus, in 2000 the 1999 program was replicated, but this time the effects of hosting workplace learning on mentors' affectivity were investigated.

Affective outcomes for host workplace mentors

As noted in the introduction to this chapter, little is known of affective outcomes for host workplace coaches and mentors participating in school-sponsored workplace learning programs. There is evidence in the organizational behaviour literature that mentoring is linked with prosocial behaviour (Isen & Baron, 1991), which is related to better workplace performance (Côté, 1999; George & Brief, 1992), but no specific

links are made with school-sponsored workplace learning in either instance. Thus, it was decided that the affectivity of host workplace and mentors over the course of the program would be the focus of the second research question for this study:

Research Question 2: Does positive affect attend host workplace mentoring roles in school-sponsored workplace learning?

CONCLUSION

Two research questions were identified in this chapter. They are:

- *Research Question 1: Does participation in school-sponsored workplace learning improve socio-economically disadvantaged high school students' motivation for school learning?* and
- *Research Question 2: Does positive affect attend host workplace mentoring roles in school-sponsored workplace learning?*

In initiating the investigation of these two research questions, discussion in Chapter 1 used Wellington's (1993b) vocational imperatives for schooling as a model for tracing the development of social contexts through which contemporary school-sponsored workplace learning is viewed. These contexts included consideration of changed unemployment and employment patterns and practices by demonstrating a 30-year change in the Australian youth labour market, itself driven by changed economic contexts arising from globalisation and technological change. Consequent social changes, particularly for socio-economically disadvantaged school students, and responses by governments to the resultant political milieu, formed the extant educational and organizational learning contexts that shaped this study. From this process, two research questions were identified; the first related to the affective outcomes for school students participating in workplace learning, and the second related to affectivity attending host workplace mentoring roles in school-sponsored workplace learning.

Chapter 2 provides a literature review of research addressing these research questions, Chapter 3 details research methods adopted to answer the two research questions, and Chapters 4 and 5 provide details of the results of the application of the research methods for both research questions. Chapter 6 provides a discussion of the implications of these findings for future research and consideration by systemic policy makers, school-level personnel, and host workplace enterprises.

CHAPTER 2

LITERATURE REVIEW

INTRODUCTION

In establishing a context for this study, two research questions were identified in Chapter 1. They are:

- *Research Question 1: Does participation in school-sponsored workplace learning improve socio-economically disadvantaged high school students' motivation for school learning?* and
- *Research Question 2: Does positive affect attend host workplace mentoring roles in school-sponsored workplace learning*

In attempting to answer these two research questions the literature on school-sponsored workplace learning and host workplace mentoring is reviewed in this chapter with particular reference to the affective aspects of students' and host mentors' development resulting from their interaction in the workplace. In addition to conventional paper-based literature, the following information, communication and technology (ICT) data-base resources were utilized: *A+Education* (Australian Education Index); *ASTATS* (Australian Bureau of Statistics); *AARE* (Australian Association for Research in Education); *ACER* (Australian Council for Educational Research); *Current Contents Connect*; *Curriculum Corporation* (Australia); *Edna* (Education Network of Australia); *ERIC* (Education Resources Information Center); *NCVER* (National Centre for Vocational Education Research, Australia); *ProQuest Education Complete*; *PsychInfo*; *Sociological Abstracts*; and *Web of Science*. This chapter begins with a brief review of the research context for this study established in Chapter 1.

Review of the research context for this study

Circumstances for Australian school leavers' access to the youth labour market have changed markedly since the mid-1960s. Globalisation and technological change have reduced the insularity of domestic labour markets of all kinds, thus cancelling many of the assumed benefits of youth employment such as permanency, and employer-sponsored training and career development that would flow from simply leaving school and entering the labour force.

The linear transitional pathways envisioned by Finn (1991) are no longer available for a large proportion of school leavers, neither school completers nor school non-completers (Dwyer, Harwood & Tyler, 1998). For completers, there is a sense of progression even though it may not always be planned, unidirectional, and free from impediment (Dwyer et al., 1998), but for school non-completers the route to adult independence is more tangled:

They [non-completers] moved in and out of jobs, back to and away from the family, increasingly depended on welfare benefits, with a handful trying re-entry into education. Some changed course 14 or 15 times - a zigzag of changes as they looked in vain for the supposed pathways. There was no systematic movement; the pattern was one of short-term, low-paid jobs (when available), mixed with living on unemployment benefits and with the support of friends and family (Dwyer, 1996: 55).

Thus, students leaving school early are more likely to become marginalised and unable to access mainstream benefits accruing from permanent employment and career progression (Freeland, 1999).

Therefore, the development of students' motivation for school learning becomes a crucial task of schooling; the development of affect that promotes students' valuing of their learning in more active ways through taking initiatives to direct and maintain their learning (O'Connor, 1994b; Tasmania, Department of Education, Community and Cultural Development, 1996; van Liemt, 1992) and, through that, their employability. As noted in Chapter 1, positive affect in learning is essential for maintaining individuals in post-compulsory education and for longer-

term survival in the globalised economy. It is from this perspective that the literature on school-sponsored workplace learning is reviewed.

Concurrently, information presented in Chapter 1 revealed that affectivity is being linked to job performance in organizational settings (Côté, 1999). Thus, positive affect of mentors involved in delivering workplace learning is linked to optimal workplace performance, given that ‘...happier individuals are more productive, and also that more productive individuals are happier...’ (Côté, 1999: 67). Consequently, the affectivity of host mentors is integral to studies of school-sponsored workplace learning and forms the second focus of this review.

SCHOOL STUDENTS’ EXPERIENCE OF WORK

The literature relating to school-sponsored workplace learning is bound up in the broader entities of school-to-work programs and models of career development in schools (Blustein, Phillips, Jobin-Davis, Finkelberg, & Roarke, 1997; Lent et al., 1996). This review emphasizes the concept of workplace learning as a component of a broadened curriculum strategy to develop students’ motivation for school learning. Accordingly, this section of the literature review seeks examples of affectivity-based evaluations of workplace learning programs that will enable students to respond positively to the globalised workplace in terms of a motivation for school learning as outlined above. It includes a review of the evolution of workplace learning from its origins as an unplanned experiential entity in students’ schooling through to the formal development of a structured, purposeful workplace training system. Chiefly, however, at each stage the literature is reviewed for evidence of affective outcomes from students’ participation in workplace learning.

The literature review addressing Research Question 1 is organized in relation to the following themes:

- Vocationalization in schools;
- Systemic influences on workplace learning in school-to-work programs;

- Emerging awareness of students' affective outcomes from workplace learning;
- Formalization of the cognitive aspects of workplace learning; and
- Identification of workplace learning programs that improve students' motivation for school learning.

Thus, this literature review is not about training school students for vocational roles, nor is it about business enterprises assuming more active roles in school curricula, management, and/or governance, although those factors will necessarily be addressed from time to time. This review is primarily focused on ascertaining the effects of workplace learning on students' motivation for school learning.

School-sponsored workplace learning

The latter quarter of the 20th century witnessed increased activity in schools in Western industrialized democracies aimed at making closer links between schools and workplaces (Olsen, 1997). This trend accelerated in the closing decades of the 20th century, particularly from the 1980s onwards, paralleling personnel restructuring in workplaces (Atkinson, 1984; van Liemt, 1992) and marked increases in youth unemployment rates in some Western industrialised democracies (Bowers et al., 1999; Maglen & Shah, 1999). The coincidence of these phenomena has led to criticism of the vocationalization of school curricula as an inappropriate response to such influences.

Vocationalization in schools

Vocationalization is the inclusion of vocational or vocationally orientated subjects in secondary schools' curricula that are '...intended to ease school-leavers into jobs or self-employment...' (Lauglo & Lillis, 1988: 3). Such subjects may form part of the school curriculum or provide workplace learning opportunities with the implied assurance that their successful completion will lead to better employment prospects. A vocational orientation towards schooling is not new, however, and Watts (1983a) noted that the first English schools in the sixth century were established with a

vocational focus to train priests and monks to minister and preach on behalf of the church. In more recent times though, it is argued that vocationalization of school curricula has become more intimately bound up in the economic cycles of national economies.

Watkins (1985) pointed out that school-to-work programs were introduced when downturns in national economic cycles led to the combination of contracting youth labour markets and labour deskilling. Vocationalization thus presents opportunities for workplace learning to be seen as ‘...a means to legitimize the present organization of work and to increase the motivation of students who are about to enter the workforce’ (Watkins, 1985:54). Watkins (1985) argued that this rationale maintains the status quo in terms of training and employment policies whilst diverting attention away from better ways of addressing changing schooling and workplace environments.

This argument was supported from an Australian viewpoint at least, when White (1993) observed that the move towards vocationalization of school curricula coincided with periods of economic depression, citing the 1890s, 1930s and the 1980s as such points in Australia’s history. These depression points and their corresponding counterpoints on the economic cycle, White (1993) argued, have reliably prompted remarkably similar debates about the instrumentalist function of education, that is, its ability to meet the employment needs of industry and commerce and, conversely, the liberating role of education in providing a general education for active citizenship in a democracy.

In the same vein, Lauglo & Lillis, (1988) claimed that vocationalization limits students’ general academic development in the pursuit of social control through the development of school leavers who are ‘...accepting and adapting to hierarchy and authority rather than questioning it’ (p.16). Wolf (1998) took up this latter theme of social control in her critique of the United Kingdom’s reform of vocational education

through the introduction of the National Vocational Qualifications (NVQs) and General National Vocational Qualifications (GNVQs).

Wolf (1998) saw the increased political interest in school-to-work programs as a reaction to perceived shortcomings in the general abilities of the British workforce in coping with globalisation and technological change compared to other countries' workforces, most notably Germany's. Thus, argued Wolf (1998) engineered workforce competitiveness was promoted as the justification for and the responsibility of the education system. In so doing, Wolf (1998) noted that the development of the NVQ and GNVQ structures in Britain has replicated the social-class structure that traditionally has underpinned British education.

Given the limitations of the usefulness of the pathways concept in the globalised workplace (Dwyer et al., 1998), Wolf (1998) argued that the academic stream or pathway remains, as always, largely the preserve of students from the middle and upper classes. The NVQ pathway is aimed at providing education and training for the less academic students from the working classes with the GNVQ providing a middle pathway between the academic and NVQ streams of school education. Wolf (1998) saw this as a singular failure of the several Dearing committees of the early 1990s to address the issue in contemporary terms, producing instead '...reports [that are] masterpieces of compromise, placating warring players rather than offering visionary solutions...' (p. 222).

Wolf (1998) maintained that because the German education system is underpinned by a similar social-class structure to that of Great Britain (Marry, 1997), it was seized upon by Dearing as a model to be emulated in Britain. This was done without a thought as to the reasons for the economic success of other nations such as the United States, argued Wolf (1998) '...which hardly has a national vocational qualification to its name' (p. 224).

This tendency to act somewhat irrationally in vocational education is taken up by Welch (1996). He develops his argument supporting the irrational interactions between education, work, and mythopoeia (myth-making) by exposing the illogicality behind policies and programs that seek to address high youth unemployment by making youth more employable without addressing the provision of youth employment opportunities. This sentiment is supported by the documented reduction in opportunities for youth employment noted in Chapter 1 and concomitant youth education, training and labour market programs introduced to address it.

In this regard Welch (1996) notes the tendency to blame the victim through action that reinforces the notion that potentially or actually unemployed youth have themselves to blame. Thus, vocational programs focusing on improving attitudes, presentation skills and job interview skills tend to assume an unwarranted legitimacy, he says.

It [more training] does not necessarily lead to more jobs, rather the phenomenon of a paper chase where many people are chasing additional qualifications in order to keep themselves competitive – even though these qualifications may not be strictly necessary for adequate job performance (Welch, 1996:64).

The negative aspects of vocationalism in school curricula inherent in the criticisms outlined above must be balanced, however, with priorities being set by elected governments. Vocationalism has been supported in Australian education systems over the past three decades (Marginson, 1997a). Moreover, as noted in Chapter 1 (van Liemt, 1992), there is now an imperative to encourage the development of positive attitudes to learning in developing individuals' employability, a point supported by O'Connor (1994a) and the former Tasmanian Department of Education, Community and Cultural Development (Tasmania, Department of Education, Community and Cultural Development, 1996).

Consequently, the debate on vocationalization assumes a dynamic character; '...a moving compromise heightened by the pressures of high youth unemployment' (White, 1993:7), and the imperative to develop a motivation for school learning to better survive in globalised workplaces (O'Connor, 1994a; Tasmania, Department of

Education, Community and Cultural Development, 1996; van Liemt, 1992). The issue of vocationalization is dealt with here in recognition that the main point of this research should not be taken as a promotion of vocationalization of school curricula. Rather, as outlined above, this research acknowledges school-sponsored workplace learning as a component of models of career education (Blustein et al., 1997; Lent et al., 1996) and explores its potential to improve students' motivation for school learning (Ainley, 1996; Cumming, 1998; Tomlinson, 1997).

In these respects, this study seeks to emphasize the affective dimensions of students' development through workplace learning rather than promoting attempts to train students for vocations whilst they are in school. Moreover, this research supports Petherbridge (1996) in that it does not promote workplace learning as an alternative to in-school maintenance programs for disaffected students, nor does it attempt to lay the blame for youth unemployment at the feet of school leavers who have inadequate skills (O'Connor, 1994a).

Systemic influences on workplace learning in school-to-work programs

Notwithstanding the objections relating to vocationalization of education, the links between schools and workplaces in Western democracies have been the subject of enabling legislation in their host countries for some time, with varying degrees of state and industry involvement and integration of vocational education with school curricula. From a systemic perspective, the United States tends to stand at the less interventionist end of the continuum and Germany at the more interventionist and vocationally integrated end.

In the United States, for example, the Academy for Career Education (Career Academy) (Smith & Theophano, 1976), the Experience-Based Career Education (EBCE) programs (Watkins & Corder, 1977), the several Carl D. Perkins Federal Acts of 1984, 1990, and 1998, and the School-to-Work Opportunities Act of 1994 (Smith & Edmunds, 1999) have provided vocational education programs in schools for over 25 years. However, across the United States these programs' presence and

mode of application is less than universal (U.S. Congress, Office of Technology Assessment, 1995).

In the United Kingdom, school-sponsored work experience programs were established in the 1970s following the passage of the Education Act, 1973 (Further Education Unit, 1984; Partee et al., 1996). They were modified and extended by the Technical and Vocational Education Initiative (TVEI) of the 1980s (Hudson, 1996), and the National Vocation Qualifications reforms of the 1990s (Sharp, 1997; Smithers, 1997; Wolf, 1997). As in the United States, their take-up has not been universal but, through funding initiatives, they have achieved substantial penetration.

Similar legislation for unplanned and planned workplace learning programs were introduced in Europe (Harrison & McLeish, 1987; Hirsch, 1992), and in Australia, (Carmichael, 1992; Cole, 1981; Kamener, 1975; Koutsoukis, 1966; La Trobe, 1974; Sweet, 1993; Wright, 1976), with varying degrees of systemic integration. Germany's dual education system stands as the exemplar of a fully integrated schooling and vocational education and training system in Europe (Marry, 1997), and the fullest expression of vocationalization of schooling discussed above.

Thus, the concept of school-sponsored workplace learning is well established and well known in secondary schools in a number of Western democracies and, through various legislative requirements and funding incentives, some governments have seen fit to formalise and establish school-sponsored workplace learning programs at various levels of systemic integration.

Emerging awareness of students' affective outcomes from workplace learning

Awareness of affective outcomes for school students in workplace learning programs was acknowledged over 20 years ago. Eggleston (1982) observed that the evaluation of school-sponsored workplace learning should not focus on the attainment of specific or even generic occupational skills, but rather more on the affective outcomes of work experience. He noted '...that some of the strongest features of

work experience programmes lie in their capacity to stimulate and motivate young people and thereby enhance schooling and its effectiveness' (Eggleston, 1982: 23).

Similarly, Hudson (1996), whilst noting an educationally focused rationale for the TVEI, the predecessor of the United Kingdom's NVQ's and GNVQ's, deduced that the aims of the TVEI were threefold, namely:

1. Cognitive, learning the relevancy of the formal curriculum to the world of work
2. Affective, the development of students' personal and social skills
3. Social, appreciating the relationship between the economics of work and local, national and international communities (Hudson, 1996: 278-279).

In taking this interpretation, Hudson (1996) emphasized the importance of students' affective development in school-sponsored workplace learning programs, a view that was supported by Stone and Mortimer (1998). Stone and Mortimer (1998) identified three general objectives for workplace learning, namely: '...the focus on how early work experiences and training affect earned wages and benefits in later life...[the] subsequent social and psychological development of youth and later adult functioning...[and]...how work affects learning and other school related outcomes' (p. 184).

Stone and Mortimer's (1998) identification of '...how work affects learning and other school-related outcomes' (p. 184) supported Eggleston's (1982) and Hudson's (1996) emphases on the affective aspects of learning inherent in school-sponsored workplace learning. Their orientation towards a student-centred rationale for school-sponsored workplace learning programs supports the rationale for this study and echoes the observation that: 'The intent of school supervision [of workplace learning] is to increase the educational value of work experience and to make the job complement the school rather than competing with it' (Stern, Finkelstein, Stone, Latting, & Dornsife 1995: 384).

Formalisation of the cognitive aspects of workplace learning

Whilst Stern et al.'s (1995) observations support earlier remarks by Stern, Raby, and Dayton (1992) about the educational value of school-sponsored workplace learning

having an implicit affective emphasis, reforms to workplace learning have tended to be more cognitively based. To this end, efforts have been aimed at correcting the perceived deficiency in learning arising from unplanned and unsupervised learning in workplaces. When resource availability for early workplace learning programs were limited some school-sponsored workplace learning programs were largely unplanned in their approach, that is, the host employer had no obligation to train the student formally for the acquisition of particular vocational and/or educational outcomes (Misko, 2000).

This mode of workplace learning is unstructured, experiential and incidental. In Australia for example, work experience programs in the compulsory years of education (up to grade 10 when students turn 16 years of age) typically follow the pattern of students' '...observation of the tasks...' (Wright, 1976:5) carried on in the workplace, although Wright (1976) noted that sometimes students were involved in actual work. As recently as 1997 concern was expressed about the quality of workplace instruction in Australian work experience programs (Cumming & Carbines, 1997). Therefore, interest has emerged in making the links between schools and workplaces more explicit through planned and structured education and training activities designed to better facilitate students' transition from school-to-work (Carmichael, 1992; Curriculum Corporation, 1994; Fullarton, 1999).

Australian reforms heralded by Carmichael (1992) have led to a range of integrated school and workplace vocational education and training programs now being present in large numbers of Australian post-compulsory senior secondary schools and colleges for grades 11 and 12 students (Fullarton, 1999). Training delivery in these programs is through complementary structured workplace learning off-the-job in schools and on-the-job in workplaces with achievements being recorded as components of students' formal studies (Ainley & Fleming, 1997), acknowledged by the award of an accredited workplace qualification (Kemp, 1996). Structured workplace learning, both on- and off-the-job, is seen as facilitating students' acquisition of generic key competencies (Mayer, 1992) and vocationally

specific workplace competencies whilst still at school. A more traditional style of vocational training, school-based apprenticeships, was introduced in Australian senior secondary schools in 1995. Between 1995 and 2000, school-based apprenticeships grew to account for 2.20% of all new apprenticeships in Australia (National Centre for Vocational Education Research, 2001).

Similar, but varied, approaches have been taken in the United States. For example, The Academy for Career Education's (Career Academies') links to local industries has emerged as one such model of educational practice for students in grades 11 and 12 (Smith & Theophano, 1976), and more recently grades 9 through to 12 (Stern et al., 1992). Through industry linkages, career academies aim to develop students' self-knowledge as expressed through interests, abilities, and values related to a strong vocational emphasis in their school. However, Hayward and Tallmadge (1995) observed that in relation to career academies, opportunities for success were limited where there was '...haphazard enrolment in vocational education that does not include a coherent, sequenced program leading to entry-level employment or further training at a postsecondary level...' (p. 142). Other models of planned and purposeful work experience for school students in the United States include youth apprenticeships for grades 11 to 14 intended to address '...the broad development of young men and women' (U.S. Congress Office of Technology Assessment, 1995:71).

In the United Kingdom, the Technical and Vocational Education Initiative (TVEI) introduced in 1982 sought to ensure that all secondary school students undertook work experience but it failed to stipulate a planned and purposeful workplace learning experience for students (Hudson, 1996). In this regard, the TVEI is similar to the unplanned workplace learning that has applied in Australia and elsewhere since the 1970s. The introduction of structured vocational courses did not eventuate until the advent of the NVQ and GNVQ programs in 1994 (Sharp, 1997; Smithers, 1997) noted above in relation to vocationalization (Wolf, 1998). Thus, they tend closer to the Australian structured workplace learning reforms noted above.

On the European continent, objections to the vocationalization of schooling are muted: 'At present, the principle of combining school and work experience is being promoted by the majority of European societies' (Jobert, Marry, & Tanguy, 1997: 3). Germany's fully integrated dual system of schooling embraces vocationalism in schools and has attracted the attention of educators from at least France (Marry, 1997), Britain (Wolf, 1996) and Australia (Dusseldorp Skills Forum, 1993).

German school students are streamed after four years of primary schooling (*Grundschule*), into one of three streams: upper primary school (*Hauptschule*), middle school (*Realschule*), or high school (*Gymnasium*). It is from the gymnasium that students are selected for direct entry to university. The remaining two streams are vocationally orientated with the *Realschule* providing for trade and technician-level training and the *Hauptschule* for other vocations. Every student in Germany is either university or vocationally trained. This dual system of secondary and vocational education in Germany keeps young people in the education and training system for much longer, enabling it to return 15 to 24 year old youth unemployment rates one-quarter of neighbouring France, where students leave the education system at 18 years of age (Marry, 1997).

In France there is a variety of practices known as work experience that have been introduced into secondary schools since the mid-1980s, including youth employment programs. These work experience programs seek to develop more cooperative arrangements between training institutions and industry that move towards the adoption of the German system described above. A major difference for the French is, however, the degree of control the State retains in the State-industry partnership, contrasting markedly with the German system where industry assumes the dominant role in the partnership (Marry, 1997).

Workplace learning programs that improve students' motivation

Despite the cognitive emphasis of the programs noted above, teachers noted post-participation improvements in returning students' motivation for school learning from the earliest inception of school-sponsored workplace learning. Subsequently, over the past 20 to 25 years a number of studies have been published. Several researchers have noted that there is a marked lack of empirical research evidence to support such claims (e.g., Stone & Wonser, 1990; Watts, 1983b). The following review of the research literature evaluating workplace learning in several Western industrialised democracies demonstrates this and other facets of this literature.

Australia.

Wright (1976) found that Australian students' exposure to work experience did not meet expectations in improving students' self-reported academic aspirations through students '...having something to work towards...' (p. 12), and that '...very few students became more aware of the usefulness of their studies following their work experience placement' (p. 13). In another Australian study, Cole (1981) observed that anecdotal evidence from high school work experience coordinators indicated '...significant changes... [presumably positive]...in students' attitudes and behaviour' (p. 7). Cole (1981), however, went on to point out that such evidence may '...be saying more about the general inappropriateness and sterility of a student's schooling experience than it does about the virtues of work experience' (p. 7). In an evaluation of work experience programs published in Queensland, Australia, Hobbs (1981) reported that teachers felt that students who were intending to leave school at the completion of compulsory schooling and were at risk of unemployment needed work experience before leaving school. A compilation of case studies of work experience in four Australian schools in Western Australia and Tasmania by Straton and Murray (1984) reported mixed results from the four studies, the authors observing that there is '...only slight support for the claim that work experience improves students' educational attitudes' (p. 14).

Where school-sponsored workplace learning in Australia became planned and purposeful, however, evidence began to emerge about its potential to improve students' motivation for learning. The Training in Retail and Commerce (TRAC) programs developed by the Dusseldorp Skills Forum and New South Wales Technical and Further Education (TAFE) in 1989 (McMiken & Tower, 1994) were amongst the first structured workplace learning programs for school students. Sweet (1993) noted that through TRAC programs in New South Wales '...the motivational benefits flow to both the students who are expected to learn and to the workers who are expected to teach' (p. 44), though no particulars of supporting evidence were offered. Scharaschkin's (1995) study, however, reported anecdotal evidence of senior secondary students' enhanced motivation, confidence, and maturity resulting from their involvement in a TRAC program conducted in three Southern Tasmanian senior secondary colleges (grades 11 and 12).

United States and Canada.

Despite a long history of vocational education in the United States' schools dating from 1862 (Smith & Edmunds, 1999), there is limited evidence of sustained improvement in students' motivation for school learning arising from their involvement in school-sponsored workplace learning. Hamilton and Crouter (1980) found that claims for students' increased academic motivation accruing from exposure to work experience and work-based learning were not backed up, the supporting reports being '...unpublished and mostly unimpressive...' (p. 325). Grubb's (1992) research, however, reported favourably on the effects of schools organized and functioning as Career Academies, Occupationally Focused Schools, and Magnet Schools in redressing student disaffection. Grubb (1992) reported that:

In many schools we've visited, the most attentive students have been in programs integrating academic and vocational education...the effort to clarify the relationship between future occupations and present schoolwork promises to enhance students' motivation, as they come to understand how high school affects their future options (p. 41).

Stern et al. (1992) reported research into Career Academies in school districts in Pennsylvania and California where they found that students' motivation was

enhanced by their involvement in the program, noting that ‘...students who were antagonistic and uninterested before they entered the program become more motivated, cooperative and ambitious’ (p. 128).

Career academies are integrated entities usually based on the school-within-a-school model where students from grades 9 to 12 undertake courses ‘...focused on a career theme...that provide opportunities for teachers and students to integrate academic and occupation-related classes...’ (Kemple, 1997: 14). Career academies link with local employers who ‘...help and guide the program, and ...serve as sources of adult mentors and work internships for...students’ (Kemple, 1997: 14). Kemple’s (1997) interim report found that the career academy model led to increased student motivation and improved engagement in school activities, although his emergent study reported at a time when very few of his study’s participating students had yet engaged in the career academies’ work-based learning activities component. Thus, Kemple’s (1997) data on students’ self-reported involvement and engagement in school activities were largely related to their in-school experiences, that is, their being supported through

...a high level of involvement with and expectation from their teachers, opportunities to collaborate with other students who are engaged in school enriched classroom instruction and ... [involvement in]...activities that prepare them for post-secondary education and careers (Kemple, 1997: 2).

Elsewhere in North America, a school-sponsored workplace learning case study in Alberta, Canada, reported anecdotes of improved students’ academic achievement, but ‘...the partners regretted not having built in instruments for measuring precise outcomes from the inception of the project’ (Hirsch, 1992: 59). In the United States, Pauly et al. (1995) reported anecdotal evidence of improved support for students undertaking work-based learning in schools, citing its positive effects on students’ educational development in that they ‘...tend to become more engaged in their schoolwork...[and]...have improved attendance, spend more time and energy on schoolwork, and show greater interest in schoolwork’ (p. 130).

Other published studies from the United States into the effectiveness of work-based learning in schools commonly reported modest improvements in student motivation as measured by proxy indicants of student attributes such as ‘...attendance, grades, graduation rates, and participation in postsecondary education...’ (U.S. Congress Office of Technology Assessment, 1995:61). Hayward and Tallmadge (1995) reported that in a 12-site three-year demonstration program investigating ways of keeping students in school, the effects of vocational education in the school curriculum led to students in 10 of the 12 sites increasing their grade point average, and in seven sites reduced the numbers of students failing courses. In another study, Peoria Public Schools (1995) found that more than half of all students involved in career academies in Peoria, Illinois, reported greater interest in school than those who were not enrolled in a career academy.

Similarly, Linnehan (1996) found statistically significant evidence supporting that of Hayward and Tallmadge (1995) in relation to the influence of career academies on students’ school attendance. Linnehan (1996) also found that school students participating in career academies in Philadelphia acquired greater employer-relevant outcomes such as job performance and work attendance. Rusch and Chadsey (1998) reported the value of workplace learning in improving student motivation noting that: ‘School-sponsored work experience is a powerful educational tool that benefits all students by improving student motivation to learn, enjoyment of learning, confidence in learning, and self efficacy...’ (p. 345).

United Kingdom.

In the United Kingdom, anecdotal evidence tends to support the notion that school-sponsored workplace learning improves students’ motivation for school learning. In view of that, Watts (1983b) observed that studies into the effectiveness of work experience had resulted in ‘Objective data [that] are limited and methodologically deficient’ (p.84) and lamented that ‘No studies have been conducted which systematically examine what happens to a pupil as result of work experience...’ (p. 84). Watts (1983b) argued that an empirical study would be impossible to mount,

however, given the lack of control the researcher would have over variability in workplace instruction and that ‘...the vast range of pupil characteristics is likely to be more complex than any research design will be able to handle’ (p. 85).

MacDonald and Black (1987) also noted that ‘...surprisingly, relatively little research has been undertaken to assess the effects of work experience and to see whether it is in fact serving a useful purpose’ (p. iii). However, from their small-scale study in Scotland, MacDonald and Black (1987) reported that ‘...motivating effects were evident’ (p.38) in slightly more than half of the 18 students interviewed in relation to their responses to work experience. Nevertheless, in their literature review Saunders et al. (1996) concurred with Watts (1983b), noting that difficulties in interpreting research in this field ‘...may be constrained by the design of evaluations’ (p. 47).

Correspondingly, Jamieson (1992) noted that the assessment of students’ affective development in work experience is problematic. He observed that the practice of assessing that which is easily measured in general education extended to work experience in that the more difficult assessment of students’ ‘...attitudes, skills and personal qualities...’ (p. 238) tended to be ignored. Similarly, Hudson (1996) noted this difficulty when he observed that amongst the three general aims of the Technical and Vocational Education Initiative (TVEI) in the United Kingdom was that of the ‘...affective, the development of students’ personal and social skills’ (p. 278). He concluded that measures of its attainment would be challenging, given that: ‘There are...no formal tests or means of measuring students “knowledge” of PSE [personal and social education] or its growth as an effect of work experience’ (p. 287).

Nonetheless, anecdote plays a useful role in pointing to areas of research inquiry. For example, in her survey of teachers’ views of 14-19 education Tomlinson (1997) reported that teachers ‘...were well aware that some students had become disaffected with traditional school courses by 14 [years of age], and could be

motivated by job-related courses' (p. 81). In a similar vein, Partee et al. (1996) reported a British education official's anecdote that '...the benefits of work experience primarily involve motivation and an understanding of the world of work' (p. 8). Whilst there is no factual evidence to support these assertions, the research possibility is raised.

Hirsch (1992) reported a case study of an enterprise simulation in Ayrshire, where students' affective outcomes were assessed, reporting that in relation to students' changed attitudes to fifth form studies:

...the effect is hard to quantify, but an external evaluation of the local TVEI project concluded that those participating are better at working in groups and communicating than their non-TVEI counterparts' (pp. 56-57).

Two other TVEI school-industry partnerships studies based in Birmingham and London quantified several proxy indicants of students' improved attitudes to and motivation for school learning such as their participation in coursework, attendance, and punctuality (Hirsch, 1992). The report did not state, however, whether these statistics could be generalised (Allal & Cardinet, 1997). Hudson's (1996) study of teachers' responses to the TVEI in 13 schools found that whilst the effects of work experience on students' knowledge were of little value in the formal curriculum, they did improve the social development of students of average or below average ability. Like Hayward and Tallmadge (1995) above, however, Hudson (1996) did note that the unplanned nature of the work experience and the variety of tasks and expectations in the wide range of work placements offered to students were factors affecting students' success in workplace learning. Despite the limitations of these isolated studies, a meta-analysis by Saunders et al. (1996) found that the national impact of the TVEI had shown positive effects, reporting that '...the TVEI in particular seems to have been successful in enriching the general 14-16 curriculum with work-related experiences and has deepened young people's enjoyment of learning and motivation to learn' (1997:157).

Another United Kingdom school-sponsored workplace learning initiative of the late-1980s was that of Compact schools. Compact schools were established initially in relatively socio-economically disadvantaged areas where students' levels of motivation and school engagement were waning. Saunders et al. (1996) reported that throughout England and Wales from 1990 to 1994 the Compact schools' goals of improvements in student achievement, attendance, punctuality, behaviour, and motivation had been met, yet Compact student cohorts continued to exhibit '...greater levels of disadvantage and lower levels of achievement than their peers' (p. 9).

Some explanation of this paradox is evident in Wellington's (1993a) penetrating case study of three Compact schools. In those schools, the Compact's formal promises of employment and/or training upon graduation as defined by satisfactory achievement of the Compact goals was not honoured. Employment and/or training take-up by host enterprises had ranged from four per cent to 11% of Compact graduates in these three schools. Teachers and students felt betrayed. For Wellington's (1993a) research subjects, the likelihood of realising the universally implied promise that that working hard at school would result in a job became an even more distant prospect.

Other European countries.

Case studies of school-sponsored workplace learning programs reported by Hirsch (1992) from Europe showed that few shared common affective objectives for their implementation, instead the school to business linkages themselves were the more dominant theme. Some of the European examples sought and achieved vocational outcomes specifically related to the host business enterprise but did not attempt to measure the workplace learning's effect on students' attitude to or motivation for school learning. Of those that did examine the relationship between workplace learning and the improvement of students' motivation for school learning, some of the evidence was inconclusive.

For example, Moeller and Ljung (1999) reported evidence of an affective outcome from workplace learning in the Korsør Production School located in Korsør Municipality on the island of Zealand, Denmark. Korsør Municipality, with a population of approximately 20,000 persons (Moeller & Ljung, 1999), is the main sponsor of the Korsør Production School. Moeller & Ljung (1999) found that between 1996 and 1998 the proportion of Korsør Production School graduates returning to education in conventional settings rose from 30.3% to 43.8%, while those going to unemployment fell from 21.2% to 14.3%. It could be implied from these figures that there is a motivational effect present in those graduating from the Danish production schools. As observed by Lewis and Koshy (1999), however, rises in apparent retention rates in educational institutions and falling youth unemployment rates may be caused by labour market factors such as withdrawal from the labour market due to shrinking employment opportunities.

In fact, Moeller's & Ljung's (1999) findings of increased retention in education was accompanied by falling youth unemployment rates: Danish national unemployment rates for 15 to 24 year olds fell during the period 1989 to 1997 (Bowers et al., 1999). Nevertheless, the unacknowledged possibility of sampling error means these comparisons should be interpreted cautiously. Given the relatively small population of 20,000 persons in Korsør Municipality (Moeller & Ljung, 1999) attempts to attribute cause and effect by comparing its localised, small sample statistics with more broadly-based national statistics may conceal local variations in labour market structure such as a higher than average local unemployment rate that influences local school retention.

Summary

The effect of workplace learning on students' motivation for school learning appears to be a relatively inconclusive area of research. The paucity of such research has been evident for some time now, as noted by Hamilton and Crouter (1980) Watts (1983b), and Stone and Wonser (1990). Stone and Wonser (1990) found that '...few studies have explored the contribution of experientially based work programs to the

social development, educational advancement, or psychological maturity of participants' (p. 43). Much of this discussion was summarised by Stern et al. (1992), particularly in relation to the prevailing comparability of experimental and control groups and the range of workplace learning activities undertaken. At best, say Stern et al. (1992), these studies are '...quasi experiments...because students were not assigned at random to the [career] academy and comparison groups' (p. 59).

These factors indicate a gap in our knowledge and, accordingly, this study attempts to contribute to closing that gap, taking account of the issues raised above. It seeks to approach Stone and Wonser's (1990) observation relating to the educational advancement of students, particularly the question of Stone and Mortimer's (1998) workplace learning rationale of '...how work affects learning and other school related outcomes...' (p. 184). Moreover, it attempts to address Hudson's (1996) observation of the affective component of workplace learning in the TVEI by measuring the effects of workplace learning on students' self-reported attitudes to and motivation for school learning in an Australian context. This study employed a research design that goes some way to addressing the quest for more empirical research in this field of inquiry (Hughes & Moore, 1999; Saunders et al., 1996; Watts, 1983b). Furthermore, it addresses the question of the affectivity of mentors in the host workplaces influenced through their involvement in school students' workplace learning programs, as alluded to by Sweet (1993) above.

Relative numbers of pre-2000 research reports employing research designs with comparison groups and no explicit comparison group are summarised in Tables 2.1 to 2.3 inclusive. Comparison group studies are outnumbered in the ratio of 1:7 (2 studies to 14 studies), emphasizing the sizeable accumulation of anecdotal evidence about the effectiveness of school-sponsored workplace learning for students' motivation for school learning until 1999. For the summaries in Tables 2.1 and 2.3, classification by research designs of comparison group and no explicit comparison group was adopted from Hughes et al. (2001).

Table 2.1 *Summary of pre-2000 findings of students' improved motivation from research designs based on comparison groups*

Report	Findings
Hayward and Tallmadge, (1995) United States	Increased student grade point average, reduced failure rates
Linnehan, (1996) United States	Improved school attendance, acquisition of greater employer-relevant outcomes such as job performance and work attendance

Table 2.2 *Summary of pre-2000 findings of students' improved motivation from meta-analyses*

Report	Findings
Saunders et al., (1996) England	Deepening of young people's enjoyment of learning and motivation to learn

Table 2.3 *Summary of pre-2000 findings of students' improved motivation from research designs based on no specific comparison groups*

Report	Findings
Grubb, (1992) United States	Enhanced student motivation
Hirsch, (1992) Canada	Improved student academic achievement
Hirsch, (1992) England	Students better at working in groups and communicating, improved participation, attendance and punctuality
Hudson, (1996) England	Improved social development for students of average or below average ability
Hughes et al., (1999) United States	Improved motivation for seven of 25 students

Table 2.3 (continued)

Report	Findings
MacDonald and Black, (1987) Scotland	Evidence of motivating effects in approximately nine of 18 students
Moeller and Ljung, (1999) Denmark	Improved rates of retention in formal education
Pauly et al., (1995) United States	Tendency for more engagement in schoolwork, improved attendance, students showing greater interest in schoolwork
Peoria Public Schools, (1995) United States	Greater student interest in school
Rusch and Chadsey, (1998) United States	Improved student motivation
Scharaschkin, (1995) Australia	Enhanced student motivation
Stern et al., (1992) United States	Enhanced student motivation
Sweet, (1993) Australia	Motivational benefits to students
Tomlinson, (1997) England	Teacher-expectation of improved student motivation through job-related courses

*RELEVANT LITERATURE RELATING TO AFFECTIVE OUTCOMES FOR
STUDENTS 2000-2004*

Since the experimental phase of this research was undertaken in 1999-2000 the phenomenon of school-sponsored workplace learning's effect on students' motivation for school learning has received increased attention, partly because of the 10-year sunset clause for the 1994 U.S. School to Work Opportunities Act (Smith & Edmunds, 1999) operating from 2004 (Hughes, Bailey & Mechur, 2001). Fourteen relevant studies published post-1999 were found (Bailey, Hughes, & Barr, 2000; Browne, Betts, Richardson & Murfet, 2001; Elliott, Hanser, & Gilroy, 2002; Green &

Smith, 2002; Gorham & Browne, 2000; Helme & Polesel, 2004; Hughes, Bailey & Mechur, 2001; Kemple & Snipes, 2000; Linnehan, 2001; Linnehan, 2003; Maxwell & Rubin, 2001; Raffo, 2003; Wonacott, 2002). The empirical studies of Kemple and Snipes (2000), Maxwell and Rubin (2001), Linnehan (2001; 2003) and Rivera-Batiz (2003) offered evidence of a comparison group research designs being used to demonstrate a quantifiable gain in students' interest in school learning. Hughes et al. (2001) and Wonacott (2002) provided meta-analyses.

Kemple and Snipes' (2000) publication completes the interim report by Kemple (1997) cited above. This six-year study is important because it offers a rare example of randomised experimental research design in this field (Hughes et al., 2001; Stern, Dayton, & Raby, 2000). Kemple & Snipes' (2000) final report on approximately 1,700 students in nine career academy sites found that:

Among students most at risk of dropping out [of high school], Career Academies significantly improved high school outcomes. The Academies reduced dropout rates, improved attendance, increased academic course-taking, and increased the likelihood that students graduated on time (Kemple & Snipes, 2000: 43).

Where students were less at risk of dropping out, outcomes were more modest, however. Kemple & Snipes (2000) reported that when the data '...were averaged across the diverse groups of students and sites participating in the evaluation, it appears that Career Academies produced only modest improvements in students' engagement and performance during high school' (p. 44). Kemple and Snipes (2000) did acknowledge, however, that such averaging tended to '...mask the high degree of variation between [career academy] sites and the ways in which this variation may be associated with program effectiveness' (p.17).

Elliott et al. (2002) employed a propensity weighting technique to control for participants' self-selection bias in career academy evaluation so that their study moved beyond the limitations of the quasi-experimental status of similar evaluations noted above (Stern et al., 1992). They found that career academy participants improved their school attendance rates, grade point averages and graduation rates compared to similar non-academy students. A second source of bias in career

academy structures, self-selection of teachers into the academy program, was acknowledged but not controlled. The presence of this bias is important, however. As noted above, Kemple's (1997) interim report detected changes in students' involvement and engagement in school activities before the workplace-learning phase of career academies, and he speculated that changes in teaching approaches may have been responsible. Thus, the workplace learning effect of career academy evaluations may be entangled in the complexity of their structures, although they do provide a research focus aimed at disentangling those issues.

In another study of the effectiveness of career academies, Maxwell and Rubin's (2001) large-scale nine-year longitudinal study ($N = 10,120$) reported that students who held career academy internships displayed heightened motivation and increased their probability of continuing in postsecondary education. Moreover, post-school surveys of subjects drawn from the same cohort revealed that '...career academy students were much more likely to report that their high-school program provided a set of skills that would help them to remain engaged in what has come to be known as "lifelong learning"' (p.12). Helme and Polesel (2004) reported similar findings from Australia. They found that school students who had participated in vocational education and training (VET) in schools programs valued the opportunities they provided and their research suggested that VET in Schools assists in successful transition to post-school study and training.

Linnehan's (2001; 2003) smaller-scale comparison group research designs ($N = 202$ and $N = 100$ respectively) confirmed the effectiveness of workplace learning as an intervention for marginalized and/or disadvantaged student groups in improving their motivation for school learning. In his 2001 study, Linnehan demonstrated statistically significant positive gains in African American school students' grade point average and school attendance following longer than half-year terms of participation in workplace mentoring programs. Similarly, Linnehan's 2003 study of disadvantaged students reported statistically significant positive gains in school

students' belief in the relevance of school following one year's participation in a school-sponsored workplace mentoring program.

Rivera-Batiz's (2003) comparison group study of school-to-work (STW) programs found similar positive effects for minority youth that were '...substantially linked to greater course taking in science and math [*sic*] after participation in such programs' (pp. 180-181) and that: 'When other factors are held constant, students who participate in STW-transition programs have a lower likelihood of dropping out' (p. 183). Subsequent studies by Rivera-Batiz (2003) showed that participation in STW programs was linked strongly to post-school labour-market participation.

Hughes et al.'s (2001) meta-analysis reported research findings from one randomised experimental research design (Kemple & Snipes, 2000), other comparison groups research designs, and research designs employing no explicit comparison group. Hughes et al. (2001) concluded that '...participation in School-to-Work can improve high school students' attendance, grades, and graduation rates' (p. 11), although they noted that longer-term effects persisting beyond high school were not yet known (see Maxwell & Rubin, 2001, above for concurrent research). Moreover, despite its seemingly modest gains in improving motivation for school learning among mainstream groups (Kemple & Snipes, 2000), Hughes et al. (2001) found support for workplace learning programs, reporting that '...we found no studies reporting that School-to-Work is in any way detrimental to students' (p. 11). Wonacott (2002), however, noted that when students spent 20 or more hours per week in workplaces their academic progress declined, whether the workplace activity was school-sponsored or otherwise.

Summary

The lack of empirical research relating to the affective outcomes for students participating in school-sponsored workplace learning was noted above. The growth of empirical research since 2000 is acknowledged and Tables 2.4 and 2.5 summarise the research literature by research method and findings. The classification research of

designs by randomised experimental, comparison group, and no explicit comparison group was adopted from Hughes et al. (2001). What is striking about this body of research is the numerical increase in either a randomised experimental or comparison group research designs. For these research reports, the ratio of 7:4 has reversed the bias towards anecdote reported above. These tables present evidence of the extent to which empirical studies have emerged since the implementation of this study's research component in 1999.

Table 2.4 *Summary of post-1999 findings of students' improved motivation from randomised experimental research designs*

Report	Finding
Kemple & Snipes, (2000) United States	For students at high risk of dropout, reduced dropout rates, improved attendance, increased academic course-taking, and increased likelihood of timely graduation

Table 2.5 *Summary of post-1999 findings of students' improved motivation from research designs based on comparison groups*

Report	Findings
Elliott, Hanser, & Gilroy, (2002) United States	Compared to similar non-academy students, career academy participants improved their school attendance rates, grade point averages, and graduation rates
Helme & Polesel, (2004) Australia	Suggests that VET in Schools assists in successful transition to post-school study and training, students valued the opportunities provided by VET in Schools programs
Linnehan, (2001) United States	Statistically significant positive gains in grade point average and school attendance

Table 2.5 (continued)

Report	Findings
Linnehan, (2003) United States	Statistically significant positive gain in students' belief in the relevance of school
Maxwell & Rubin, (2001) United States	Heightened student motivation and increased probability of retention in postsecondary education, greater likelihood of engagement with lifelong learning
Rivera-Batiz, (2003) United States	Increased student enrolment in science and mathematics courses, reduced likelihood of high school dropout, strong links between participation in school-to-work programs and subsequent labour-market participation

Table 2.6 *Summary of post-1999 findings of students' improved motivation from meta-analyses*

Report	Findings
Hughes et al., (2001) United States	Improved student attendance, grades, and graduation rates
Wonacott, (2002) United States.	Increased student attendance and completion of academic courses, higher grade point averages, decreased dropout rates, some negative effects on academic achievement where work is 20+ hours per week

Table 2.7 *Summary of post-1999 findings of students' improved motivation from research designs with no explicit comparison group*

Report	Findings
Browne et al., (2001) Australia	A challenging male student developed a more positive attitude to school learning
Gorham & Browne, (2000) Australia	Improved student socialization into adult roles
Green & Smith, (2002) Australia	Increased student motivation in schoolwork
Raffo, (2003) England	Improved motivation for learning for two out of the three students studied

These summaries illustrate the support, both empirical and anecdotal, for the notion that school-sponsored workplace learning improves students' motivation for school learning. This leads to consideration of causal relationships between workplace learning and improved student motivation, and what explanations there may be for such improvement.

CAUSAL RELATIONSHIPS BETWEEN WORKPLACE LEARNING AND IMPROVED MOTIVATION FOR SCHOOL LEARNING

No studies were found that explained a causal relationship between workplace learning and improved motivation for school learning. In their case study Green and Smith (2002) attempted an explanation, reporting that

...some students reported increased motivation in schoolwork after periods in the workplace. This was variously because they began to have a clearer idea of what they wanted to do and how school could help them reach their goals, or because they learned that workplaces were hostile environments compared with school and thus appreciated school more (p. 22).

These sentiments tend to resonate with students' comments from earlier studies (MacDonald & Black, 1987) but no generalisable evidence about causation between workplace learning and motivation for school learning was found.

In his meta-analysis, Wonacott (2002) considered the particular effect of work-based learning [WBL] on students' positive outcomes in programs such as '...Tech Prep [*sic*], career academies, and High Schools That Work...' (p. 3) programs. He concluded that

It is difficult, if not impossible, to say exactly what role WBL plays in producing positive effects.... Nevertheless, WBL may play a crucial indirect role in improving outcomes for at risk students by increasing their engagement in learning, whether in or out of school (p. 4).

Nonetheless, despite the lack of agreed explanation for any causal relationship between workplace learning and increased motivation for school learning, reports of workplace learning's positive role in engaging at risk students continue to be published, particularly in relation to addressing the needs of at-risk students. Several studies published before and after the experimental phase of this study in 1999-2000 have reported the effects of various factors associated with school-sponsored workplace learning that may affect individual students' motivation for school learning. These are summarised below and their potential links with causal aspects of this study are assessed.

Contextual factors in workplace learning that may affect students' motivation for school learning

MacDonald and Black's (1987) study included some interviews with high school students about their attitude to school after completing a session of workplace learning (work experience). Two students expressed an eagerness to leave school as soon as possible, saying that they found the workplace more suited to their temperaments. The remaining seven students reporting a relevant opinion expressed a renewed appreciation of school, for reasons ranging from the need to stay at school and achieve better leaving qualifications (five students) to a deeper appreciation of the work of teachers (two students).

This phenomenon of school students' tendency to think more critically of themselves and their post-school futures following participation in workplace learning was observed in a United States research report. In their study of three work based learning (WBL) programs for mostly minority group students in Los Angeles, Stasz and Kaganoff (1998) noted that there was a loose connection between WBL and school learning but that workplace learning provided subtle cues for students that could encourage them to re-engage with school. Stasz and Kaganoff (1998) speculated that:

Perhaps the real power of the WBL concept is pedagogical: authentic work experiences should give students opportunities to apply knowledge in useful contexts. They thereby can gain a deeper understanding of both their abilities and the opportunities they can create for themselves through experience and/or education (p. 5).

Hughes et al. (1999) tested claims that workplace learning improved students' motivation for school learning and found that seven of the 25 students surveyed reported improved motivation for school learning following workplace learning. These students explained that their improved motivation for school learning arose from an increased interest in a particular topic or field that arose in their workplace internship, and/or a heightened awareness of the importance of school learning in achieving work goals. Similar reasons emerged in Green and Smith's (2002) study. They found that some students' motivation for school learning increased after workplace learning, either

...because they began to have a clearer idea of what they wanted to do and how school could help them reach their goals, or because they learned that workplaces were hostile environments compared with school and thus appreciated school more (Green & Smith, 2002: 23).

These sentiments are supported by findings from Smith and Wilson's (2002) research. One of their respondents reported a positive relationship between their work experience and motivation for school learning: 'Work experience gave me a sense of direction and of what I want to do and where I want to go after school' (p. 20). Conversely, three of their respondents' experience of workplace learning was

quite negative: 'I always thought working would be great instead of going to school but it taught me that work wasn't.... Working as a waitress hurts your feet and is boring.... It is a soul-destroying experience' (Smith & Wilson, 2002: 20).

In several studies employing no explicit comparison group research design, Browne et al. (2001), Gorham & Browne (2000), and Raffo (2003) all reported positive outcomes from participation in workplace learning for students at risk of disengaging from schooling. No attempt was made by the authors of these studies to test the generalisability of these findings (Allal and Cardinet, 1997).

The changes in motivation noted by MacDonald & Black (1987), Hughes et al. (1999) and Green & Smith (2002) indicate the ascription of an instrumental view of learning in that the individual is motivated by factors external to the learning itself. Yet, it is unlikely that such relatively shallow levels of motivation can explain deeper-seated behaviours such as increased likelihood of engagement with lifelong learning (Maxwell & Rubin, 2001) or deepening of enjoyment of learning (Saunders et al., 1996) reported elsewhere.

It is notable that Wonacott (2002) saw students' increased engagement in learning '...whether in or out of school' (p. 4) as a crucial factor in re-engaging at-risk students, and that Stasz and Kaganoff (1998) speculated that the authenticity inherent in workplace learning pedagogy could achieve similar ends. Lave and Wenger's (1994) work on situated learning theory addresses the role played by contexts for learning in school and learning in workplaces affecting learning outcomes, particularly in relation to individuals' motivation for learning. This leads to consideration of situated learning theory as an explanation for the causal relationships underpinning the findings of this research.

Situated learning theory and motivational contexts for learning in workplaces and schools

Learners in workplaces, say Lave and Wenger (1994), are placed in positions of ‘...legitimate peripheral participation...’ (p. 110) whereby the novice is accepted into the workplace and then interacts with host employees, some of whom have attained the status of ‘...acknowledged adept practitioners...’ (p. 110). The novice’s presence and the validity of the workplace activity as shown by the adept practitioners’ performance legitimates the novice’s perception of the learning activity, particularly in view of the adept practitioners’ portrayal of ‘...mature practice...’ (p. 110). Motivation for learning is enhanced, say Lave and Wenger (1994), both because of the extrinsic value of the mature practice apparent to the novice and, importantly, its role in forming aspirations towards ‘...*becoming* part of the community [emphasis in original]’ (p.111).

Novices’ motivation for learning is sustained in the workplace community in the course of their deepening involvement through the allocation of tasks that are more difficult and their progression to recognition as an adept practitioner (Lave & Wenger, 1994). Importantly, novices receive in this process ‘...adult attention, guidance, and support...’ (Guetzole 1997: 100), a factor noted by Linnehan (2001 & 2003) in relation to workplaces, and Kemple (1997) in relation to schools. In addition, the motivational value of this deepening involvement resonates with Raffo’s (2003) observations about the motivational effects of trust and support in workplaces and links to earlier work on the value of external support for school students at-risk of early school leaving.

Arguably, workplace learning provides a learning context where successful learning has an immediate application (Kazis & Goldberger, 1995). The lack of such immediacy of application in school learning moves responsibility for maintaining learning motivation through the period of deferred rewards accruing from school learning (Kazis & Goldberger, 1995) to ‘...“didactic caretakers”...’ (Lave & Wenger: 112), who are most usually teachers and parents. Yet the capacity of teachers and

parents to support adequately some educationally disadvantaged students' development of motivation for school learning is limited, if not negated, in the school learning context (Ainley et al., 1995; Dowson & McInerney, 1998). As pointed out by Guetzole (1997) young people's links with the traditional agents of socialisation such as school and family (Hunt, 1972) are becoming more tenuous.

Therefore, situated learning theory seems to offer a plausible explanation of improvement in motivation for learning in workplaces, yet there remains a lack of articulation of the causal relationship between improving motivation for workplace learning and improving motivation for school learning. The weakness of Lave and Wenger's (1994) explanation of the observed phenomenon via situated learning theory is that of its failure to take account of the dynamic nature of the relationship between learners and learning contexts (Engeström & Cole, 1997).

Lave & Wenger's (1994) explanation of the development of motivation for learning is underpinned by an assumption of stability of process, particularly in respect of the learner's unidirectional interaction with the workplace practices: from periphery to centre as defined by the attainment of task-mastery. Engeström and Cole (1997) point to the dynamism of learners' interactions in task accomplishment being influential in relation to the learner's developmental status: 'Not only is the individual developing, the practices in which he or she is involved develop, too' (p. 306). Consequently, argue Engeström and Cole (1997), not only does the dynamic nature of the learning tasks that shape learners' motivational responses affect their development, but learners bring to the process a level of intimacy that, combined with the dynamism of their task-accomplishment, promotes the '...emergence of novel actions by individuals' (p. 306).

Two recent research reports support Engeström and Cole's (1997) interactive model of workplace learning. Fuller and Unwin (2004) found that apprentices learning in workplaces drew on their previous learning away from the workplace, for example at school, college, or wider life experience, to teach others in the workplace:

...apprentices are helping colleagues...they are sharing their expertise in relation to manual, cognitive and affective skills. Some of the 'sharing' and 'explaining' takes the form of [apprentices'] teaching or instruction, in that it goes beyond spontaneous interchange of ideas and 'know how' (p. 37).

Similarly, Chin, Bell, Munby, and Hutchinson (2004) reported that workplace learning conformed to Hung's (1999) theory of epistemological appropriation in that the learner showed evidence of '*...submitting* to the authority of the experienced practitioner...*mirroring* the practitioner, and *...constructing* independently patterns of actions and beliefs inherent to the community [emphases in original]' (Chin et al., 2004: 404)). Concurrently, Chin et al. (2004) reported, the learner's acquisition of knowledge and skill was paralleled by the mentor's '*...scaffolding, modeling [sic], and coaching* [emphases in original]' (p. 404) appropriate to the learner's progress.

Thus, the research reported by Fuller and Unwin (2004) and Chin et al. (2004) provide examples of the interactive nature of workplace learning that supports Engeström and Cole's (1997) criticism of the limitations of situated learning theory. They do not (nor do they claim to), however, provide evidence that assists in explaining the causal relationship between students' experience of workplace learning and their subsequent increased motivation for school learning. In fact, Engeström and Cole's (1997) research leads to consideration of activity theory processes, the scope of which is beyond the outcomes focus of this study, although its explanatory power and usefulness for further research in this field is acknowledged. Additionally, much of the foregoing has focused on differences between schools and workplaces in seeking explanations for school students' improved motivation for school learning after participating in workplace learning. Alternative explanations for such improvement may lie in the similarities between the two learning contexts rather than their in their differences.

Contextual similarities between workplace learning and school learning

Raizen (1989) perceived a narrowing of the contextual differences between workplace learning and school learning and contemplated '*...the extent to which the work environment, with its increasing complexity, will come to resemble more and*

more the academic strand of education' (p.11). In so doing, Raizen (1989) questioned whether

...the separation between school and work is actually shrinking, that school learning will become more functional for effective job performance as the application of technology continues to make the work environment more symbol-dependent (p. 11).

Some of the discussion in Chapter 1 of this study supports Raizen's (1989) observation. Australian labour market restructuring associated with globalisation and technological change tends to value abstract skills in working with symbols in a changing environment such as those found in high skill areas of the service industry ahead of lower level manual skills in more predictable, routine work environments (van Liemt, 1992; Maglen & Shah, 1999; Misko, 1998; Resnick & Wirt, 1996).

Such observations invite conjecture as to whether there are certain student characteristics that may tend to increase motivation for learning in workplaces that are becoming more similar to school learning contexts. SES background was established as one such characteristic in Chapter 1 of this study and the motivational value of school-sponsored workplace learning programs for students from low SES backgrounds has been noted above (e.g., Kemple & Snipes, 2000). Another student characteristic that may have been overlooked and is relevant to this study is that of gender.

Gender-moderated motivational tendencies for school learning

Several studies about gender-moderated motivational tendencies related to school learning found that female students showed higher levels of motivation as demonstrated through their general willingness to be involved in activities related to school learning (Fullarton, 2002; Igoe & Sullivan, 1991; Johns, 1997). Thus, female subjects' greater involvement in school learning may extend to school-sponsored activities such as workplace learning. Therefore, females' higher levels of motivation for school-like learning activities in workplaces may have affected the results for studies in this field of inquiry. Whilst no studies were found that explicitly pursued

this point, there is evidence of disproportionately high numbers of females participating in school-sponsored workplace learning programs.

Gender participation in school-sponsored workplace learning

In a randomly sampled eight-state evaluation of workplace learning sponsored through the United States' School-to-Work Opportunities Act ($N = 5,503$), Haimson and Bellotti (2001) reported an over representation of females in workplace learning. In Australia, Fullarton's (1999) longitudinal study of Australian youth ($N = 11,150$) found that female secondary students were more likely than male secondary students to participate in workplace learning programs. Neither Haimson and Bellotti (2001) nor Fullarton (1999) reported statistically significant differences for gender representation, however. All of Linnehan's (1996; 2001; 2003) comparison group studies reported high levels of female participation (76%, 64% and 62% respectively). In the first study, Linnehan (1996) acknowledged female bias and controlled for it, but in the latter two studies, Linnehan (2001; 2003) found it was not statistically significant.

The over representation of females in the studies cited above may be related to students' perception of industry relevance to their gender-specific aspirations for workplace learning; those who feel little or no affinity with a particular kind of workplace may not apply for inclusion in the program. Therefore, consideration of the importance of the kind of workplace learning offered should be acknowledged. Haimson and Bellotti (2001) considered the possibility of such an influence in workplace learning programs in their study. They noted that the availability of some schools' well-developed work-based learning programs in health-service occupations had apparently attracted more females than males. Fullarton (1999) speculated in a similar fashion, noting that the greater availability of workplace learning programs in occupations and industries attractive to females may have led to higher rates of female participation. These observations lead to consideration of the real-world gender-segregation of workplaces, that is, are students' gender-segregated responses to some school-sponsored workplace learning programs reflective of gender-

segregation in real-world workplaces? The national location of this study focused consideration of this question on Australian workplaces.

Gender-segregation in Australian workplaces

In Australian workplaces there is research evidence supporting the notion that females are over represented in some workplaces. For example, Harrison (2002) found that in relation to workplaces by industry type, females were over represented markedly in health and community services, and education. Thus, these findings tend to support the implications of Haimson and Bellotti (2001) findings that students' gender-segregated attraction to some school-sponsored workplace learning programs may be influenced by their correspondence to the real-world gender-segregation of workplaces. Therefore, the choice of industry type and its real-world gender-balance profile may be significant for any study into the relationships between school-sponsored workplace learning and students' subsequent improved motivation for school learning.

Summary

Whilst causal relationships between school-sponsored workplace learning are not explained satisfactorily in the literature, several factors should be accounted for in any study of the role of school-sponsored workplace learning in improving socio-economically disadvantaged school students' motivation for school learning.

Prominent among these is the acceptance of effects of gender-specific motivation, and the consequential gender-biased attractiveness of workplace learning programs located in particular industry types.

MENTORING BY HOST WORKPLACE PERSONNEL

Much research into affective outcomes from workplace learning arises in the context of employees' affectivity being defined by their willingness to participate in and adopt workplace practices resulting from learning programs designed to enhance their skills and/or improve their productivity (Billett & Cooper, 1998; Seyler, Holton III, Bates, Burnett, & Carvalho, 1998). Relatively limited research has been undertaken

to investigate the effects of hosting and/or mentoring school students' workplace learning on host enterprises and their employees, although some useful evidence of host employee affect associated with the mentoring activity is available (e.g., Confederation of British Industry, 1994; Hirsch, 1992; Kazis & Goldberger, 1995; Pauly et al., 1995; Sweet, 1993). The limitations impinging on this research field may arise from affective outcomes being less tangible and more difficult to quantify, as noted by Hirsch (1992) for example:

There is a feeling that employees who participate [in workplace mentoring] are likely to learn more about teamwork, about young people and about teaching. But these effects appear to be fairly random, and the gain to the company is difficult to pin down (p. 57).

There are exceptions to Hirsch's (1992) view. For example, the Confederation of British Industry (1994) reported evidence of BP's (presumably British Petroleum's) confidence that it saw typical benefits to itself from hosting workplace learning as:

1. A contribution to the motivation and development of BP staff.
2. Creation of opportunities for the company to understand, influence and learn from education.
3. Help with recruitment.
4. Earning of goodwill.
5. Access to resources, expertise and facilities. (Confederation of British Industry, 1994: 19).

Apart from item 1, however, these expressions of benefit tend to be associated with instrumental workplace benefit (help with recruitment, influencing and learning from education, access to resources, expertise and facilities) and affect (earning goodwill) at an enterprise level. Whilst item 1 identifies BP staff as beneficiaries and identifies motivation and development as outcomes, it does not differentiate between their cognitive and affective aspects. It does not identify '...a cognitive component (a set of beliefs about the attitude object) [and] an affective component (feelings or emotions elicited by the attitude object)' (Organ & Konovsky, 1989: 158), the attitude object being mentoring school-sponsored workplace learning. BP's expressions of benefit (Confederation of British Industry, 1994) tends to confirm

claims that in some instances the research has focused on management personnel's ideas about the effects of workplace learning on host employees without consulting the employees at the operational level of the enterprise (Hillage, Hyndley & Pike, 1995). Research at the enterprise level also seems to focus on the financial cost associated with hosting school students for workplace learning. Pauly et al. (1995) reported that this most usually takes the form of staff time for training and supervising students in the workplace.

Nevertheless, BP's list of enterprise-benefit outcomes from hosting school-sponsored workplace learning (Confederation of British Industry, 1994) was corroborated by Kazis and Goldberger (1995) who reported that: 'There are two general reasons why employers choose to participate [in school-sponsored workplace learning] ...one is their own labor [*sic*] market needs; the other is their sense of responsibility to the community and its youth' (p.178). These factors tend to overlook deeper-seated benefits from hosting school-sponsored workplace learning, however, alluded to by Sweet (1993): improved employee affect, in that the act of mentoring of itself elicits prosocial behaviours in host workplaces.

There is research evidence from the organizational behaviour literature that supports Sweet's (1993) suggestion by indicating an association between workplace mentoring and prosocial behaviour (Isen & Baron, 1991). Moreover, workplace personnel's experience of positive affect through their exhibition of prosocial behaviours in workplaces is related to improved work performance (Côté, 1999; Isen & Baron, 1991). Côté (1999) asserted that:

Evidence supporting an association between affect and job performance exists for individuals, groups, and work tasks of short duration. Furthermore, explorations of causal effects between affect and job performance suggest that happy employees are productive and that productive employees are happy (pp. 67-68).

Thus, Côté (1999) concluded that positive affect provides benefits at several levels in the organizational setting, noting that '...research on affect and performance needs to be conducted at multiple levels of analysis, as research conducted at one level of

analysis (e.g., the individual) may not generalise to another level of analysis (e.g., the group)’ (Côté, 1999: 68).

Given that no evidence was found in the research literature about the direct relationship between organizational behaviour and workplace mentoring in school-sponsored workplace learning programs, its potential as an avenue of inquiry in relation to this study was recognised. Accordingly, this research attempted to draw together these two fields of enquiry. Moreover, it heeded Côté’s (1999) advice and included the effects of mentoring in workplace learning on host workplace employees’ affect at multi-level analyses.

Multi-level analyses allows for employees who participate in the hosting of workplace learning for high school students to provide input in terms of its relationship with their affect in each of four workplace context layers (O’Connor, 1994b) namely:

- Individual workers;
- Work teams or groups;
- Work section or department; and
- Enterprise.

Such involvement recognizes that ‘...those who know most about the detailed and intimate workings and requirements of the particular [workplace] context layer are those who occupy, operate and shape its functions’ (O’Connor, 1994b: 275), and provides access to descriptions of host employees’ affectivity attending mentoring roles at four levels of analysis (Côté, 1999).

*RELEVANT LITERATURE RELATING TO AFFECTIVE OUTCOMES FOR
HOSTS 2000-2004*

Since 2000, output in this area of research has remained relatively modest. Some further research on the financial costs of hosting school students for workplace learning was found (Bassi & Ludwig, 2000), complementing that of Pauly et al. (1995) reported above. Bailey, Hughes, and Barr (2000) reported a comparison group study of host employers' motivations for participating in workplace learning, and Curtain (2001) reported that from host employers' perspectives increased employee morale was an expected benefit outcome from their participation. One study was found reporting the effects of hosting workplace learning on mentors' affect (MacAllum & Charner, 2000).

Bailey et al. (2000) reported that philanthropy and self-interest tended to underpin employers' motivation for participating in workplace learning, supporting the findings by Kazis and Goldberger (1995) noted above. Bailey et al.'s (2000) data suggest that '...the most important motivation for participation [in school-sponsored workplace learning] remains philanthropic, although a strong minority of firms report that bottom-line-oriented reasons are the most important motivations for their participation' (p. 58). Moreover, reported Bailey et al. (2000), of those employers who were non-participants, more favourable cost/benefit arguments would be required to engage them. Thus, while host employers' community service ethic is important in their decision to participate, the costs noted by Bassi and Ludwig (2000) and Pauly et al. (1995) remain important factors for them. Similarly, Curtain (2001) reported that whilst personal satisfaction for staff ranked highest of host enterprises' expected benefits from hosting workplace learning, 'Community bodies will need to present "value propositions" for their [workplace learning] activities' (p. 33). Moreover, Curtain (2001) noted that 'Firms are seeking measurement and evaluation tools to assess the value of their community contributions, and to measure the benefits that flow back to business' (p.33). Consequently, financial benefit accruing from the prospect of improving employees' positive affect through mentoring school

students (Côté, 1999), assumes relevance in promoting school-sponsored workplace learning.

MacAllum and Charner (2000) found that host mentors experienced personal enrichment and welcomed students into their work teams. Additionally, the presence of school students in the workplace encouraged mentors to adopt more responsible workplace practices. MacAllum and Charner's (2000) study did not deal directly with mentors' affect and workplace performance cited above (Côté, 1999) but it does provide possible corroborating evidence related to this study's analysis based on O'Connor's (1994b) workplace context layers. Additionally, Bailey et al.'s (2000) and Bassi's and Ludwig's (2000) research provides a similar possibility in relation to the enterprise workplace context layer (O'Connor, 1994).

Post-1999 evidence supporting Côté's (1999) claims of productivity gains from the positive affect attending workplace-mentoring roles was reported in the organizational behaviour literature, however. Scandura and Hamilton (2002) noted that both parties in the mentoring process may experience higher levels of emotional intelligence as defined by '...empathy, self-awareness, self-motivation, and social skills' (p. 301). Correspondingly, Scandura and Hamilton (2002) found that raised emotional intelligence was accompanied by competence in dealing with social situations, which added to both parties' productivity by developing and maintaining successful working relationships. In isolating benefits to mentors, Scandura and Hamilton (2002) reported that the mentoring role '...may positively impact on the individual performance of the mentor' (p. 297), but noted that: 'More research is needed to explore performance and other benefits that mentors may receive from the mentoring relationship' (p. 297).

CONCLUSION

This literature review has focused on establishing extant knowledge about the two research questions identified in Chapter 1. They are:

- *Research Question 1: Does participation in school-sponsored workplace learning improve socio-economically disadvantaged high school students' motivation for school learning? and*
- *Research Question 2: Does positive affect attend host workplace mentoring roles in school-sponsored workplace learning?*

In relation to Research Question 1, the literature review in this chapter has traced the development of school-sponsored workplace learning and has investigated claims for its association with school students' improved motivation for school learning. It found that a substantial body of anecdotal evidence has accumulated, although it has been somewhat unfocused in its identification of particular aspects of students' development in the affective domain. Since 2000 several experimental and comparison group studies have reported more convincing evidence of the positive effects of school-sponsored workplace learning on students motivation for school learning, notably those by Kemple and Snipes (2000), Linnehan (2001; 2003), Maxwell and Rubin, (2001), and Rivera-Batiz (2003). Causal relationships between school-sponsored workplace learning and motivation for school learning were implicit in these accounts, but no satisfactory explanation was found. In this regard, the influence of dissimilarities and similarities between workplace learning and school learning were considered, as well as the presence of factors such as gender-moderated motivation and gender-segregation in workplaces.

The effects of hosting school-sponsored workplace learning addressed by Research Question 2 is less well documented and there is little evidence of research evaluating positive affect for host workplace mentors. Recent case-study research (MacAllum & Charner, 2000) goes some way to filling this knowledge gap, but is constrained by its partial focus on mentor affect in the context of its wide-ranging investigation into several aspects of partnerships in a workplace learning program. Few studies were found linking the field of organizational behaviour and school-sponsored workplace learning. Therefore, this study will seek to address that gap in

our knowledge and take the organizational behaviour research on employee affect and its relationship to workplace performance as a focus for determining the affectivity of mentors hosting students for workplace learning. In Chapter 3 theoretical structures supporting research to answer the two research questions noted above are developed.

CHAPTER 3

RESEARCH METHOD

INTRODUCTION

The contextual factors and antecedents established for this study in Chapters 1 and 2 indicated that changed and changing contexts for work and learning have created an imperative for school students to develop a motivation for school learning. Such development will contribute to the capacity of each to respond to the learning demands of a globalised and changing employment environment (O'Connor, 1994b; Tasmania, Department of Education, Community and Cultural Development, 1996; van Liemt, 1992). In Chapter 1 school-sponsored workplace learning was identified as a curriculum intervention in compulsory schooling aimed at achieving greater inclusiveness in secondary schooling for socio-economically disadvantaged high school students by developing their motivation for school learning.

In Chapter 2 a review of the literature related to school-sponsored workplace learning in Australia and other industrialised Western democracies revealed that despite a body of extant research on workplace learning, limited empirical research has been undertaken to measure the effects of workplace learning on students' motivation for school learning (Hughes & Moore, 1999; Misko, 1998; Saunders et al., 1996; Stone & Wonser, 1990; Watts, 1983b; Wellington, 1993b). Since 2000, however, empirical research output supporting school-sponsored workplace learning as an effective intervention has increased markedly. Table 2.1 in Chapter 2 summarises empirical studies pre-2000 and in the same chapter Tables 2.4 and 2.5 summarise post-1999 experimental studies.

A related research issue was identified in Chapter 1: determination of the affective responses of host workplace mentors participating in school sponsored workplace learning programs. As revealed in Chapter 2, there is some extant

knowledge, but little research into affectivity attending host workplace mentoring roles (Côté, 1999; Hirsch, 1992; MacDonald & Black 1987; Misko, 1998; Pauly et al., 1995). A post-1999 study, however, has reported some affectivity associated with host mentors roles in school-sponsored workplace learning programs (MacAllum & Charner, 2000), but its publication date was too late to influence the research method for this study.

As indicated in Chapter 1, a school-sponsored workplace learning program was identified as the subject of this research. Thus, the two research questions were identified in Chapter 1 and were the foci for this study. They are:

Research Question 1: Does participation in school-sponsored workplace learning improve socio-economically disadvantaged high school students' motivation for school learning?

Research Question 2: Does positive affect attend host workplace mentoring roles in school-sponsored workplace learning?

Ethical considerations

In relation to Research Question 1 approval for this research rested with the subject school's principal, in accordance with the terms of the former Tasmanian Department of Education, Training, Community and Cultural Development ethical guidelines for research in schools (Tasmania, Department of Education, Training, Community and Cultural Development, 1998b). Accordingly, the school-based aspects of this research required no formal approval at a departmental level because of the researcher's employment status as a member of the subject school's teaching staff for the duration of the research project. The research formed part of the researcher's professional responsibilities in leading the vocational education component of the school's ASSR process (Curriculum Corporation, 2000; Tasmania, Department of Education, Community and Cultural Development, 1997b). In accordance with

ASSR guidelines, the subject school's principal provided written approval for the researcher's access to relevant data for this study and related publications.

Inquiry for Research Question 2 involved personnel beyond the administrative reach of the Department of Education, Training, Community and Cultural Development and required approval from the University of Tasmania Human Research Ethics Committee. Accordingly, approval was sought to involve host workplace mentors in this research project under the auspices of the University of Tasmania and was granted on July 31, 2000, vide the Human Research Ethics Committee of the University of Tasmania, reference number H5802.

The remainder of this chapter will address issues of research method related to answering the two research questions, including their relevance to current knowledge, the research contexts, research design, and modes of data analyses adopted to substantiate an investigation.

RESEARCH RELEVANCE

Gaps in our knowledge related to the two research questions noted above were identified in Chapter 2. As indicated in Chapter 2, little research has specifically focused on affective outcomes accruing mutually for students and hosts engaged in school-sponsored workplace learning. Thus, the relevance of this research is twofold: firstly, it relates to the effects of school-sponsored workplace learning on socio-economically disadvantaged school students' motivation for school learning, and secondly, to concomitant affective outcomes for host workplace mentors.

RESEARCH CONTEXT FOR RESEARCH QUESTION 1

This facet of the research was conducted during 1999 and was integral to Blue Gum High School's participation in the ASSR quality assurance process arising from the Tasmanian government's *Directions for Education* policy (Curriculum Corporation, 2000; Tasmania, Department of Education, Community and Cultural Development, 1997b). Information related to the demographic and educational contexts of Blue

Gum High School was reported in Chapter 1, as were details of the workplace learning program undertaken by the Experimental subsample of school students. The latter's conformity to accepted models of workplace learning practice is presented below in relation to quality assurance in this research context (Kazis & Goldberger, 1995).

The location of this study in the suburban supermarket retail industry acknowledged its availability through a multiplicity of accessible workplaces. This action also sought neutrality in workplace gender-segregation, although the Australian retail trade's trend away from marginally higher rates of female employment towards marginally higher rates of male employment over the period 1990 to 1995 was noted (Harrison, 2002). Also, Australian retail trade, more than any other industry sector, maintained its share of youth employment from 1966 to 1995 (Jamrozik, 1998), thus identifying it as an industry accustomed interacting with young people.

The maxmincon principle and Research Question 1

In relation to Research Question 1, the sites for this research, Blue Gum High School and the host enterprise's six suburban supermarkets, provided an empirical research context with potential to apply Kerlinger's (1973) *maxmincon* principle: maximisation of experimental variance; control of extraneous variables; and minimisation of error variance. As discussed in Chapter 1, the concentration of low SES background students in the subject school was substantial, amongst the highest in the state of Tasmania and nationally in Australia. The associated low levels of students' motivation for school learning (Caldas & Bankston, 1997; Churchill, 1998; Gerwitz et al., 1995; Sparkes, 1999; Tasmania, Department of Education and the Arts, 1994) gave this research the potential to maximise experimental variance. As indicated in Chapter 2 and more fully detailed below, extraneous variables related to differences in training content and methods were controlled through the adoption of a quality-assured workplace learning program.

Quality assurance for workplace learning in this study

Concerns over schools' lack of control over the quality of workplace learning programs were alluded to in Chapter 2 (Cumming & Carbines, 1997; Hayward & Tallmadge, 1995; Hudson, 1996; Kazis & Goldberger, 1995). These researchers noted that where students were placed for unplanned workplace learning, those students' and others' confidence in the effectiveness of school-sponsored workplace learning was compromised. Moreover, where variability occurred in assessing standards of performance in workplace learning programs such as the Compacts programs in the United Kingdom, students and teachers felt uneasy, particularly where those assessments affected future employment prospects (Wellington, 1993a). When, however, quality-assured workplace learning activities were undertaken together with consistent assessment across a range of workplaces, the motivational effects of workplace learning were detectable (Scharaschkin, 1995; Smith, 1994; Sweet, 1993 & 1995).

Thus it appears that if the effects of workplace learning on students' motivation for school learning is to be measured, then it would be advantageous if the workplace learning was quality-assured and, so far as practicable, identical for each student so that systemic effects in subsequent analysis are minimised. The Australian VET reforms reported in Chapter 2 provided such an opportunity through the host enterprise's status as a Registered Training Organization (RTO) (Tasmanian State Training Authority, 1998) and the enhancement of its RTO status through its achievement of registration as a Quality Endorsed Training Organization (QETO) (Purity/Roelf Vos, 1999).

Host enterprise's quality-assured training system

The host enterprise's six supermarkets and staff training college located within a 20 kilometre radius of Blue Gum High School were the sites for the workplace learning program that is the subject of this study. The host enterprise established its personnel training programs through the articulation of workplace performance it wished to have practised by its staff. Thus, employees already doing the tasks themselves

developed *Service Standards* from analyses of current practice through their documentation of workplace expectations and appropriate training requirements. This documentation was refined through expert panels to comply with the requirements for recognition and accreditation through the Australian National Training Authority (ANTA) (Institute for Working Futures, 1995). Through this process, the host enterprise had established its training program by 1998, and had achieved advanced standing in training operations through its achievement of Quality Endorsed Training Organization (QETO) status. This level of registration allowed the host enterprise to design and deliver nationally-accredited training programs suited to its enterprise (Tasmanian State Training Authority, 1998).

Application of quality assurance for this research project

The structure of the workplace learning for all participating students in this research project followed the Australian Qualifications Framework (AQF) and as such provided students with an opportunity to complete a vocational qualification leading to entry-level employment with links to further education and training. Adoption of the staff training offered by the host enterprise and detailed above represented a variation from the VET in Schools model (Curriculum Corporation, 1997) in that no off-the-job training took place at school; the host enterprise taking up that function in its off-the-job staff training college.

At the host enterprise training college students undertook one day's off-the-job orientation and occupational health and safety training for the first day of the 10-day workplace learning program. In all respects, the training shared the same competency-based approaches for delivery and assessment as do all other VET programs operating under the mutual recognition principle (Tasmanian State Training Authority, 1998). Furthermore, this workplace learning was delivered to students in grade 10 rather than the normal practice of delivering it to grade 11 and 12 in VET in Schools programs (Curriculum Corporation, 1997).

Thus, the workplace learning program available to students from the subject school was quality-assured through the auspices of the Australian National Training Authority (ANTA). This allowed uniformity in training and assessment by host workplace mentors from a single host enterprise in a number of operationally-equivalent host work sites. The workplace learning program for this study conformed to nine of the 10 basic elements identified by Kazis and Goldberger (1995) as being desirable in a school-sponsored workplace learning program, namely:

1. Agreement on the goals of the workplace learning program and their achievement;
2. A written learning plan to guide student learning in the workplace;
3. The planned development of broad, transferable skills;
4. Complementary school-based activities to distil and deepen the lessons of workplace learning;
5. Careful documentation and assessment of workplace learning activities;
6. Social and psychological orientation prior to entering the workplace;
7. Workplace support that allows students to cope with the work environment and its demands;
8. Orientation and support for workplace and school personnel;
9. Careful design of workplace learning co-ordination and management;
10. Institutionalised mechanisms for quality assurance of students' workplace learning.

Nine of these 10 elements were present in this workplace learning program. Item 4, relating to school-based instructional support, was not pursued in deference to the host enterprise's comprehensive extant training system (Institute for Working Futures, 1995). This action accorded with Bailey, Hughes, & Barr's (1998) findings that workplace learning programs for school students '...appear to work best if they are tied more directly to work preparation than to educational preparation' (unnumbered page). This view is supported by Stasz & Kaganoff (1998) who reported that '...students can learn many things when school and work are unconnected' (p. 5). Stasz and Kaganoff's (1998) thoughts on the nature of that

learning was cited more fully in Chapter 2. Thus, in research terms, this quality-assured approach in the workplace learning program in relation to content, method, time, and place accorded with the second of Kerlinger's (1973) *maxmincon* principles: '*...eliminate the effect of a possible influential independent variable on a dependent variable...*[emphasis in original]' (p. 309).

The host enterprise's workplace learning program for the Blue Gum High School students was adapted from the Certificate 1 in Retail (Introduction to Sales and Service) Skills where five of the 10 competencies for the Certificate were addressed. Competencies attempted by school students included:

- *Communicate with Staff and Customers;*
- *Work Cooperatively in Teams;*
- *Work Safely in a Supermarket;*
- *Maintain Personal Hygiene and Store Image; and*
- *Apply Knowledge of Store and Products.*

Successful students were awarded the host enterprise's nationally accredited *National Statement of Attainment* at the completion of their training. This provided students with a quality-assured workplace credential for entry level employment in the industry.

RESEARCH METHOD FOR RESEARCH QUESTION 1

Included below are details about the identification of this study's mode of inquiry, the timing of the experimental research phase, and details of theoretical constructs supporting the research.

Mode of research inquiry

To accommodate the depth of research implied in national and international studies cited in Chapter 2, a modified case study approach was adopted for this research project. This action acknowledged the multi-faceted nature of the study and was taken in response to the need to '*...enhance the understanding of educational action*'

(Sturman, 1997:63) in a number of contexts related to school-sponsored workplace learning programs. The initial case study orientation was provided by the school/enterprise workplace learning relationship and modified by complementary elements from evaluation studies (Smith, 1997), survey research (Burns, 1997; Rosier, 1997), and experimental studies (Lawson, 1997). In so doing, this modified case study research method aimed to avoid some of the limitations of pure case study methods.

Robinson and Thomson (1998), for example, criticised the prevalence of case studies in vocational education and training, citing a lack of generalisability as one of their major limitations. They pointed out that whilst promising results may be achieved in a case study of a workplace learning program in a particular context, its general applicability is limited by its isolated, singular nature. Robinson and Thomson (1998) also pointed out that the survey methods adopted in some research studies were questionable, particularly where responses to mailed questionnaires were unverified and subject to low response rates. Therefore, Robinson and Thomson (1998) recommended that questionnaire responses should be at least randomly verified, low response rates faithfully reported, and that case studies should be conducted in sets over time and in a range of settings.

To some extent, the internal structure of this modified case study answered Robinson's and Thomson's (1998) criticisms. Firstly, subject to the quality assurance described above, this study was in sets, that is, it did study the effects of workplace learning involving three repetitions of subjects being trained in six separate workplace learning sites, but retained the advantage of being enterprise-specific so that the host employer and the industry were constants throughout the study. Secondly, as will be explained below, this study used reliable and verified survey questionnaires that achieved high response rates for completion. Thirdly, this study addressed Robinson's and Thomson's (1998) unease about questionable survey methods and Saunders et al.'s (1996) concerns about a lack of research rigour in workplace learning inquiry. This study quantitatively reported the effects of

workplace learning on school students' motivation for school learning and, through inferential statistical testing, established the likelihood of such treatment effects being generalisable in other schools and workplace learning settings (Allal & Cardinet, 1997). Moreover, in both aspects of the research, well-established theoretical constructs underpinned the research method, providing explicable and acknowledged structures for the quantitative and qualitative evidence presented, thus enhancing the potential for the research to be replicated.

Timing of research activity for Research Question 1

Table 3.1 summarises research activity during 1999 and 2000 for this aspect of the study.

Table 3.1 *Research activity timetable for Research Question 1*

Date	Research Activity
January 1999	Sought and received approval for research involving students within the school in accordance with DETCCD policy (Tasmania, Department of Education, Training, Community and Cultural Development, 1998b)
January 1999	Negotiated workplace learning availability with host employer
January 1999	Prepared student survey questionnaires based on Keeves' (1974) Attitude Scales
February 1999	Prepared and distributed information about the workplace learning program for high school parents and students
February 1999	Received students' applications for the program and ballot places
February 1999	Administered pretest survey to entire Grade 10 cohort
March 1999	First group of 10 students entered workplace learning program

Table 3.1 (continued)

Date	Research Activity
March- October 1999	Second and third groups entered the program in July and September respectively, managed and maintained the student workplace learning program in accordance with school and host workplace priorities
November 1999	Administered posttest survey to entire Grade 10 cohort, conducted teacher validation of post-treatment surveys
December 1999-January 2000	Undertook preliminary quantitative analyses of pretest and post-treatment survey data

Theoretical constructs supporting research for Research Question 1

A number of theoretical constructs or models portraying students' affective development in relation to school learning were available. Prominent among these were students' interest orientations (Schiefele, 1991), the self-determination theory (Deci et al., 1991), and the Affective Domain Taxonomy (Krathwohl, Bloom & Masia, 1964). The former two were discussed in Chapter 1 in relation to their capacity to demonstrate a relationship between student motivation and school achievement. In Chapter 1, the relative emphases between the more specific subject-orientation of student interest motivation (Schiefele, 1991) and a general orientation to learning afforded by intrinsic motivation's underpinning of the self-achievement theory (Deci et al., 1991) were discussed. In Chapter 1, those differences were temporarily laid aside and both models were drawn upon to demonstrate the relationship between student motivation (or interest) and school achievement. Neither theoretical model was found to be suitable for this study, however.

Schiefele's (1991) assumption of subject orientation underpinning students' subject interest driving their achievement did not present well as an appropriate model to measure affective changes in the multi-disciplinary nature of learning in a

workplace. Moreover, a definitive model for measuring the different levels of affective outcome is lacking. Its limitations are acknowledged, and Schiefele (1991) noted that ‘...intensive efforts are needed to distinguish between the different levels of the quality of learning outcomes on a well-founded theoretical basis’ (p. 317). Presumably, Schiefele (1991) is defining “learning outcomes” in both their cognitive and affective guises.

Self-determination theory presented as a more attractive option for this study. However, it too appeared to be developing through a series of iterations underpinned by certain assumptions. For example, Deci et al. (1991) noted that the question of intrinsic and extrinsic motivation had moved from a position of mutual opposition, in that ‘...extrinsically motivated behaviors [*sic*] were assumed not to be self-determined’ (p. 328) to one of mutual accommodation through the acceptance of differentiated extrinsic motivators and their effect on self-determination or controlled responding.

Moreover, instruments available for measuring self-determination were aimed at either a lower or a higher age-range than that involved in this study. Such age-range targeting is important because, as noted by Schiefele and Csikszentmihalyi (1995), ‘During early stages of schooling, affect is determined by achievement, whereas later achievement becomes more and more dependent on affect’ (p. 178). However, self-determination theory’s use of internalisation as a hierarchical organizer for tracing the effects of different levels of extrinsic motivators was attractive.

Another model of affective development based on the concept of organized hierarchies of internalisation is the Affective Domain Taxonomy (Krathwohl et al., 1964). The Affective Domain Taxonomy addressed the limitations of subject specificity inherent in student interest motivation (Schiefele, 1991) being applied to the multi-disciplinary context of workplace learning, and has remained largely unchanged since its publication in 1964, thus avoiding the iterative nature of self-determination theory’s development (Deci et al., 1991). Moreover, in contrast with

some U.S. researcher's idiomatic proxy measures of motivation for school learning such as grade point averages (Hayward & Tallmadge, 1995), the Affective Domain Taxonomy offers more universally explicable and timely measures of students' affective development (Krathwohl et al., 1964).

The timeliness of taking measures of motivation for school learning is particularly important in view of the interventionist nature of this curriculum extension. Its location in the compulsory years of schooling acknowledges that workplace learning as a means of engaging socio-economically disadvantaged students with school should take place earlier rather than later (Cumming & Carbines, 1997; Irving, 1993; Tomlinson, 1997), within the limits of local legislation.

The Affective Domain Taxonomy

Thus, the Affective Domain Taxonomy (Krathwohl et al., 1964) was adopted as the theoretical construct supporting study into changes in students' motivation for school learning through their participation in workplace learning. This action acknowledged the seminal status of Krathwohl et al.'s (1964) work in that provided for the first time a '...simple and coherent framework...' (Keeves, 1974: 13) to describe developmentally sequential profiles of students' attitudes to learning. Table 3.2 summarises the levels and subcategories of the Affective Domain Taxonomy.

Table 3.2 *Levels and categories of the Affective Domain Taxonomy*

Level	Category	Subcategory
1	Receiving	1.1: Awareness
		1.2: Willingness to receive
		1.3: Controlled or selected attention
2	Responding	2.1: Acquiescence in responding
		2.2: Willingness to respond
		2.3: Satisfaction in response

Table 3.2 (continued)

Level	Category	Subcategory
3	Valuing	3.1: Acceptance of a value
		3.2: Preference for a value
		3.3: Commitment (conviction)
4	Organization	4.1: Conceptualisation of a value
		4.2: Organization of a value system
5	Characterization by a value or value complex	5.1: Generalized set
		5.2: Characterization

As indicated in Table 3.2, the Affective Domain Taxonomy (Krathwohl et al., 1964) is a five level continuum of affective behaviour categories that provides a conceptual map of individuals' increasing internalisation of the motivation for learning (Ringness, 1975). The internalisation of individuals' motivation for learning is complex and includes cultural, emotional, and moral aspects of individual growth and development (Krathwohl et al., 1964). In relation to students' affective outcomes for Research Question 1, this study focused on the affective aspects of school students' motivation for school learning and consideration of its cultural, emotional, and moral aspects was minimised, although they are bound up in the consideration of SES. Nevertheless, these aspects of affective development are addressed comprehensively elsewhere (e.g., Evans & Poole, 1992; McCann, 1985; UNESCO, 1992; Greenhalgh, 1994). In this study, the Taxonomy's behaviour categories were utilised as measures of students' affective development in relation to the development of their motivation for school learning.

Details of the Affective Domain Taxonomy levels surveyed

The Affective Domain Taxonomy (Krathwohl et al., 1964) has attracted less research attention than its companion, the Cognitive Domain Taxonomy (Bloom, 1956). Those who have addressed it as a theoretical model have included empirical research

aimed at confirming the validity of its hierarchical structure (Lewy, 1968) and research aimed at measuring attitudes to learning (Campbell, 1972; Keeves, 1974).

Lewy's (1968) findings confirmed the descriptive validity of the Taxonomy's hierarchical categorization of the internalisation of motivation by demonstrating a reduction in school students' internalisation of motivation for school learning at successively higher levels of the Taxonomy. Lewy (1968) did find, however, that there were difficulties associated with validating the upper two levels of the Taxonomy, Level 4 (*Organization*) and Level 5 (*Characterization*), and recommended further study to address this shortcoming. Such a task was beyond the scope of this study and, like Campbell's (1972) and Keeves' (1974) studies, the first three levels of the Taxonomy were used in measuring the treatment effect inherent in Research Question 1. Campbell (1972) confirmed the appropriateness of these measures for high school students, arguing that in respect of the third level of the Taxonomy '...the value [*sic*] level represents the highest expectations of many [secondary school] science programs' (p. 146).

Consideration of the first three levels of the Taxonomy in this study represented an attempt to measure a limited continuum of internalisation of motivations for learning that culminated in individuals valuing learning (Level 3). Krathwohl et al. (1964) claimed that the achievement of this level of affective behaviour '...implies cognitive behaviours such as the ability to analyse situations in order to determine how...ideas and ideals apply in a given situation' (p. 53). This ability to '...analyse situations...' and '...to determine how...ideas and ideals apply in a given situation' aligns with the imperatives for students' self regulation and self control of their learning cited in Chapter 1 (O'Connor, 1994a; Tasmania, Department of Education, Community and Cultural Development, 1996; van Liemt, 1992).

In the context of this study, it is argued that achievement of this level of affective development in relation to learning will enable a young person to self-direct and maintain themselves in school or employment-related education and training in a

globalised economy subject to rapid technological labour market changes. Thus, the extent of the Affective Domain Taxonomy considered in this research ranged from Level 1 (*Receiving*) through Level 2 (*Responding*) to Level 3 (*Valuing*), the third level being that which will sustain a self-regulated approach in future learning.

Campbell (1972) used the Affective Domain Taxonomy to chart the affective development of school students in science programs. Both Lewy (1968) and Campbell (1972) approached their analyses through aggregation of the Taxonomy's subcategories into Krathwohl et al.'s (1964) levels of affective development. Keeves' (1974) work with the Affective Domain Taxonomy (Krathwohl et al., 1964) in several Australian states and territories encompassed the first three levels of the Taxonomy and through the application of proxy test items provided culturally appropriate and potentially reliable attitude scales for Australian research based on this theoretical construct.

Keeve's (1974) scales were developed and applied through his research in schools in the Australian states and territories of New South Wales, Victoria, and the Australian Capital Territory. Through their potential for use in control and experimental group studies, the use of Keeves' (1974) attitude scales in this research accorded with Saunders et al.'s (1996) call for any empirical evaluation of affective outcomes in workplace learning to be facilitated by a '...quantitative comparison between the outcomes for the 'experimental' group of students and a similar control group' (p.47).

RESEARCH DESIGN FOR RESEARCH QUESTION 1

This research design took the form of a quasi-experimental nonequivalent control group design, depicted by Campbell and Stanley (1963) as Research Design 10. The application of this research design involved the non-random formation of an Experimental group of school students (subjects) and a Control group of school students (subjects) and the exposure of the experimental group to a treatment: workplace learning. Before and after administering the experimental treatment all

subjects were surveyed as to their attitudes on a number of independent variables. A comparison of the post-treatment responses of the Experimental and Control groups was taken to be the measured effect of the treatment (Reichardt, 1979).

Research Design 10 (Campbell & Stanley, 1963) was preferred over others because of the sampling bias inherent in the non-random selection of the Experimental group. This sampling bias arose from the high degree of self-selection for the Experimental group, driven in part by some potential subjects' perceptions about the attractiveness of the proposed treatment in relation to prospective employment and the congruence between their personal attributes and the proposed treatment (Cook & Campbell, 1979). The self-selection sampling bias was compounded by the experiment's direct relationship to attributes students held to varying degrees. Thus, it was expected that students with more positive attitudes to learning generally would be more likely to volunteer for the experimental treatment than those who held less positive attitudes.

Therefore, factors related to the study unavoidably influenced the sampling process. The strength of potential Experimental subjects' desire to participate was demonstrated by their willingness and ability to conform to administrative procedures in the preliminary stages of the experiment such as taking home information about the proposed workplace learning program, having parents sign permission forms, and returning the documentation in one week. Nevertheless, despite the marked enthusiasm shown by some prospective experimental subjects for inclusion in the Experimental group, equal access considerations were applied and all members of the student cohort were encouraged to participate.

Sample selection

The Experimental and Control groups were drawn from the 1999 Grade 10 cohort at Blue Gum High School. The Experimental group comprised 30 grade 10 students undertaking the treatment of structured workplace learning and the Control group comprised the remaining grade 10 students who did not participate in the workplace

learning program. Equal access to the program for all potential subjects was provided during the daily morning assemblies from 8:45am to 9:00am on school days from February 18 to 23 inclusive, 1999. All students present at that time were provided with literature and explanations about the program. At that time, the enrolment for the cohort was 104 students.

At these morning assemblies from February 18 to February 23, 1999, the researcher explained the program and distributed relevant literature. All grade 10 students were told of the proposal to place 30 students in six neighbouring suburban supermarkets for structured workplace learning for one day per week in each of three 10 week blocks of time in first, second, and third terms of the school year. Students so placed would not come to school on those days, but instead would undertake structured workplace learning in a designated supermarket and/or the host employer's training college. Students would be expected to complete the normal workplace requirements of on-the-job training in the supermarket but would not be paid.

All interested students were given a parental information and permission form printed on white A4 paper to take home for their parents' information and signing. Returned permission forms bearing a parent's signature indicated a valid acceptance of the invitation to participate in the proposed workplace learning program. Students were informed that a ballot would be held to select the 30 participants if more than 30 valid acceptances were received by the return deadline of 8:45am on February 24 1999. Each piece of paper bearing a valid acceptance would assume the status of a chance of selection if a ballot needed to be held.

Valid acceptances from 42 students were received by the deadline. Consequently, a public ballot was held during the morning grade 10 assembly at Blue Gum High at 8:45am on February 24, 1999 to select the 30 participants for the workplace learning program. All 42 valid acceptances were placed in a large cardboard box; each entrant's name being read out to the assembly as it was folded and placed into the box. All acceptances were the same size and were folded

uniformly. The grade 10 coordinating teacher drew acceptances from the box and the names of the first 30 drawn were noted and balloted into the program. The names of the remaining 12 were noted and held in reserve to be balloted into any unforeseen vacancies arising during the course of the program.

The value of this residual subsample's potential as a randomly-sampled Control group was recognised, but its non-probabilistic nature was seen as a limitation (Peers, 1996). This subsample's non-probabilistic nature lies in its definition by a balloting procedure that is necessarily flawed because of its non-replacement of selected individuals. Thus, individuals' chances of selection vary with the order of their draw in the ballot. Therefore, inclusion of this group would have further compromised a study already facing limitations inherent in the selection of a non-probabilistic Experimental group (Peers, 1996).

The Experimental group and individuals' SES

Blue Gum High School's level of educational disadvantage as established by the association between students' places of residence, students' SES backgrounds, (Ainley et al., 1995), students' over-representation in the MARSSS program (Tasmania, Department of Education, 1999b), and acknowledgement of the school's difficult to staff status by the teacher employing authority (Tasmania, Department of Education and the Arts, 1994) was explained in Chapter 1. This research study's value was enhanced by its inclusion of subjects in the Experimental group whose places of residence were representative of school's overall enrolment. Thus, comparable proportions of socio-economically disadvantaged students were present in the Experimental group, the 1999 Grade 10 cohort, and the 1998 school cohort. Table 3.3 summarises data related to the places of residence of relevant cohorts of students for this study.

Table 3.3 *Residential distribution of relevant cohorts at Blue Gum High School 1998-1999*

Cohort	Public housing		Elsewhere		Totals	
	No.	%	No.	%	No.	%
Grade 10 Experimental 1999	22	73.33	8	26.67	30	100.00
Grade 10 1999	79	75.96	25	24.04	104	100.00
1998 school	344	77.65	99	22.35	443	100.00

The difference between relative proportions depicted in Table 3.3 was not statistically significant ($\chi^2 = 0.374$, $df = 2$, $p = .83$), confirming the claim of comparability of educational disadvantage for the Experimental group

Pretest survey questionnaire

A survey questionnaire of subjects' current motivation for school learning based on Keeves' (1974) attitude scales was prepared for administration to all subjects in grade 10 before the workplace learning program began. Responses to Keeves' (1974) attitude scale items acted as proxy indicants of attitudes to learning expressed in the Affective Domain Taxonomy (Keeves, 1974; Krathwohl et al., 1964) encompassing two scales related to subject non-specific aspects of schooling and academic motivation, and two subject-specific scales: mathematics and science.

The survey questionnaire was adapted with minor modifications from Keeves' (1974) attitude scales and followed his model by subdividing the survey into a number of distinct sub-tests, a procedure which better accommodated the use of Cronbach's Coefficient Alpha as a measure of its internal consistency (Cronbach, 1951). Keeves' (1974) Scale V *Respect and Confidence in Self (Self Regard)* was not used and consequently no data were collected concerning Level 1 (Receiving), sub-level 1.1 (Awareness) of the Affective Domain Taxonomy. This action took account

of Keeves' (1974) reported doubts about Scale V's usefulness and Zeller's (1997) reservations about validation of self-esteem indicants, asserting that '...for many concepts, no appropriate criterion measure exists. For example, there is no known criterion variable for self-esteem' (p. 825). The minor modifications to Keeves' (1974) attitude scales included adjustment for local conditions of schooling in Tasmania and recasting some items so that no more than one idea was represented in an item, namely:

- In Keeves' (1974) Scale I *Attitudes toward School and School Learning* item 41 was adjusted from '...staying at school after I am fifteen' (Keeves, 1974:32), to '...staying at school after I am 16' to acknowledge the minimum school leaving age of 16 in Tasmania; and
- In Keeves' (1974) Scale II *Attitudes of Interest and Enjoyment in Learning Mathematics* (Keeves, 1974:33), items 29 and 35 were recast into two items for each, and the tail of item 39 was deleted such that each of these five items '...contained only one complete thought' (Anderson, 1997: 888).

The pre- and posttest survey questionnaires are included in Appendix A in Parts I and II respectively. In both versions, the adjusted items appear in Section A, item 16, and Section B, items 7, 8, 9, and 10, respectively. As indicated above, Keeves (1974) developed these surveys in Australian schools between 1965 and 1969. Keeves' surveys were ranked dichotomously and trichotomously. In adapting Keeves' (1974) attitude scales for the 1999 Blue Gum High School survey, students' responses were ranked polychotomously using a five point Likert scale ranging from Strongly Disagree through Disagree to Uncertain to Agree to Strongly Agree (Burns, 1997).

The use of the five-point Likert scale instead of Keeves' dichotomous and trichotomous ranking schemes took account of the researcher's 25 years' experience in teaching these and similar students. During this time the researcher had used forced choice questionnaires in other contexts and had noted negative reactions to them. A negative attitude can lead to subjects' alienation and a subsequent loss of data, or worse, contamination of the data by insincere responses. The researcher's

experience in these contexts supports the maxim that students respond best when allowed options. In this case, it was thought that the use of a survey allowing only a forced-choice dichotomous response set would have led to a loss or contamination of data as students' willingness to co-operate evaporated in the face of the restrictive nature of forced-choice responses. The inclusion of the *Uncertain* response allowed students options outside the variously ranked agree or disagree options. Such action leads to a reduction in the '...proportion of omitted responses' (Anderson, 1997: 892). The expansion from three possible responses to five reflected Anderson's (1997) further advice that '...the more response options that are provided the greater the reliability' (p. 892), although seven is usually accepted as the upper limit.

Administration of pretest surveys

On February 25 and February 26 1999 all grade 10 students present at school were administered the pretest treatment attitude survey. This survey is entitled *Questionnaire One* in Part I of Appendix A. It is identified with the ASSR process, a pattern of activity which students had become used to through their being surveyed in a number of subjects for other aspects of the ASSR such literacy and numeracy testing (Tasmania, Department of Education, Community and Cultural Development, 1997b). The survey questionnaire administration took place during students' timetabled lessons in Studies of Society and Environment (SOSE) with their normal subject teachers. Students were allowed as much time as necessary to complete the questionnaires. Most completed the 69 items in approximately 20 minutes and all students completed in a double lesson period of 70 minutes. On these two days 84 students were surveyed.

Treatment details

On Tuesday, March 2, 1999, the first group of 10 subjects in the Experimental group began their workplace learning program in six local supermarkets. Full details of the nature and extent of the program were explained above. These students undertook 10 weeks' workplace learning for one day per week. The procedure was repeated with the second and third groups, with the third group completing the program on

November 10, 1999.

Administration of posttest survey

On November 11 and November 12, 1999 all subjects, Experimental and Control, were resurveyed as to their attitudes in the same manner as the pretest survey and with the same survey instrument that had been used in February. On this occasion, 75 subjects were surveyed.

Nonresponses

Some subjects failed to answer all 69 items in the pretest. One subject failed to answer three items, a non-response rate of 4.35%, and 10 subjects failed to answer one item, a non-response rate of 1.45%. These non-responses were dealt with by substituting a neutral response from the five-point Likert scale on the basis that the nonresponse rate was no greater than 20% for any subject (Anderson, 1997). Thus, the nonresponse was taken as ‘...indicating uncertainty in responding’ and acknowledging that ‘...assigning a neutral response is appropriately used in compensating for the missing data’ (Anderson, 1997: 894). Similar action was taken in relation to the posttest where one subject failed to answer three items, a nonresponse rate of 4.35%, and seven subjects failed to answer one item, a nonresponse rate of 1.45%.

Survey reliability

The reliability of the pretest and posttest surveys as instruments for measuring attitudes in terms of its internal consistency compared favourably with that achieved by Keeves (1974) some 30 years earlier. Pretest and posttest reliability coefficients summarised in Tables 3.4 and 3.5 illustrate this comparison .

Table 3.4 *Coefficients of internal consistency: Pretest survey*

Coefficient	Section A	Section B	Section C	Section D
Cronbach's Alpha	.92	.84	.91	.88
Split-half	.90	.83	.87	.91

Table 3.5 *Coefficients of internal consistency: Posttest survey*

Coefficient	Section A	Section B	Section C	Section D
Cronbach's Alpha	.94	.91	.90	.90
Split-half	.95	.89	.86	.90

Table 3.6 *Coefficients of internal consistency (Keeves, 1974)*

Coefficient	Section A	Section B	Section C	Section D
K-R20	0.84	0.82	0.83	0.82

The Kuder and Richardson formula 20 (K-R20) (Kuder & Richardson, 1937) used by Keeves (1974) is suitable for dichotomous ranking schemes but is accepted as being equivalent to Cronbach's Alpha (Peers, 1996). Thus, the K-R20 coefficients yielded by Keeves' surveys (1974) are taken to be directly comparable with the Cronbach's Alpha coefficients yielded by this research in 1999.

Both measures for the 1999 survey were calculated using the computer

software Statistical Package for the Social Sciences, Base 9.0 (SPSS, 1999). Cronbach's Alpha was used in the survey administration in accordance with its traditional use in Likert scales (Anderson, 1997). Additionally, the split-half correlation was used corroboratively in recognition of its status as the '...most widely used method of estimating internal consistency...' (Borg, 1987). All three coefficients of internal consistency exceed 0.7, the generally accepted minimum coefficient of survey reliability (Litwin, 1995: 31). They also exceed Helmstadter's median reliability value of 0.79 for attitude scales (Borg, 1987).

Comparability of responses

Keeves' (1974) attitude scales proved to be stable. Table 3.8 depicts the correlations between the percentages of positive responses from Keeves' (1974) administration of the attitude scales and the pretest responses achieved in this study in 1999.

Table 3.7 *Pearson's r for percentages of students making positive responses reported by Keeves (1974) and in the pretest survey for this study*

Section A	Section B#	Section C	Section D
.81*	.81*	.81*	.76*

#Correlated for items 1-6 only: see above for alterations to 1999 questionnaire items.

*Statistically significant at the rejection region $\alpha = .05$

From the data presented in Table 3.7 it is evident that there is a strong positive association between respondents' positive responses reported by Keeves (1974) and this research, confirming the stability of Keeves' (1974) attitude scales.

Relationship between the Affective Domain Taxonomy and Keeves' (1974) attitude scales.

Survey questionnaire items derived from Keeves' (1974) attitude scales stood as proxy indicants for the first three levels of the Affective Domain Taxonomy

(Krathwohl et al., 1964). These relationships are summarised in Table 3.8 where the numbers of proxy indicants are for each Taxonomy sub-level tested.

Table 3.8 *Numerical representation of indicants of Affective Domain Taxonomy levels (Krathwohl et al., 1964) in modified attitude scales Keeves' (1974)*

Affective Domain Taxonomy Level	Section A	Section B	Section C	Section D	Totals
1.1	Not surveyed	Not surveyed	Not surveyed	Not surveyed	0
1.2	4	0	5	1	10
1.3	4	0	1	1	6
2.1	0	0	0	3	3
2.2	0	0	3	11	14
2.3	7	3	4	2	16
3.1	0	2	1	0	3
3.2	2	6	4	2	14
3.3	0	1	2	0	3
Totals	17	12	20	20	69

Survey reliability in the form of proxy indicants

As indicated in Table 3.8 proxy indicants in the survey questionnaire linked with the Affective Domain Taxonomy's (Krathwohl et al., 1964) hierarchical structure of affective development. These Taxonomy levels were tested for reliability by Cronbach's Alpha (Cronbach, 1951) and are presented in Table 3.9.

Table 3.9 *Coefficients of internal consistency for proxy indicants*

Affective Domain Taxonomy Level	Cronbach's Alpha	
	Pretest	Posttest
1	.85	.88
2	.90	.92
3	.85	.90

These coefficients of internal consistency are similar to those summarised in Tables 3.4 and 3.5. Therefore, the reliability of the survey instruments was carried into their capacity to yield reliable information about respondents' affectivity aligned with the Affective Domain Taxonomy (Krathwohl et al., 1964).

Survey validity

Unintended effects of research activity that might have threatened survey validity (Ball, 1997) were addressed by embedding the research project in the Blue Gum High School's ASSR process (Tasmania, Department of Education, Community and Cultural Development, 1997b). This action allowed pretest and posttest surveys to be conducted in normal classroom time and formed one of a number of surveys conducted through the ASSR in 1998 (Garth, 1998) and 1999. No specific link between the ASSR processes and the research project was identified to subjects, although teaching staff were informed of its status as an ASSR evaluation procedure in February 1999 and, as explained below, some teachers contributed to the validation process.

Zeller (1997) argues that in validating survey data, that is, '...establishing the isomorphism between reality and observation...' (p. 828), the question: 'What is known and what needs to be known about the phenomenon?' (p. 828) must be addressed. In this regard, as noted above, the validity of the Affective Domain

Taxonomy's (Krathwohl, 1964) claim to being a hierarchical structure based on increasing levels of individuals' internalisation of motivation for learning was confirmed, at least in its first three levels, by Lewy's (1968) empirical study. Moreover, in Campbell's (1972) study that used the Affective Domain Taxonomy's (Krathwohl et al., 1964) first three levels as a theoretical context for surveying school students' scientific curiosity, a '...jury of prominent researchers in the scientific attitude area' (p. 142) was empanelled to validate its *Scientific Curiosity Inventory* (Campbell, 1972).

In Campbell's (1972) study, only those survey items achieving 80% agreement among jurors about their appropriateness were included in the Inventory. Keeves (1974) confirmed the validity of the indicants for the surveyed attitude scales I to IV used in this study by using students' teachers as experts about subjects' motivation for school learning at the first three levels of the Taxonomy. Taking account of such precedents, validation for this study accorded with Zeller's (1997) advice to develop a '...general strategy of combining qualitative, survey, and experimental observations' (p.828).

Thus, this survey instrument was applied in the knowledge that it had been validated in a previous study under Australian conditions (Keeves, 1974), that the hierarchy supporting its underpinning theoretical structure had been validated (Lewy, 1968), and that this theoretical structure had been used for a previously validated survey of school students' attitudes to scientific curiosity (Campbell, 1972). Accordingly, subjects' teachers in this study were enlisted as experts to provide qualitative information about subjects' overt motivational behaviours related to each of the attitude scales surveyed. Consequently, teachers ranked subjects' exhibition of school behaviours associated with the attitude scales. In this study, these scales comprised questionnaires related to students' attitudes to learning in each of Keeves' (1974) *Like School*, *Like Mathematics*, *Like Science*, and *Academic Motivation* scales. Subjects' teachers made these rankings in November 1999.

Teachers' capacity to validate students' responses

By November 1999, subjects' teachers were well placed to provide information validating their survey responses. None of Keeves' (1974) validation problems associated with teachers not being adequately acquainted with their students were encountered in this study. All subjects' teachers had completed at least one academic year's contact with them (February to November, 1999) as either pastoral care group teachers and/or subject teachers. In these roles, the subjects' teachers were exposed to them at least weekly if not more frequently.

Each validating teacher had formally reported to subjects' parents about their children's school progress once in May 1999, and these teachers had supplied information about these subjects' academic performances for external moderation purposes during October 1999. Additionally, these teachers had reviewed subjects' general progress through written input for their school references in September 1999 and, in the case of pastoral care group teachers, had collated this input and written their school references during October 1999. Through these activities and the teacher-student relationships formed through school and classroom contact, these teachers acquired intimate knowledge of subjects' exhibition of behaviours related to their motivation for school learning in Keeves' (1974) four attitude scales listed above.

Copies of proforma used for these teachers' validity rankings are attached in Appendix B as *Teacher Questionnaire, November 1999*. These documents reveal that for each independent variable, teachers' rankings were made in response to requests to rank each student's overt learning behaviour ranging from very low through low to moderate to high and culminating with very high. Responses in this range were ranked -2, -1, 0, 1 and 2 respectively and this ranking yielded a teacher's validity index for each subject's attitude scale.

Establishing validity for subjects' responses

Teachers completed their validation proforma in November 1999. A teacher's validity index for a particular subject's overt learning behaviour related to an attitude scale was then paired with the subject's median ranking for their self-reported posttest survey on that attitude scale. This pairing gave an external qualitative comparison to the subjects' indicants at the time of their posttest survey. These pairings were then taken as inferred evidence of the validity of the pretest rankings, that is to say, subjects' indicants on the posttest survey were taken to be aligned with their indicants on the pretest survey.

In this regard, Meyer et al. (1991) found that self reported attitudes by school students proved to be valid when confirmed independently by other measures. Meyer et al. (1991) reported that such self-reporting '...could be considered to represent a self-rating of...motivation to achieve and be engaged in school' (p. 12). Thereby, Meyer et al. (1991) provided empirical evidence supporting the inferences made in this study relating to the validity of students' responses at the pretest, and subsequent pairing based on pretest response profiles.

The matching of validity indices with subjects' posttest survey medians was applied dichotomously with respect to direction (positive or negative) as indicated by the subject's median ranking for a particular attitude scale and the teacher's validity index. Quantitatively, matches across three or more of the four sections of the survey questionnaire (attitude scales), A (I), B (II), C (III), and D (IV) were deemed to have established validity of a subject's responses across all attitude scales. This level of tolerance is justified in that it qualitatively matched a subject's post-treatment survey median ranking and teacher's validity index in at least 75% of the attitude scales, a level comparable with Campbell's (1972) 80% tolerance level for jury validation outlined above.

Such a level of acceptance is defensible in that it combines a quantitative measure (75%) with substantial qualitative evidence from teachers' intimate

knowledge about subjects' motivation for school learning. In Zeller's (1997) terms, it combines the quantitative researcher's '... "chasing the decimal point"...' (p. 827) with the qualitative research strategy of '... "pressing the flesh"...' (p. 827) in '...establishing the isomorphism between reality and observation...' (Zeller, 1997: 828).

Pretest bias and selection-maturation effects

Non-equivalent control subsample designs are likely to produce pretest bias (Reichardt, 1979); therefore steps need to be taken to address any pretest bias that may mask a true treatment effect. Additionally, where the Control and Experimental subsamples are formed by non-random sampling methods, selection-maturation effects can be precipitated (Cook & Campbell, 1979). In this study, the sampling method reported above indicated that subjects self selected themselves into the Experimental subsample by dint of their self-interest and motivation to comply with the administrative requirements leading up to selection. Potential Experimental subsample subjects had to pursue actively their inclusion in the Experimental subsample, thus exhibiting behaviour that is associated with the behaviour being tested in this study: the internalisation of motivation for school learning (Krathwohl et al., 1964).

Cook & Campbell (1979) identified several characteristics of data that support the plausibility of claims for a selection-maturation effect. Amongst these is the phenomenon of increased within-group variability for the Experimental subsample at the posttest. This phenomenon, say Cook & Campbell (1979) arises where the self selection of '... "keen"...' (p.106) subjects into the experimental subsample provides opportunities for growth and development that is absent in the control subsample's circumstance. Moreover, these subjects' keenness leads to their greater application in the experimental treatment so that '...the more able ...gain more than the less able... [and thus]...the differential growth between groups should also be occurring within groups' (Cook & Campbell, 1979: 107). Consequently, say Cook & Campbell (1979), '...on many measures of educational achievement we would expect the more

able among the experimentals [*sic*] to gain more than the less able *among the experimentals*' [emphasis in original] (p. 107). Thus, any detection of increased posttest variability in the Experimental subsample for this study indicates the presence of the "keen" subjects and suggests that a selection-maturation effect could be masking the treatment effect.

Minimising pretest bias and selection-maturation effects

Reichardt (1979) argues that a matched pairs analysis is the most effective at minimising bias and selection maturation effects in analyses of data such as these, although some data is inevitably lost from subjects who cannot be matched, especially in instances where bias is present. There tends to be, he says, a systematic omission of some individuals from the pairing process simply because of their unusually high or low scores on the pairing criterion of pretest scores (Reichardt, 1979). Nevertheless, Reichardt (1979) noted that pair matching offers the prospect of identical treatment effect estimates compared to tests such as the analysis of covariance (ANCOVA) when '...matching uses pairs whose observed pretest scores match exactly' (p. 178). Thus, Reichardt (1979) advocates matching pairs on pretest scores but, it is argued by Nunnally (1967), matching on pretest scores or median ranks alone can be undependable indicators of matching for a pair where pretest bias is to be minimised.

Nunnally (1967) points out that median ranks define the levels of subjects' response profiles but they do not draw on information about which two subjects in a potential pair rank particular survey items alike, that is, taking account of the dispersion and shape of subjects' response profiles. Differences in response profiles can mean that subjects paired solely at the level of median ranks are markedly different in the dispersion and shape of their responses profiles. This leads to mismatches in terms of the subjects' characteristics being measured, thus limiting the degree to which sampling bias can be minimised by pairing (Keeves, 1997; Nunnally, 1967). Pair matching by median ranks *as well as* response profile dissimilarity that accounts for subjects' response profiles' dispersion and shape is a more dependable

way of matching aimed at minimising the effects of pretest sampling bias (Nunally, 1967).

In this study, exact pretest median matching was used except where exact matching excluded available data and threatened the statistical power of the test (Cohen, 1988). In these circumstances, a caliper-matching approach was adopted, aimed at capturing otherwise unused data (Reichardt, 1979). Thus, unless otherwise noted, this study's Experimental subjects' median ranks were exactly matched with Control subjects' median ranks (Reichardt, 1979) and then by the squared Euclidean distance measures to match for profile dispersion and shape (Keeves, 1997; Nunnally, 1967).

Matching for profile dispersion and shape

Increased access to computer technologies has improved the prospects for adopting profile analyses in matched-pairs research (Keeves, 1997). One such analysis is the squared Euclidean distance measure (Cronbach & Gleser, 1953). The squared Euclidean distance measure is suitable for all levels of data, providing measures of profile dissimilarity such that the lower the measure, the greater the similarity between profiles (Cronbach & Gleser, 1953). In this study the computer software Statistical Program for the Social Sciences (SPSS, 1999) was used to apply squared Euclidean distances measures to potential pairings.

Where more than two subjects shared identical median ranks and distance measures in this study, Control and Experimental subjects were paired through the application of the *maxmincon* principle (Kerlinger, 1973) so as to maximise posttest differences. In aggregated analyses, Control and Experimental subjects were matched without regard to any other criterion and in disaggregated analyses, Control and Experimental subjects were matched according to the criterion of disaggregation, that is, gender or the timing of their exposure to the treatment.

Nonparametric statistical tests for two related samples

In recognition of the ordinal status of this data, nonparametric two related samples statistical tests were considered for these analyses (Siegel & Castellan, 1988). Two such tests were found to be suitable: the Wilcoxon Signed Ranks Test for matched pairs and the Sign Test (Siegel & Castellan, 1988). The former is the more powerful test and takes account of the direction and ranking of matched pairs' differences in calculating its statistical values. The Wilcoxon Signed Ranks Test is approximately 95% power efficient compared to the parametric t test (Siegel & Castellan, 1988). The Sign Test uses less information from the data, considering the direction of differences only, and for small subsamples ($n = 6$) is approximately 95% efficient compared to the binomial test, falling to about 63% for large subsamples ($n > 35$) (Siegel & Castellan, 1988). The Sign Test is also suitable for estimating statistical power values and effect sizes of inferential statistical testing (Cohen, 1988).

Directionality

As implied by the predictive nature of the research question, the difference between Control and Experimental subsamples is directional, that is, the statistical measure is one-tailed (Cohen, 1988; Peers, 1996; Siegel & Castellan, 1988). Therefore, one-tailed statistical significance (Siegel & Castellan, 1988) and statistical power values (Cohen, 1988) were used throughout the inferential statistical analyses. As indicated in Chapter 3, ranking of subjects' responses was on a five-point Likert scale (Anderson, 1997) from -2 to 2. This ranking system readily yielded negative and positive directionality in effect sizes.

Effect size

Effect size was calculated by using the numbers of negative and positive pair differences in the Sign Test to measure their relative distances from .50 and taking the result as an indication of effect size i.e., "small" ≥ 0.05 ; "medium" ≥ 0.15 ; and "large" ≥ 0.25 (Cohen, 1988). This is theoretically validated through the Sign Test's null hypothesis taking '...the form that the fraction of a population of potential observations having some defined characteristic is one-half, i.e., $H_0: P = .50$ ' (Cohen,

1988: 145). Thus, where g is the effect size index and P is the ‘...proportion differing of X, Y pairs...’ (Cohen, 1988: 146), the formula ‘... $g = P - .50$ or $.50 - P$ (directional)...’ (Cohen, 1988: 147) is used. Knowledge of directionality and effect size provides opportunities for comparison with apparent treatment effects from descriptive analyses. Moreover, with knowledge of effect size and subsample size, statistical power value estimates are available from Cohen’s (1988) tables.

Sample mortality

The reduction to 75 students resurveyed at the posttest stage in November 1999 indicates an apparent shortfall of nine students from the initial survey of 84 students in February 1999. This shortfall arose from a number of factors: some subjects left the school and enrolled elsewhere; and some others turned 16 during the year and stopped coming to school. Several more were attending school sporadically and were unavailable simply because they did not present at an appropriate time to be resurveyed. The real shortfall, however, was 11 subjects. Two Control subsample subjects who were not surveyed for the pretest survey in February were surveyed for the posttest survey in November, and therefore were eliminated from the study. One Experimental subsample subject surveyed in February was one of those not resurveyed in November. One Experimental subject who was surveyed at pretest and posttest stages withdrew from the workplace learning program at short notice, was not replaced, and became a Control subject. Thus, the effective numbers of subjects in the study sample diminished to 46 for the Control subsample and 28 for the Experimental subsample.

Following application of the validation process described above, three members of the Control subsample and six members of the Experimental subsample were eliminated from the study. Thus, the final sample ($N = 65$) comprised one Control subsample ($n = 43$) and one Experimental subsample ($n = 22$). This sample mortality has potential to reduce to unacceptably low values the statistical power of any statistical testing undertaken to establish the generalisability of research findings from this study (Allal & Cardinet, 1997; Cohen, 1988).

Statistical power values and sample size

Statistical power values provide estimates of the likelihood of correctly rejecting a null hypothesis, thus avoiding a Type II error (Peers, 1996). Cohen (1988) argues that a statistical power value of 80% is acceptable for behavioural research and provides estimates of statistical power values over a range of sample sizes at the rejection level $\alpha = .05$ that are dependent on effect size calculated from the Sign Test output. Cohen (1988) does not provide similar information for the Wilcoxon Signed Ranks Test although he does provide estimates of statistical power values for the parametric t test. Siegel & Castellan (1988) have provided evidence of the statistical power of the Wilcoxon Signed Ranks Test relative to the t test as being approximately 95%.

Thus, throughout corroborative testing in this study, initial statistical power values derived from the Sign Test were read directly from Cohen's (1988) tables and inferences were made about the statistical power values of the Wilcoxon Signed Ranks Test. These inferences were based on 95% of the relevant values of the t test (Siegel & Castellan, 1988) read from Cohen's (1988) tables. It should be noted that effect sizes for the parametric t test are defined differently, with "small" being ≥ 0.20 , "medium" ≥ 0.50 , and "large" ≥ 0.80 (Cohen, 1988). The Experimental subsample sizes planned for this study were of sufficient statistical power at medium to large effect sizes to correctly reject the null hypotheses at the rejection region $\alpha = .05$. Relevant subsample size, statistical significance, effect size, and statistical power values are summarised in Table 3.10 for the Sign Test and Table 3.11 for inferred values for the Wilcoxon Signed Ranks Test.

Table 3.10 *Selected sample sizes and statistical power values for the Sign Test*

Sample size	Sign Test		
	p value	Effect size	Statistical power
23	.05	Large (≥ 0.25)	$\geq 80\%$

Table 3.10 (continued)

Sample size	Sign Test		
	<i>p</i> value	Effect size	Statistical power
16	.05	Large (≥ 0.30)	$\geq 80\%$
8	.05	Large (≥ 0.40)	$\geq 80\%$

Table 3.11 *Selected sample sizes and inferred statistical power values for the Wilcoxon Signed Ranks Test*

Sample size	Wilcoxon Signed Ranks Test (95% of t test values)		
	<i>p</i> value	Effect size	Statistical power
25	.05	Medium (≥ 0.70)	$\geq 80\%$
19	.05	Large (≥ 0.80)	$\geq 80\%$
12	.05	Large (≥ 1.00)	$\geq 80\%$
9	.05	Large (≥ 1.20)	$\geq 80\%$

The sample mortality detailed above led to some subsample sizes lower than those depicted in Tables 3.10 and 3.11, however, correspondingly reducing statistical power values for their tests. Thus, where statistically significant alpha values were met or exceeded by statistical testing, the decision to reject or not reject the null hypothesis was influenced by the relevant statistical power value.

Therefore, pair matching was performed as described above and the two statistical tests, the Wilcoxon Signed Ranks Test for matched pairs and the Sign Test, were applied to the data for the resultant matched pairs. In recognition of its importance in statistical testing of small subsamples (Cohen, 1988; Peers, 1996; Siegel & Castellan, 1988), outcomes for both statistical tests were considered corroboratively. These statistical tests revealed indicators of directionality and

measures of effect size, statistical significance, and statistical power. Summaries and details of the results of statistical testing for Research Question 1 are presented in Chapter 4 and Appendix D respectively.

RESEARCH CONTEXT FOR RESEARCH QUESTION 2

Research activity for this facet of the study took place in 2000. Few contextual controls were available for ascertaining affectivity associated with host workplace mentoring roles in school-sponsored workplace learning. Resource limitations did not allow sustained research observation in workplaces, so on-site post-hoc survey questionnaire and interview modes of data collection were adopted. This allowed for implementation of combined quantitative and qualitative data analyses (Silverman, 1993). Reliance on volunteers from the ranks of workplace mentors for this facet of the study limited its potential for generalisability (Allal & Cardinet, 1997; Burns, 1997).

RESEARCH METHOD FOR RESEARCH QUESTION 2

Included below are the identification of this research project's mode of inquiry, timing of the research activity, and details of theoretical constructs supporting the research.

Mode of research enquiry

A mixed mode of quantitative and qualitative investigation was adopted for this facet of the research (Silverman, 1993). This involved the use of post-hoc survey questionnaires and follow-up interviews with some questionnaire respondents. A positivist approach was adopted; an approach intended to elicit '...facts about behaviour and attitudes' (Silverman, 1993: 91) that related to host workplace mentors' positive affect attending their mentoring roles. As indicated above, a survey questionnaire was followed by an interview for volunteer workplace mentors to elicit further information about the responses they had made in their survey questionnaire.

This action partly addressed the reservations of Isen and Baron (1991) about solely using self-report devices such as survey questionnaires to establish affectivity, and their advocacy of direct observation of affective behaviours to overcome threats to validity of the data collected. Earlier research by Wicker (1969) should be acknowledged in this regard, however. Wicker (1969) found that ‘...it is considerably more likely that attitudes will be unrelated or only slightly related to overt behaviours than that attitudes will be closely related to actions’ (p. 65). Consequently, with due deference to Isen and Baron’s (1991) and Wicker’s (1969) views about the detection of certain affective behaviours, Silverman’s (1993) counsel was accepted in combining quantitative survey questionnaire and qualitative interview research methods in addressing Research Question 2.

The absence of direct observation in the workplaces during workplace mentoring meant that spontaneity in mood state (George & Brief, 1992) could not be established and, consequently, their model of affect in the workplace was used in an adapted form in this study. Whilst this adaptation negates the spontaneity of George and Brief’s (1992) model of workplace affectivity in terms of extra-role behaviours, it takes advantage of the forms of spontaneous affective behaviours George and Brief (1992) developed in their model. In this study these forms of spontaneity enabled identification of particular affective behaviours that may attend workplace mentoring activities.

Adoption of O’Connor’s (1994b) workplace context layers for multiple levels of analysis (Côté, 1999) permitted research input by those most directly involved in the activity, potentially providing for richer and thicker descriptions of workplace interactions (Darrah, 1992). Consultation at this level overcame some of the limitations of similar research studies that have involved research input from host workplace personnel remote from the mentoring role; personnel whose accessibility to external enquiries made them convenient rather than knowledgeable informants (Hillage et al., 1995).

In relation to school-sponsored workplace learning, mentoring has been described as a wide-ranging suite of activities including mentor interaction with students at the school and workplace involving not only instruction in the immediate workplace tasks at hand but broader aspects of the students' development such as job interview preparation and progression to post-school education (Stern et al., 1992). For the host enterprise in this study, the workplace mentor was located within the workplace setting at all times. Activities such as job interview preparation and progression to post-school education (Stern et al., 1992) were not formally assigned to mentors in this study. Thus, the host enterprise saw the mentor's role as wide ranging within the work environment, and included one-on-one workplace instruction, instruction in a department, and instruction across a supermarket (Institute for Working Futures, 1995). Table 3.12 summarises research activity during 2000 for this aspect of the study.

Table 3.12 *Research activity timetable for Research Question 2*

Date	Research Activity
February 2000	Prepared and distributed information about the workplace learning program for parents and students in the 2000 Grade 10 cohort
March-November 2000	First, second, and third groups of school students entered the program in March, July, and September respectively, managed and maintained the workplace learning program
April-May 2000	Prepared survey questionnaire for host workplace mentors in collaboration with host enterprise's training staff
May-July 2000	Prepared relevant documentation and received approval from the University of Tasmania Ethics Committee to conduct research with human subjects, Ethics Committee reference number H5802

Table 3.12 (continued)

Date	Research Activity
September 2000	Administered survey questionnaires to volunteer host workplace mentors, analysed quantitative data, identified potential interviewees
October- December 2000	Conducted interviews with selected volunteer host workplace mentors, analysed qualitative data

Throughout 2000 school students' workplace learning program continued with the 2000 grade 10 cohort with the focus of inquiry on affectivity attending host mentoring roles.

Supporting theories

Research by Isen and Baron (1991) recognized workplace mentoring as a prosocial behaviour associated with positive affect. George and Brief (1992) complemented Isen and Baron's (1991) research through their identification of five forms of organizational behaviour associated with positive affect: helping co-workers; protecting the organization; making constructive suggestions; developing oneself; and spreading goodwill. The theoretical work by George and Brief (1992) and Isen and Baron (1991) led to Côté (1999) arguing that people's workplace performance improved when positive affect was present, and when positive affect was present, people's workplace performance improved.

The research by George and Brief (1992) specifically relates to certain mood states' effect on spontaneous positive affect, that is, behaviours exhibited of '...one's free will or voluntarily' (George & Brief, 1992: 310). Whilst the spontaneous quality supporting George and Brief's (1992) theoretical model of organizational behaviour was not tested in this study, three of its categories of organizational behaviour that attend positive affect were adapted to detect host mentors' affectivity in the workplace: helping co-workers; developing oneself; and spreading goodwill (George & Brief, 1992).

Côté (1999) noted that further research in this field should assume greater depth, especially in relation to its occurrence at ‘...multiple levels of analysis...’ (p 68). The greater depth of analysis sought by Côté (1999) was implemented in this study through the application of the first four of O’Connor’s (1994b) seven workplace context layers as an organizing structure for ‘...multiple levels of analysis...’ (Côté, 1999: 68), namely:

- Individual workers;
- Work teams or groups;
- Work section or department; and
- Enterprise.

Data gathered at these levels of student/mentor involvement allowed revelation and potential analysis of the ‘...complex interactions, relationships, practices and meanings which characterize the sites of work performance’ (O’Connor, 1994b: 273).

RESEARCH DESIGN FOR RESEARCH QUESTION 2

This research design combined aspects of quantitative and qualitative research (Silverman, 1993) so that a broad overview of the affectivity host workplace mentors could be established through a questionnaire analysis, followed by a more intensive series of structured interviews to deepen understanding of the phenomena in question (Burns, 1997). Listed below are research design details relating to sample selection, survey questionnaire design, survey questionnaire validation, survey questionnaire reliability, and interview procedures

Sample selection

Participants in this aspect of the study comprised volunteers drawn from host workplace mentors who had been involved in the research project as workplace mentors in the years 1999 and/or 2000; an opportunity sample (Burns, 1997).

Survey questionnaire design

A survey questionnaire was used initially to effectively reach a potentially large number of geographically dispersed host workplace mentors. Organizational behaviour related to affect (Côté, 1999; George & Brief, 1992; Isen & Baron, 1991) combined with multiple levels of analysis through O'Connor's (1994b) workplace context layers underpinned this aspect of the research and the questionnaire was designed accordingly. Three items relating to each of the first two workplace context layers and two items relating to each of the third and fourth workplace context layers were placed randomly throughout the survey questionnaire. Items were couched in positive and negative terms to counter respondents' adoption of response sets. The workplace mentors' survey questionnaire is included in Appendix C.

Having regard to the greater maturity of potential respondents, their familiarity with the content, and the proposed mode of questionnaire presentation (researcher present), a forced-response format for this survey questionnaire was adopted. Thus, respondents were faced with a four point Likert scale for their responses: *Strongly Disagree; Disagree; Agree; Strongly Agree*. To accommodate this format, survey questionnaire items were carefully formulated (Burns, 1997) and subject to rigorous review at the validation stage before presentation to potential respondents.

Survey questionnaire validation

Validation of the host workplace mentors questionnaire took place before its administration to respondents. This validation took the form of content validation based on expert scrutiny and advice (Burns, 1997; Zeller, 1997; Litwin, 1995). A panel of six qualified and experienced training personnel from the host enterprise sat with the researcher on May 5, 2000 and considered items for inclusion in the questionnaire. Suggestions were made for amendment and/or non-inclusion based on these trainers' experience in training workplace personnel in the host employer's supermarkets.

Survey questionnaire administration

The host workplace mentors survey questionnaire was administered to a volunteer sample of workplace mentors in the host workplaces from September 26, 2000 to September 29, 2000. During the administration the researcher was present and available to answer queries from respondents about the questionnaire items. No significant difficulties were encountered. The researcher took completed questionnaires directly from the respondents.

Survey questionnaire reliability

Completed responses from 32 respondents in the host employer's supermarkets were analysed for internal consistency. The reliability of the survey instrument expressed as Cronbach's Alpha was .75. This is greater than the generally accepted level of .70 and indicates that the survey instrument is reliable to an acceptable degree (Litwin, 1995).

Interview procedures

Survey questionnaire respondents were invited to indicate their willingness to be interviewed about their involvement in the program. Eight respondents were interviewed in their workplaces on October 19, 2000; October 20, 2000; November 3, 2000; November 23, 2000; November 26, 2000; December 2, 2000; and December 9, 2000.

In the interview situation, both the interviewer (the researcher) and the volunteer host workplace mentor were conversant with the composition and purposefulness of the workplace learning program. In this respect, the researcher had studied the development of nationally accredited training in the host enterprise and was familiar with the initiatives taken by both the host enterprise and the regulatory authorities in developing its current training culture (Institute for Working Futures, 1995; Tasmanian State Training Authority, 1998). Thus, interview conversations reported here addressed the criticisms of the positivist approach to interviewing: that

the interviewer and interviewee can be ostensibly talking about the same thing but at a deeper level be failing to understand each other (Silverman, 2001).

CONCLUSION

This chapter has endeavoured to set the research context and method for this study. It has examined the rationale for the study based on the evidence presented in Chapter 1 and Chapter 2 and has addressed a research context involving a high school enrolling a high proportion of students from low SES backgrounds having access to quality-assured workplace learning through a national chain of supermarkets. It has identified theoretical constructs that locate the research in relation to established theories and has identified appropriate modes of inquiry: the modified case study, and a combined descriptive quantitative and positivist qualitative study.

Included in Chapter 3 have been details regarding ethical considerations, the development, application, reliability and validity of measuring instruments and interview procedures. Chapters 4 and 5 will present detailed analyses of the data so collected and report results of analyses related to Research Questions 1 and 2 respectively.

CHAPTER 4

RESULTS FOR RESEARCH QUESTION 1

INTRODUCTION

As established in earlier chapters, Research Question 1 relates to socio-economically disadvantaged high school students' participation in workplace learning and their subsequent motivation for school learning. It is:

- *Does participation in school-sponsored workplace learning improve socio-economically disadvantaged high school students' motivation for school learning?*

Review of the research context and research design

Research activity in respect of Research Question 1 utilised a quasi-experimental research design (Campbell & Stanley, 1963). This action was taken in response to the compilation of two comparison research subsamples non-randomly selected from a cohort of high school students in a Grade 10 at a Tasmanian suburban high school. The first three levels of the Affective Domain Taxonomy (Krathwohl et al., 1964) formed the theoretical framework for the research, its successively deeper levels of internalisation of affect providing a classification for measuring increasing levels of students' motivation for school learning. Pretest and posttest surveys were conducted for Control and Experimental subsamples as to their motivation for school learning.

DATA OVERVIEW FOR RESEARCH QUESTION 1

The aim of this aspect of the research was to establish the presence of treatment effects in the data that are generalisable (Allal & Cardinet, 1997). Reichardt (1979) recommends that the consideration of research data from quasi-experimental nonequivalent group designs should begin with a '...sift through the data descriptively to see what they suggest' (p. 200).

Accordingly, these data were analysed at several levels of aggregation to find apparent treatment effects. These aggregations and disaggregations comprised:

- An aggregated analysis of Control and Experimental subsamples' apparent treatment effects structured by the three surveyed levels of the Affective Domain Taxonomy, Levels 1, 2, and 3 (Krathwohl et al., 1964);
- A disaggregated analysis of gender-assigned Control and Experimental subsamples' apparent treatment effects structured by the three surveyed levels of the Affective Domain Taxonomy, Levels 1, 2, and 3 (Krathwohl et al., 1964);
- An analysis of the differences in apparent treatment effects between the Control subsample and temporally-disaggregated Experimental subsamples participating in workplace learning in autumn, winter, and spring of 1999, structured by the three surveyed levels of the Affective Domain Taxonomy, Levels 1, 2, and 3 (Krathwohl et al., 1964).

Aggregated data analyses

Research subjects reported pretest to posttest differences from which apparent treatment effects were arranged by Affective Domain Taxonomy level (Krathwohl et al., 1964) and subsample (Control and Experimental). These data are summarised in Tables 4.1, 4.2, and 4.3.

Table 4.1 *Research subjects reporting improved motivation at Level 1*

Pretest to posttest motivation	Subsample			
	Control		Experimental	
	No.	%	No.	%
Improved	14	33	6	27
Not improved	29	67	16	73
Totals	43	100	22	100

Table 4.2 *Research subjects reporting improved motivation at Level 2*

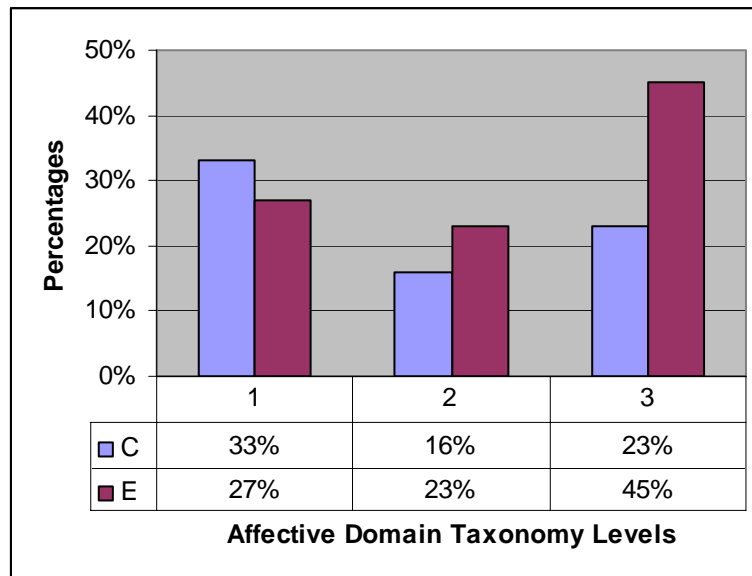
Pretest to posttest motivation	Subsample			
	Control		Experimental	
	No.	%	No.	%
Improved	7	16	5	23
Not improved	36	84	17	77
Totals	43	100	22	100

Table 4.3 *Research subjects reporting improved motivation at Level 3*

Pretest to posttest motivation	Subsample			
	Control		Experimental	
	No.	%	No.	%
Improved	10	23	10	45
Not improved	33	77	12	15
Totals	43	100	22	100

Data summarised in Table 4.1 indicate that higher percentages of Control subsample subjects reported improved motivation for school learning at Level 1 of the Affective Domain Taxonomy (Krathwohl et al., 1964). Data summarised in Tables 4.2 and 4.3 indicate that higher percentages of Experimental subsample subjects reported improved motivation for school learning at Levels 2 and 3 of the Taxonomy. Thus, there was an apparent negative treatment effect at Level 1 of the Taxonomy and apparent positive treatment effects at Levels 2 and 3. Figure 4.1 depicts these data summaries graphically.

Figure 4.1. Proportions of Control (C) and Experimental (E) subsamples reporting improved motivation



Evidence presented in Chapter 2 indicated that gender may influence students' participation in school-sponsored workplace learning (Fullarton, 1999; Haimson & Bellotti, 2001; Linnehan, 1996; 2001; 2003). Consequently, gender-disaggregated data were analysed to establish apparent treatment effect by gender at levels 1, 2, and 3 of the Affective Domain Taxonomy (Krathwohl et al., 1964).

Gender-assigned disaggregated data analyses

These data analyses are presented by gender and Taxonomy level in Tables 4.4, 4.5, 4.6, and Figure 4.2 for female subjects and Tables 4.7, 4.8, and 4.9 and Figure 4.3 for male subjects.

The Experimental Female subsample at Level 1 of the Taxonomy depicted in Table 4.4 and Figure 4.2 showed an apparent positive treatment effect, at Level 2 an apparent neutral effect, and at Level 3 an increased apparent positive treatment effect. At Level 1 of the Taxonomy the Experimental Male subsample showed an apparent

negative treatment effect, while at Levels 2 and 3 it showed an apparent positive treatment effects.

Table 4.4 *Female research subjects reporting improved motivation Level 1*

Pretest to posttest motivation	Female subsample			
	Control		Experimental	
	No.	%	No.	%
Improved	2	13	4	25
Not improved	14	87	12	75
Totals	16	100	16	100

Table 4.5 *Female research subjects reporting improved motivation at Level 2*

Pretest to posttest motivation	Female subsample			
	Control		Experimental	
	No.	%	No.	%
Improved	3	19	3	19
Not improved	13	81	13	81
Totals	16	100	16	100

Table 4.6 *Female research subjects reporting improved motivation at Level 3*

Pretest to posttest motivation	Female subsample			
	Control		Experimental	
	No.	%	No.	%
Improved	2	13	7	44
Not improved	14	87	9	56
Totals	16	100	16	100

Figure 4.2. Proportions of Control Female (CF) and Experimental Female (EF) subsamples reporting improved motivation

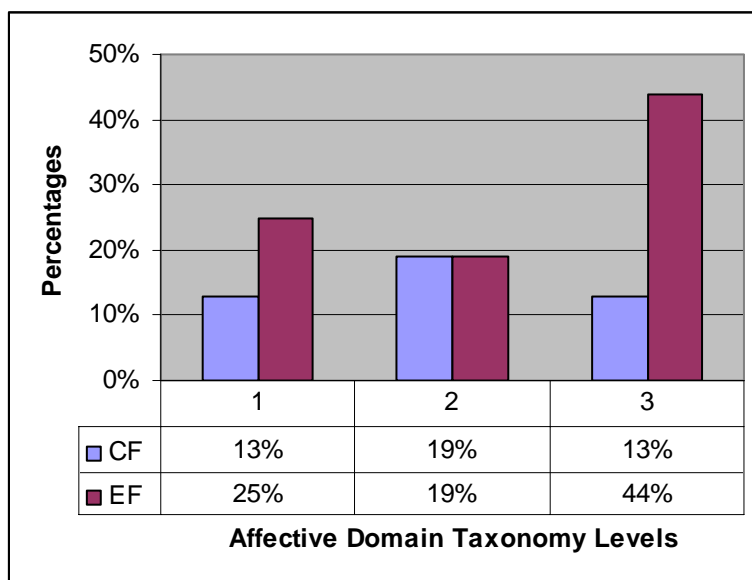


Table 4.7 Male research subjects reporting improved motivation at Level 1

Pretest to posttest motivation	Male subsample			
	Control		Experimental	
	No.	%	No.	%
Improved	12	44	2	33
Not improved	15	56	4	67
Totals	27	100	6	100

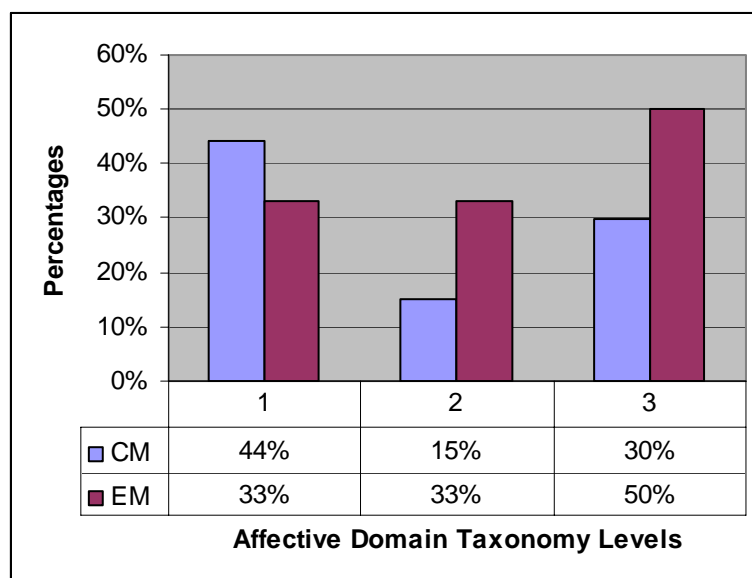
Table 4.8 *Male research subjects reporting improved motivation at Level 2*

Pretest to posttest motivation	Male subsample			
	Control		Experimental	
	No.	%	No.	%
Improved	4	15	2	33
Not improved	23	85	4	67
Totals	27	100	6	100

Table 4.9 *Male research subjects reporting improved motivation at Level 3*

Pretest to posttest motivation	Male subsample			
	Control		Experimental	
	No.	%	No.	%
Improved	8	30	3	50
Not improved	19	70	3	50
Totals	27	100	6	100

Figure 4.3. Proportions of Control Male (CM) and Experimental Male (EM) subsamples reporting improved motivation for school learning



Temporally-disaggregated data analyses

As noted in Chapter 3, Robinson and Thomson (1998) observed that reporting temporal variations of treatment effects could strengthen case studies. Accordingly, the temporal variations found in this study are presented below. The temporally-disaggregated subsamples are abbreviated as Control subsample C, first Experimental subsample E1 (autumn), second Experimental subsample E2 (winter) and the third Experimental subsample E3 (spring). The Control subsample remained temporally constant and therefore is represented once only in each of these data summaries.

Data summarised in Tables 4.10, 4.11, and 4.12 and Figures 4.4, 4.5, and 4.6 show that Experimental subsamples participating in workplace learning in the first (autumn) and the second (winter) disaggregations appear to have reported high levels of improvement in their motivation for school learning, outstripping the Control subsample at Levels 2 and 3 of the Taxonomy. The third (spring) disaggregation reported improvement rates lower than the Control subsample at all three levels of the Taxonomy.

Table 4.10 *Temporally-disaggregated research subjects reporting improved motivation at Level 1*

Pretest to posttest motivation	Temporal subsample							
	C		E1 (autumn)		E2 (winter)		E3 (spring)	
	No	%	No	%	No	%	No	%
Improved	14	33	4	44	2	29	1	17
Not improved	29	67	5	66	5	71	5	83
Totals	43	100	9	100	7	100	6	100

Figure 4.4. Percentages of temporally-disaggregated research subjects reporting improved motivation at Level 1

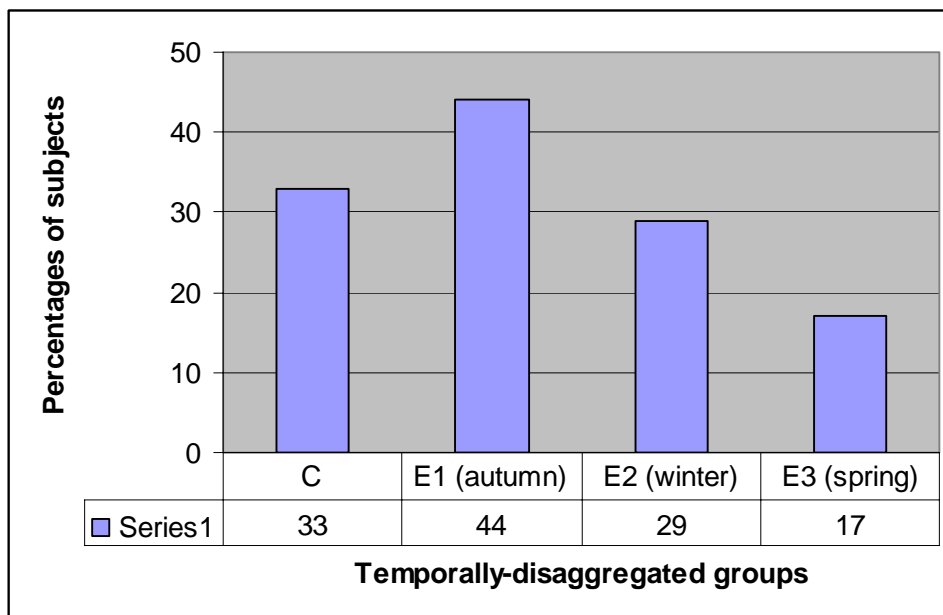


Table 4.11 *Temporally-disaggregated research subjects reporting improved motivation at Level 2*

Pretest to posttest motivation	Temporal subsample status							
	C		E1 (autumn)		E2 (winter)		E3 (spring)	
	No	%	No	%	No	%	No	%
Improved	7	16	3	33	2	29	0	0
Not improved	36	84	6	67	5	71	6	100
Totals	43	100	9	100	7	100	6	100

Figure 4.5. Percentages of temporally-disaggregated research subjects reporting improved motivation at Level 2

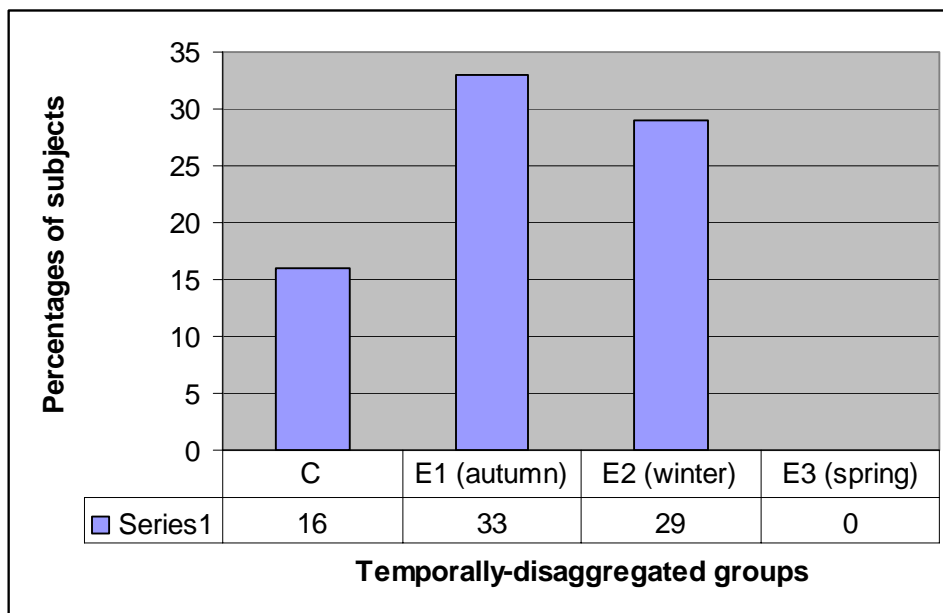
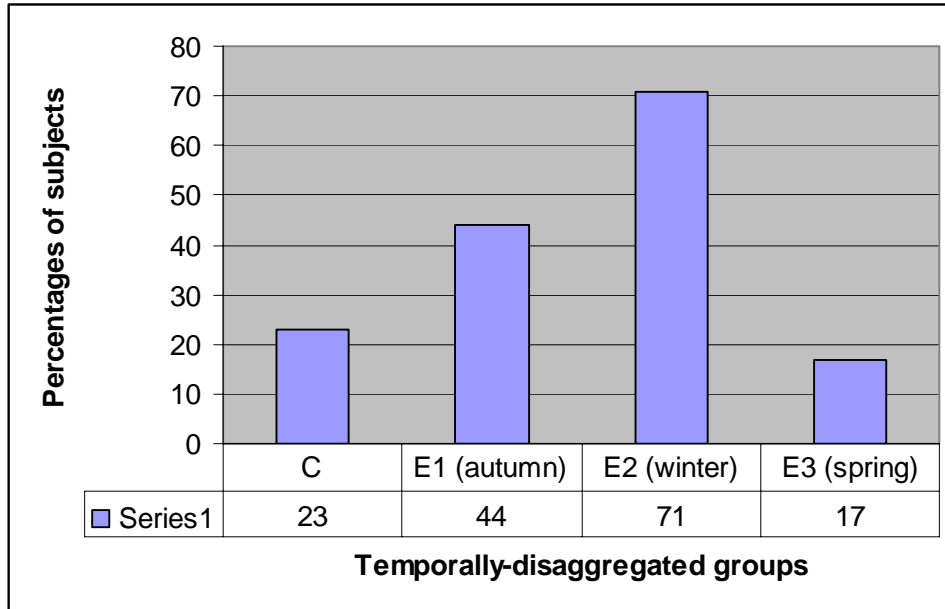


Table 4.12 *Temporally-disaggregated research subjects reporting improved motivation at Level 3*

Pretest to posttest motivation	Temporal subsample status							
	C		E1 (autumn)		E2 (winter)		E3 (spring)	
	No	%	No	%	No	%	No	%
Improved	10	23	4	44	5	71	1	17
Not improved	33	77	5	56	2	29	5	83
Totals	43	100	9	100	7	100	6	100

Figure 4.6. Percentages of temporally-disaggregated research subjects reporting improved motivation at Level 3



Summary of data overviews

These data overviews provide an indication of the apparent effects of the experimental treatments for Research Question 1 and partly satisfy Reichardt's (1979) recommendation that the data be sifted to see what they suggest. In this regard, these data suggest a similar pattern of apparent negative and positive treatment effect for the aggregated Experimental subsample and the disaggregated Experimental Male subsample across Levels 1, 2, and 3 of the Taxonomy. The disaggregated Experimental Female subsample varies from this pattern, with an apparent positive treatment effect at Level 1, an apparent neutral treatment effect at Level 2 and a markedly increased apparent positive treatment effect at Level 3. For temporally-disaggregated subsamples apparent positive treatment effects have accrued generally at all levels of the Taxonomy for the autumn and winter subsamples, and less so for the spring subsample (Figures 4.4, 4.5, and 4.6).

At this stage, these overviews are not the generalisable findings of this facet of the study (Allal & Cardinet, 1997). As pointed out above, there may be biases

present in these subsamples related to the affective outcomes being investigated and selection-maturation effects may be masking the true treatment effect (Cook & Campbell, 1979). These factors need to be addressed in establishing the generalisability of the findings from this study, that is, that the treatment effects are not due to sampling error or chance (Peers, 1996).

Detecting subsample biases

As indicated in Chapter 3, non-equivalent control subsample designs may produce bias (Reichardt, 1979) and selection-maturation effects that mask true treatment effects (Cook & Campbell, 1979). The presence of these factors can be detected by a descriptive analysis of the data (Reichardt, 1979), focused on detecting pretest bias and/or increased posttest variability for the Experimental subsample. Detecting these distortions ‘...will entail multiple analyses of the data, with each analysis aimed at estimating the effects of different patterns of potential biases...’ (Reichardt, 1979: 200). Accordingly, descriptive analyses incorporating summaries of pretest and posttest medians and ranges are reported. These summaries are presented in Appendix D at Tables D1 to D24, and Figures D1 to D24, inclusive.

Inferential statistical analyses and the level of statistical proof at the data overview stage.

The computer program Statistical Package for the Social Sciences (SPSS, 1999) and its subsequent versions 10, 11, 11.5 and 12 were utilized to analyse quantitative data for Research Question 1. An alpha level of .05 was used for all statistical tests. The secondary importance of this data overview in relation to the research question led to none of the null hypotheses being tested formally. This action adopted statistical inference ‘...as the standard of proof that the phenomenon exists...’ (Cohen, 1988: 2), without proceeding to statements about ‘...the nature of the phenomenon’s existence’ (Cohen, 1988: 2) that may relate to directionality, effect size, and/or statistical power (Cohen, 1988). Where subsequent statistical tests of primary importance to the research question were applied, all factors relating to ‘...the nature of the

phenomenon's existence' (Cohen, 1988: 2) were taken into account and, where appropriate, null hypotheses were tested formally.

These inferential statistical analyses are described by Affective Domain Taxonomy level (Krathwohl et al., 1964). Reliable and valid ordinal data resulting from the ranked responses described above were analysed from pretest and posttest survey questionnaires administered in February and November 1999, respectively. Table 3.1 in Chapter 3 summarises this research activity. These data are from related samples and because the estimation of treatment effect is to be taken from measures between the groups of subjects it is important that any variations between groups be detected and accounted for in subsequent statistical analyses (Peers, 1996). As indicated above, the first apparent variation suggested by the data overview is related to gender segregation in some subsamples.

Sample and subsample gender segregation

The subjects in the research sample ($N = 65$) comprised the following subsamples: one Control subsample ($n = 43$) comprising female ($n = 16$) and male ($n = 27$) subsamples, and one Experimental subsample ($n = 22$) comprising female ($n = 16$) and male ($n = 6$) subsamples. The difference between proportions of subjects' participation status and gender representation was statistically significant ($\chi^2 = 7.4338$, $df = 1$, $p = .01$). Whilst this p value is within the region of rejection for the customarily accepted alpha level of .05 (Peers, 1996), it is acknowledged that the relatively small size of the Experimental Male subsample may have affected this chi-square test. Therefore, corroborative statistical testing of ordinal data was undertaken through the Kruskal Wallis test for ordinal data error variance (Peers, 1996; Siegel & Castellan, 1988) to establish whether this variability is greater than that of '...the kind of variations that are to be expected among random samples from the same population' (Siegel & Castellan, 1988: 206).

Data error variance

As indicated in Chapter 3, self-selection into the Experimental group may have biased the data. Accordingly, the aggregated Control and Experimental subsample's data were tested for error variance. Detailed output from SPSS data analyses is included in Appendix D at Tables D25 to D30 inclusive, and summaries for Levels 1, 2, and 3 of the Taxonomy are presented below in Tables 4.13, 4.14, and 4.15. Statistically significant findings are identified for acknowledgement in subsequent descriptive and inferential analyses primarily related to the research question. Moreover, as noted above, self-selection combined with gender status may have influenced differences in these data and gender-sensitive tests for data error variance were applied to disaggregated gender-assigned data (Lyons & Howard, 1991). These are summarised in Tables 4.17, 4.18, and 4.19 for Levels 1, 2, and 3 of the Taxonomy and statistically significant findings are identified. Detailed output from SPSS data analyses is included in Appendix D at Tables D31 to D36 inclusive.

Table 4.13 *Control and Experimental data error variance for Level 1*

Test stage	Kruskal Wallis test statistic (N = 65)	df	p value
Pretest	1.92	1	.17
Posttest	0.03	1	.86

Table 4.14 *Control and Experimental data error variance for Level 2*

Test stage	Kruskal Wallis test statistic (N = 65)	df	p value
Pretest	3.15	1	.08
Posttest	2.15	1	.14

Table 4.15 *Control and Experimental data error variance for Level 3*

Test stage	Kruskal Wallis test statistic	df	p value
	(N = 65)		
Pretest	1.45	1	.23
Posttest	2.00	1	.16

Disaggregated gender-assigned data validity and reliability

Disaggregation of this data by gender status involved gender assignment only and the integrity of individual subjects' responses profiles was maintained. Therefore, the external validation of subjects' responses was unaffected. Reliability, however, was threatened by this disaggregation because of the reduced number of responses available for each reliability analysis (female $n = 32$; male $n = 33$) (Thorndike & Thorndike, 1997). Hence, reliability coefficients (Cronbach's alpha) were recalculated and are summarised in Table 4.16. The reliability coefficients presented in Table 4.16 are greater than .70 and are acceptable for inferential statistical analysis on data derived from attitude scales (Anderson, 1997; Litwin, 1995).

Table 4.16 *Gender-assigned reliability coefficients*

Test stage	Affective Domain Taxonomy Level					
	1		2		3	
	Female	Male	Female	Male	Female	Male
Pretest	.82	.87	.89	.91	.79	.89
Posttest	.89	.89	.93	.93	.91	.88

Table 4.17 *Gender-assigned data error variance for Level 1*

Test stage	Kruskal Wallis test statistic (N = 65)	df	p value
Pretest	8.56	3	.04*
Posttest	1.01	3	.80

* Statistically significant at the rejection region $\alpha = .05$

Table 4.18 *Gender-assigned data error variance for Level 2*

Test stage	Kruskal Wallis test statistic (N = 65)	df	p value
Pretest	10.30	3	.02*
Posttest	2.25	3	.52

* Statistically significant at the rejection region $\alpha = .05$

Table 4.19 *Gender-assigned data error variance for Level 3*

Test stage	Kruskal Wallis test statistic (N = 65)	df	p value
Pretest	3.70	3	.30
Posttest	7.41	3	.06

Commentary on tests for data error variance

No statistically significant levels of data error variance were found for the aggregated Control and Experimental subsamples. This is consistent with the data overviews reported previously. Tests for data error variance in the gender-assigned disaggregated subsamples revealed statistically significant levels of variance for the

pretests at Levels 1 and 2 of the Taxonomy. This confirms the gender differences suggested in the data overview and the statistically significant findings of the chi square test applied to the gender composition of the Control and Experimental subsamples. These findings will be addressed at appropriate stages of the following data analyses.

Temporal disaggregation

As indicated above, Robinson & Thomson (1998) recommended that case studies (to which this modified case study is related) should provide for differences in settings and timing for data collection. In this study, three subsamples of nominally 10 Experimental subjects were placed for 10 weeks' of one day per week workplace learning with the host enterprise. The timing of these placements corresponded to the three climatic seasons encompassed by the academic year: autumn, winter, and spring. Small subsample sizes ($n \leq 6$) precluded disaggregated study relating to settings (work sites), but the availability of larger subsamples ($n \geq 6$) enabled some consideration of differences attributable to the timing of subjects' exposure to the treatment (Cohen, 1988; Siegel & Castellan, 1988).

Accordingly, the Experimental subsample was disaggregated according to the timing of its workplace learning placement and each disaggregated subsample was designated temporally by the climatic season of its placement. Thus the first-placed Experimental subsample was designated E1 with its climatic season appended in parentheses, viz., E1 (autumn). The remaining subsamples were designated likewise: E2 (winter) and E3 (spring). To ascertain the presence of any seasonal influence, the data were tested for error variance by the Kruskal Wallis test. Formal testing of null hypotheses and associated output from SPSS are presented in Appendix D at Tables D37 and D38 (Level 1), Tables D39 and D40 (Level 2) and Tables D41 and D42 (Level 3). The results from these tests are summarised in Tables 4.20, 4.21 and 4.22.

Commentary for temporally-disaggregated data error variance

Data error variance related to temporal disaggregation was statistically significant for posttest data at Levels 2 and 3 of the Taxonomy. These findings will be addressed at appropriate stages of the following data analyses.

Table 4.20 *Temporally-disaggregated data error variance for Level 1*

Test stage	Kruskal Wallis test statistic (N = 65)	df	p value
Pretest	3.03	3	.39
Posttest	6.82	3	.08

Table 4.21 *Temporally-disaggregated data error variance for Level 2*

Test stage	Kruskal Wallis test statistic (N = 65)	df	p value
Pretest	3.76	3	.29
Posttest	16.22	3	.00**

** Statistically significant at the .01 rejection region.

Table 4.22 *Temporally-disaggregated data error variance for Level 3*

Test stage	Kruskal Wallis test statistic (N = 65)	df	p value
Pretest	1.79	3	.62
Posttest	9.15	3	.03*

* Statistically significant at the .05 rejection region.

In relation to data such as these, Peers (1996), counsels caution in interpreting findings from samples that have not been selected with a probabilistic (random) basis

for inclusion. It will be noted also that there are some small subsample in these analyses, as small as $n = 6$ for example. As noted above small subsample sizes may affect statistical tests and, in relation to small subsamples Siegel and Castellan (1988), make the point that:

When sample sizes are small, only relatively large differences are detected by our statistical procedures which lead to the rejection of H_0 ...Before accepting H_0 ...the researcher should seek corroborating evidence... [but]...this caution does not imply that we should not have confidence in the differences between subsamples if we are able to reject H_0 at a given significance level (p. 210).

Accordingly, further statistical testing of these data applied a range of corroborative descriptive and inferential statistical analyses to minimise the possibility of error in statistically testing small subsamples.

STATISTICAL ANALYSES AT LEVEL 1 OF THE AFFECTIVE DOMAIN TAXONOMY

Statistical analyses at Level 1 of the Affective Domain Taxonomy took account of the descriptive analyses presented in Appendix D at Tables D1 to D8, and Figures D1 to D8, inclusive. The differences between subsamples were tested through probability theory (Peers, 1996) to estimate the treatment effect size, and power of the statistical test (Cohen, 1988), and to establish their generalisability (Allal & Cardinet, 1997).

Pretest bias and/or selection-maturation effects were found in all of the descriptive analyses presented in Appendix D for Level 1 of the Taxonomy. In addressing these issues, Reichardt (1979) recommends the use of a matched pairs analysis to minimise their influence in estimating treatment effects. In matched pairs analyses ‘...individuals are paired so that, according to some criterion, they have comparable pretest scores... [and]... the treatment effect is estimated from the posttest difference between pairs’ (Reichardt, 1979: 176). Thus, two related samples matched pairs statistical tests were adopted for this study (Peers, 1996; Siegel & Castellan, 1988). Details of the tests adopted and their associated matching procedures were presented in Chapter 3.

Statistical tests at Level 1

This statistical testing was of primary importance to the research question and full account was taken of ‘...the nature of the phenomenon’s existence’ (Cohen, 1988: 2) in relation to its directionality, effect size, and statistical power (Cohen, 1988). Where effect size was positive, and predetermined statistical significance and statistical power values were met, the respective null hypotheses were tested formally.

Pretest bias and/or selection-maturation effects were found in the descriptive analyses of these data presented in Appendix D at Tables D1 to D8, and Figures D1 to D8, inclusive. In respect of statistical testing at Level 1 of the Taxonomy, details of output from SPSS are presented in Appendix D at Tables D43 to D48 (Wilcoxon Signed Ranks Test) and Tables D62 to D67 (Sign Test). The results are summarised in Tables 4.23 to 4.25 inclusive.

Table 4.23 *Results of statistical tests for Control and Experimental subsamples’ treatment effect at Level 1*

Statistical Test (<i>n</i> = 17)	<i>p</i> value	Effect size	Decision
Wilcoxon Signed Ranks			No further action
Sign		-0.09	No further action

Commentary for testing Control and Experimental subsamples at Level 1

Pretest median ranks for pairs were exactly matched and the squared Euclidean distances for pair matching ranged from 1.00 to 59.00 with a median of 13.00 and an interquartile range of 13.00. Distance measures up to the 3rd quartile were below 20.00 and 59.00 was an extreme value. Effect size, taken from the Sign Test’s numbers of negative and positive differences was calculated at -0.09, a medium negative effect (Cohen, 1988). There being no positive treatment effect, no further analysis was warranted.

Gender-assigned statistical testing

Data presented in Table 4.17 shows that there is gender sensitivity in the pretest data at Level 1 of the Taxonomy. Moreover, selection-maturation for the Experimental Female subsample depicted in Table D4, and Figure D4, and the Experimental Male subsample depicted in Table D6, and Figure D6, may be masking the true treatment effects (Reichardt, 1979). The Experimental Male subsample's size was too small to achieve sufficient statistical power to test the null hypotheses (Cohen, 1988) and statistical significance was noted as a matter of record only. Associated output from SPSS is presented in Appendix D at Tables D44 and D45 (Wilcoxon Signed Ranks Tests) and Tables D63 and B64 (Sign Tests). The results are summarised in Table 4.24.

Table 4.24 *Results of statistical tests for gender-assigned subsamples' treatment effect at Level 1*

Statistical test	Gender	<i>p</i> value	Effect size	Decision
Wilcoxon Signed Ranks	Female(<i>n</i> = 12)	.43		H_0 not tested
	Male (<i>n</i> = 3)	.63		H_0 not tested
Sign	Female (<i>n</i> = 12)	.39	0.08	H_0 not tested
	Male (<i>n</i> = 3)	>.31	0.17	H_0 not tested

Commentary for testing gender-assigned subsamples at Level 1

Pretest median ranks for pairs were exactly matched and the squared Euclidean distances used for pairs' profile matching in the Experimental Female subsample ranged from 2.00 to 58.00 with a median of 18.50 and an interquartile range of 25.50. Values up to the 3rd quartile were below 35.00. Effect size, taken from the Sign Test's numbers of negative and positive differences was calculated at 0.08 for the female's pair differences, a medium positive effect. All *p* values were greater than the rejection region $\alpha = .05$. Therefore, the null hypotheses were not tested formally.

Pretest median ranks for pairs were exactly matched in the Experimental Male subsample and the squared Euclidean distances used for pairs' profile matching ranged from 17.00 to 83.00 with a median of 34.00 and an interquartile range of 33.70. Distance measures up to the 3rd quartile were below 45.00 and the value of 83.00 was an outlier. A medium positive effect size of 0.17 (Cohen, 1988) was calculated. All p values were greater than the rejection region $\alpha = .05$. Therefore, the null hypotheses were not tested formally.

Temporally-disaggregated statistical testing at Level 1

Data presented in Tables D7 and D8, and Figures D7 and D8 revealed pretest biases and evidence of selection-maturation effects. Therefore, the data were tested by way of two related samples testing for effect size and statistical significance. Some subsample sizes were too small to achieve sufficient statistical power to reject the null hypotheses (Cohen, 1988), and statistical significance was noted as a matter of record only. Associated output from SPSS are presented in Appendix D at Tables D46 to D48 (Wilcoxon Signed Ranks Test) and Tables D65 to D67 (Sign Test). The results are summarised in Table 4.25.

Table 4.25 *Results of statistical tests for temporally-disaggregated subsamples' treatment effect at Level 1*

Statistical test	Temporally-disaggregated subsample	p value	Effect size	Decision
Wilcoxon Signed Ranks	E1 (autumn) ($n = 5$)	.22		H_0 not tested
	E2 (winter) ($n = 6$)	.16		H_0 not tested
	E3 (spring) ($n = 4$)			No further action

Table 4.25 (continued)

Statistical test	Temporally-disaggregated subsample	<i>p</i> value	Effect size	Decision
Sign	E1 (autumn) (<i>n</i> = 5)	.50	0.10	H_0 not tested
	E2 (winter) (<i>n</i> = 6)	.34	0.17	H_0 not tested
	E3 (spring) (<i>n</i> = 4)		-0.50	No further action

Commentary for testing temporally-disaggregated subsamples at Level 1

Pretest median ranks for pairs were exactly matched and the squared Euclidean distances used for pairs' profile matching in the E1 (autumn) subsample ranged from 3.00 to 46.00 with a median of 10.05 and an interquartile range of 15.75. Distance measures up to the 3rd quartile were below 25.00 and the value of 46.00 was an outlier. Effect size was calculated as 0.10, a small positive effect. Neither the Wilcoxon Signed Ranks Test nor the Sign Test yielded *p* values within the rejection region of $\alpha = .05$. Therefore, the null hypotheses were not tested formally.

Pretest median ranks for pairs were exactly matched and the squared Euclidean distances used for pairs' profile matching in the E2 (winter) subsample ranged from 4.00 to 19.00 with a median of 10.00 and an interquartile range of 12.00. The effect size was calculated at 0.17, a medium positive effect. Neither the Wilcoxon Signed Ranks Test nor the Sign Test yielded *p* values at or below the rejection region of $\alpha = .05$. Therefore, the null hypotheses were not tested formally.

Pretest median ranks for pairs were exactly matched and the squared Euclidean distances used for pairs' profile matching in the E3 (spring) subsample ranged from 4.00 to 19.00 with a median of 10.00 and an interquartile range of 12.00. The marked similarity of these figures with those of the E2 (winter) subsample was noted. The effect size was calculated at -0.50, a large negative effect. There being no positive treatment effect, no further analyses were warranted.

Summary of statistical testing at Level 1

Some subsample sizes in these tests were too small to achieve sufficient statistical power (Cohen, 1988), but general indications have emerged of the direction and magnitude of the treatment effect at Level 1 of the Affective Domain Taxonomy. Among these was that small treatment effect sizes accrued for gender-assigned subsamples at Level 1 of the Taxonomy. This trend was repeated in the E1 (autumn) and E2 (winter) subsamples' analyses but not the E3 (spring) subsample. These findings agree with those suggested in the data overview reported above in respect of the positive treatment effects for the Experimental Female subsample.

*STATISTICAL ANALYSES AT LEVEL 2 OF THE AFFECTIVE DOMAIN
TAXONOMY*

As presented in the analyses at Level 1 of the Affective Domain Taxonomy, two levels of analysis were considered at Level 2: a descriptive analysis and an inferential analysis. Details of the descriptive data analyses are presented in Appendix D at Tables D9 to D16, and Figures D9 to D16, inclusive. In the inferential data analyses the differences between subsamples were tested through probability theory (Peers, 1996) to estimate the treatment effect size and power of the statistical test (Cohen, 1988) and to establish their generalisability (Allal & Cardinet, 1997).

Statistical tests at Level 2

Pretest biases and/or selection-maturation effects were found in the descriptive analyses of these data presented in Appendix D Tables D9 to D16, and Figures D9 to D16, inclusive. Thus, similar approaches to those taken for the analyses of data at Level 1 of the Taxonomy were used for these inferential analyses. Output data from SPSS are presented in Appendix D at Tables D49 to D54 (Wilcoxon Signed Ranks Test) and Tables D68 to D73 (Sign Test). The results are summarised in Table 4.26 to 4.28 inclusive.

Table 4.26 *Results of statistical tests for Control and Experimental subsamples' treatment effect at Level 2*

Statistical test ($n = 17$)	p value	Effect size	Decision
Wilcoxon Signed Ranks	.08		H_0 not tested
Sign	.03*	0.26	H_0 not tested

* Statistically significant at the rejection region $\alpha = .05$

Commentary for testing of Control and Experimental subsamples at Level 2

The pretest median ranks for pairs were exactly matched and the squared Euclidean distance measure used to match pairs' profiles ranged from 4.00 to 93.00 with a median of 40.05 and an interquartile range of 28.00. Distance measures up to the 3rd quartile were below 51.00 and the value of 93.00 was an extreme. The effect size was 0.26, a large positive effect (Cohen, 1988).

The Wilcoxon Signed Ranks Test for matched pairs confirmed the directions of the treatment effect but provided no evidence of a statistically significant difference between the two subsamples' posttest differences at the rejection region $\alpha = .05$. Conversely, the Sign Test revealed that there is a statistically significant difference between the two subsamples' posttest differences at the rejection region $\alpha = .05$.

The Sign Test is the less powerful of the two tests and is limited to using the directions, but not the magnitudes, of differences in its calculation. Its statistical power value at the rejection region $\alpha = .05$ and effect size of 0.26 for a sample size of $n = 17$ is between 60% and 67 % (Cohen, 1988: 167). This means that there is a 60% to 67% chance of correctly rejecting the null hypothesis at a rejection region $\alpha = .05$. This is below the 80% statistical power value advocated by Cohen (1988) for minimising the risk of committing a Type II error (Peers, 1996).

Due weight must be given to the findings of the more powerful Wilcoxon Signed Ranks Test where rejection of the null hypothesis risks committing a Type I error and making a false positive claim in respect of the alternative hypothesis (Peers, 1996). Using 95% of the t test power values for comparison (Siegel & Castellan, 1988), the inferred Wilcoxon Signed Ranks Test statistical power for a comparable effect size is between 70% and 75% for the rejection region $\alpha = .05$ (Cohen, 1988: 54), which it is not ($p = .08$). Thus, acknowledging that ‘...failure to find is less serious than finding something that is not there...’ (Cohen, 1988: 56), the null hypotheses were not tested formally.

Gender-assigned statistical testing

Data presented in Table 4.18 shows that there is gender sensitivity in these data. Therefore, disaggregated gender-assigned statistical tests were applied to determine if the apparent positive treatment effect for the Experimental Female subsample reported in Table D12 and Figure D12 was statistically significant and to test the Experimental Male subsample’s apparent positive treatment effect reported in Table D14 and Figure D14. The size of the Experimental Male subsample was too small to achieve sufficient statistical power to reject the null hypotheses (Cohen, 1988) and statistical significance was noted as a matter of record only. Associated output from SPSS is presented in Appendix D at Tables D50 and D51 (Wilcoxon Signed Ranks Tests) and Tables D69 and D70 (Sign Tests). The results are summarised in Table 4.27

Table 4.27 *Results of statistical tests for gender-assigned subsamples’ treatment effect at Level 2*

Statistical test	Gender	p value	Effect size	Decision
Wilcoxon Signed Ranks	Female ($n = 12$)	.03*		H_0 not tested
	Male ($n = 3$)	.63		H_0 not tested

Table 4.27 (continued)

Statistical test	Gender	<i>p</i> value	Effect size	Decision
Sign	Female (<i>n</i> = 12)	.03*	0.32	H_0 not tested
	Male (<i>n</i> = 3)	>.31	0.17	H_0 not tested

Statistically significant at the rejection region $\alpha = .05$

Commentary for testing gender-assigned subsamples at Level 2

The pretest median ranks for pairs of females were exactly matched and squared Euclidean distance measure used to match pairs' profiles ranged from 4.00 to 96.00 with a median of 46.00 and an interquartile range of 32.50. Distance measures up to the 3rd quartile were below 63.00. Effect size was calculated at 0.32 for the females' paired differences, a large positive effect (Cohen, 1988). Both the Wilcoxon Signed Ranks Test and the Sign Test provided statistically significant findings at the rejection region $\alpha = .05$, but the statistical power of 60% to 67% ($n = 12$, large effect size ≥ 0.30) (Cohen, 1988: 167) was less than the advocated 80% value required to minimise the risk of committing a Type II error (Cohen, 1988; Peers, 1996). Therefore, the null hypotheses were not tested formally.

Effect size for the male subsamples' paired differences was 0.17, a medium positive effect (Cohen, 1988), indicating the direction of the treatment effect, but both statistical tests provided no statistical significance for the males' paired differences. Therefore, the null hypotheses were not tested formally.

Temporally-disaggregated statistical testing at Level 2

Data presented in Tables D15 and D16 and Figures D15 and D16 revealed pretest biases and evidence of selection-maturation effects. Some subsample sizes were too small to achieve sufficient statistical power to reject the null hypotheses (Cohen, 1988) and statistical significance was noted as a matter of record only. The results are summarised in Table 4.28. Associated output from SPSS is presented in

Appendix D at Tables D52 to D54 (Wilcoxon Signed Ranks Tests) and Tables D71 to D73 (Sign Tests).

Table 4.28 *Results of statistical tests for temporally-disaggregated subsamples' treatment effect at Level 2*

Statistical test	Temporally-disaggregated subsample	<i>p</i> value	Effect size	Decision
Wilcoxon Signed Ranks	E1 (autumn) (n = 6)	.02*		<i>Ho</i> not tested
	E2 (winter) (n = 5)	.03*		<i>Ho</i> not tested
	E3 (spring) (n = 5)			No further action
Sign	E1 (autumn) (n = 6)	.01**	0.50	<i>Ho</i> not tested
	E2 (winter) (n = 5)	.03*	0.50	<i>Ho</i> not tested
	E3 (spring) (n = 5)	.	-0.30	No further action

* Statistically significant at the rejection region $\alpha = .05$

** Statistically significant at the rejection region $\alpha = .01$

Commentary for testing temporally-disaggregated subsamples at Level 2

Pretest median ranks for E1 (autumn) subsample pairs were exactly matched and the squared Euclidean distances used for pairs' profile matching in the E1 (autumn) subsample ranged from 17.00 to 70.00 with a median of 29.00 and an interquartile range of 20.08. Values up to the 3rd quartile were below 45.00. The effect size was calculated at 0.50, a large positive effect. Both the Wilcoxon Signed Ranks Test and the Sign Test provided evidence of statistical significance at the rejection region $\alpha = .05$, but the statistical power value was between 50% and 60%; lower than the accepted convention of 80% for correctly rejecting the null hypothesis (Cohen, 1988). Therefore, the null hypotheses were not tested formally.

Pretest median ranks for E2 (winter) subsample pairs were exactly matched and the squared Euclidean distance measures for pair matching in the E2 (winter) subsample ranged from 21.00 to 86.00 with a median of 46.00 and an interquartile range of 59.90. The effect size was calculated at 0.27, a large positive effect. Pair differences tested by the Wilcoxon Signed Ranks Test and the Sign Test were statistically significant, but the statistical power value was between 25% and 50%, lower than the accepted convention of 80% for rejecting the null hypothesis (Cohen, 1988). Therefore, the null hypotheses were not tested formally.

Pretest median ranks for E3 (spring) subsample pairs were exactly matched and the squared Euclidean distance measures for pair matching ranged from 4.00 to 19.00 with a median of 10.00 and an interquartile range of 12.00. The effect size was -0.30, a large negative effect. There being no positive treatment effect, no further analyses were warranted.

Summary of statistical testing at Level 2

The direction and magnitude of the treatment effects at Level 2 of the Affective Domain Taxonomy grew and strengthened from their marginally positive orientations at Level 1. All temporally-neutral subsamples attained positive treatment effects and the Experimental Female subsample achieved statistical significance in its treatment effect but lacked sufficient statistical power to allow rejection of the null hypothesis. Likewise, the temporally-disaggregated subsamples of E1 (autumn) and E2 (winter) grew and strengthened their positive treatment effects from Level 1, with both subsamples reaching statistical significance but, again, lacked sufficient statistical power to allow rejection of the respective null hypotheses. The spring subsample reduced the negativity of its treatment effect but it did not achieve the positive directionality necessary for a one-tailed analysis (Siegel & Castellan, 1988). These findings agreed with the positive treatment effects suggested in the data overview reported above.

*STATISTICAL ANALYSES AT LEVEL 3 OF THE AFFECTIVE DOMAIN
TAXONOMY*

As in the analyses presented for Levels 1 and 2 of the Affective Domain Taxonomy, two levels of analysis were completed at Level 3: a descriptive analysis and an inferential analysis. Details of the descriptive data analyses are presented in Appendix D at Tables D17 to D24 and Figures D17 to D24 inclusive. In the inferential data analyses the differences between subsamples were tested through probability theory (Peers, 1996) to estimate the treatment effect size and power of the statistical test (Cohen, 1988) and to establish their generalisability (Allal & Cardinet, 1997).

Statistical tests at Level 3

Data presented in Appendix D at Tables D17 to D24, and Figures D17 to D24 showed pretest bias and/or selection-maturation effects that may be masking true treatment effects. Thus, similar approaches to those taken for the analyses of data at Levels 1 and 2 of the Taxonomy were used for these inferential analyses. Output data from SPSS are presented in Appendix D at Tables D55 to D61 (Wilcoxon Signed Ranks Test) and Tables D74 to D80 (Sign Test). The results are summarised in Table 4.29 to 4.31 inclusive.

Table 4.29 *Results of statistical tests for Control and Experimental subsamples' treatment effect at Level 3*

Statistical test (n = 15)	<i>p</i> value	Effect size	Decision
Wilcoxon Signed Ranks	.17		H_0 not tested
Sign	.06	0.23	H_0 not tested

Commentary for testing of Control and Experimental subsamples at Level 3

The pretest median ranks for pairs were exactly matched and the squared Euclidean distance measures used to match pairs' profiles ranged from 9.00 to 81.00 with a

median of 18.00 and an interquartile range of 13.50. Distance measures up to the 3rd quartile were below 26.00. The value of 51.00 was an outlier and the value of 81.00 was an extreme value. The effect size was 0.23, a medium positive effect. The Wilcoxon Signed Ranks Test for matched pairs and the Sign Test provided no evidence of statistically significant differences between the two subsamples' posttest differences. Therefore, the null hypotheses were not tested formally.

Gender-assigned statistical testing

Evidence of pretest bias and/or selection maturation effects is present in the descriptive data analyses for the Experimental Female subsample and the Experimental Male subsample reported in Appendix D at Tables D19 and D20, and Figures D19 and D20, inclusive. Therefore, a two related samples test for statistical significance was applied to this data. The Experimental Male subsample's size was too small to achieve sufficient statistical power to reject the null hypotheses (Cohen, 1988) and statistical significance was noted as a matter of record only. Formal testing of null hypotheses and associated output from SPSS are presented at Tables D56 to D58 (Wilcoxon Signed Ranks Tests) and Tables D75 to D77 (Sign Tests). The results are summarised in Table 4.30.

Table 4.30 *Results of statistical tests for gender-assigned subsamples' treatment effect at Level 3*

Statistical test	Gender	<i>p</i> value	Effect size	Decision
Wilcoxon Signed Ranks	Female (<i>n</i> = 9)	.00**		H_0 rejected
	Male (<i>n</i> = 4)	.06		H_0 not tested
Sign	Female (<i>n</i> = 9)	.00**	0.50	H_0 rejected
	Male (<i>n</i> = 4)	.06	0.50	H_0 not tested

** Statistically significant at the rejection region $\alpha = .01$

Commentary for testing gender-assigned subsamples at Level 3

Except for three pairs, the pretest median ranks for Experimental Female subsample pairs were exactly matched. The three pairs not exactly matched were caliper-matched, using a tolerance of 0.50 of one median rank, thus maintaining their comparability (Reichardt, 1979). This action captured all but four Experimental Female subjects. These four unmatched Experimental Female subjects were two median ranks or greater from exactly matching any of the remaining Control Female subjects' pretest medians. Moreover, their profile dissimilarity with their potential matches was greater than that achieved with the exactly or caliper matched pairs reported above.

For the matched female pairs the squared Euclidean distances ranged from 6.00 to 53.00 with a median of 24.50 and an interquartile range of 21.25. Values up to the 3rd quartile were below 35.00, and the three caliper matched pairs' distance measures were 9.00, 17.00, and 24.00, placing them within the 2nd quartile of distance measures. For the unmatched subjects, squared Euclidean distances ranged from 62.00 to 97.00, well outside the range achieved for the exactly and caliper matched pairs. The effect size was 0.50, a large positive effect. These data were tested by the Wilcoxon Signed Ranks Test for matched pairs and the Sign Test for one-tailed statistical significance which, in both tests, was lower than the rejection region of $\alpha = .05$. The statistical power value for these tests ($n = 9$, $\alpha = .05$, effect size > 0.40) was between 80% and 85% (Cohen, 1988: 167), exceeding Cohen's (1988) conventionally accepted value of 80% for minimising the risk of a Type II error and allowing the correct rejection of the null hypothesis.

Therefore, the null hypotheses for the Experimental Female subsample were tested formally (Tables D57 and D76 in Appendix D) and were rejected. Thus, the alternative hypothesis, H_1 , was accepted:

After participating in school-sponsored workplace learning, socio-economically disadvantaged female high school students will report improved motivation for school learning at Level 3 of the Affective Domain Taxonomy.

In relation to the Experimental Male subsample, pretest median ranks for pairs were exactly matched. The squared Euclidean distance measures used for pairs' profile matching ranged from 10.00 to 109.00 with a median of 20.00 and an interquartile range of 34.42. The value of 109.00 was an extreme. The effect size was 0.50, a large positive effect (Cohen, 1988). Tests for one-tailed statistical significance by the Wilcoxon Signed Ranks Test and the Sign Test provided no evidence to proceed to testing the null hypotheses for the Experimental Male subsample. Therefore, the null hypotheses were not tested formally.

Temporally-disaggregated statistical testing at Level 3

Data presented in Tables D23 and D24 and Figures D23 and D24 revealed pretest biases and evidence of selection-maturation effects. Therefore, these data were tested by way of two related samples testing for effect size and statistical significance. Some subsample sizes were too small to achieve sufficient statistical power to reject the null hypotheses (Cohen, 1988). Associated output from SPSS is presented in Appendix D at Tables D59 to D61 (Wilcoxon Signed Ranks Tests) and Tables D78 to D80 (Sign Tests). The results are summarised in Table 4.31.

Table 4.31 *Results of statistical tests for temporally-disaggregated subsamples' treatment effect at Level 3*

Statistical test	Temporally-disaggregated subsample	<i>p</i> value	Effect size	Decision
Wilcoxon Signed Ranks	E1 (autumn) (n = 6)			No further action
	E2 (winter) (n = 6)	.02*		<i>H</i> ₀ not tested
	E3 (spring) (n = 4)			No further action

Table 4.31 (continued)

Statistical test	Temporally-disaggregated subsample	<i>p</i> value	Effect size	Decision
Sign	E1 (autumn) (n = 6)		0.00	No further action
	E2 (winter) (n = 6)	.02*	0.50	<i>H</i> ₀ not tested
	E3 (spring) (n = 4)		-0.25	No further action

* Statistically significant at the rejection region $\alpha = .05$

Commentary for testing temporally-disaggregated subsamples at Level 3

Pretest median ranks for pairs were exactly matched and the squared Euclidean distance measures used for pair matching in the E1 (autumn) subsample ranged from 9.00 to 81.00 with a median of 13.00 and an interquartile range of 14.83. The distance measure of 81.00 was an extreme, and values at the 3rd quartile were less than 25.00. All pairs were exactly matched for pretest median ranks. There was a neutral treatment effect and, therefore, no effect size. Accordingly, no statistical power estimate was made. Thus, the *p* values from the Wilcoxon Signed Ranks Test and the Sign Test are not relevant. Consequently, no further analysis was warranted.

Pretest median ranks for pairs were exactly matched and the squared Euclidean distance measures used for pair matching in the E2 (winter) subsample ranged from 6.00 to 30.00 with a median of 17.00 and an interquartile range of 13.00. All pairs were exactly matched for pretest median ranks. There was a large positive effect size of 0.50, confirming the apparent treatment effect reported in Tables 4.29 and 4.30 and Figures 4.13 and 4.14. The Wilcoxon Signed Ranks Test and the Sign Test provided evidence supporting rejection of the null hypothesis, but the power value for the tests was between 50% and 60% ($n = 6$, $\alpha = .05$, effect size > 0.40) (Cohen, 1988: 167), lower than the conventionally accepted 80% for correctly

rejecting the null hypothesis (Cohen, 1988). Therefore, the null hypotheses were not tested formally.

Pretest median ranks for pairs were exactly matched except for one pair in the E3 (spring) subsample. This pair was caliper matched to a tolerance of 0.05 of a median rank, thus maintaining pretest comparability (Reichardt, 1979). This action captured all available data. The squared Euclidean distance measures used for pair matching in the E3 (spring) subsample ranged from 9.00 to 23.00 with a median of 15.50 and an interquartile range of 10.90. The distance measure for the caliper-matched pair was 9.00 and was placed in the 1st quartile. There was a large negative effect size of -0.25. There being no positive treatment effect, no further analyses were warranted.

Summary of statistical testing at Level 3

All three temporally-neutral subsamples attained positive treatment effects at Level 3 of the Taxonomy, with the Experimental Female subsample achieving statistical significance and statistical power sufficient to allow rejection of the null hypothesis and acceptance of the alternative hypothesis. This level marked the culmination of a pattern of growth in the Experimental subsamples that began at Level 2, characterized by greater treatment effect sizes at successively higher levels of the Taxonomy. The temporally-disaggregated subsample E1 (autumn) attained a neutral treatment effect at Level 3 of the Taxonomy and the E3 (spring) subsample reduced its negative effect further, but remained at a negative orientation. The E2 (winter) subsample achieved statistical significance at Level 3 but lacked sufficient statistical power to allow rejection of the null hypothesis. These findings agree with the positive treatment effects suggested in the data overview reported above.

CONCLUSION

This chapter presents the results of research activity addressing Research Question 1:

Does participation in school-sponsored workplace learning improve socio-economically disadvantaged high school students' motivation for school learning?

These results show that positive treatments effects have accrued for gender-assigned subsamples at each of the first three levels of the Affective Domain Taxonomy and the generalisable finding that female high school students from low SES backgrounds report improved motivation for school learning at Level 3 of the Taxonomy after participating in school-sponsored workplace learning. These findings are discussed further in Chapter 6 in relation to recommendations arising from this facet of the study. Meanwhile, the findings for Research Question 2 are presented in Chapter 5.

CHAPTER 5

RESULTS FOR RESEARCH QUESTION 2

INTRODUCTION

It will be recalled that Research Question 2 guiding inquiry for this aspect of the study is:

- *Does positive affect attend host workplace mentoring roles in school-sponsored workplace learning?*

Research activity for Research Question 2 took place in 2000 and is summarised in Table 3.10 of Chapter 3. The research activity focused on positive affect attending host mentoring roles in the workplace learning program described and analysed in Chapters 3 and 4 of this study. This aspect of the study adopted O'Connor's (1994b) workplace context layers to structure the enquiry into several levels of analysis (Côté, 1999) and to focus on host workplace personnel who were involved in school students' workplace learning (Hillage et al., 1995). Thus, it sought to capture examples of positive affective behaviours attending the interaction of host workplace mentors and school students in a number of workplace context layers that had potential to reveal them (George & Brief, 1992; Isen & Baron, 1991).

Review of the research context and research design

The context for this research was the school-sponsored workplace learning program described in Chapter 3. It involved high school students participating in a workplace learning program for one day per week for 10 weeks to acquire certain workplace competencies from the nationally-accredited Certificate 1 in Retail (Introduction to Sales and Service) Skills. Volunteer workplace mentors who had participated in the workplace learning program provided information about their affectivity through being involved in the program. To gain access to that information a combined quantitative and qualitative approach was used, employing a survey questionnaire

complemented by follow-up interviews with a subsample of volunteer workplace mentors (Silverman, 1993, 2001).

This aspect of the study used George and Brief's (1992) attendant behaviours for workplace affectivity: helping co-workers; developing oneself; and spreading goodwill, together with multi-level analyses (Côté, 1999) afforded by the adoption of workplace context layers (O'Connor, 1994b) to '...guide ...[the]... investigation ...[and]... to focus and restrict the collection of data' (Keeves & Sowden, 1997: 298). Only host workplace mentors who had been involved in the workplace learning program for the Blue Gum High School students completed a survey questionnaire.

Arguably, a reliance on volunteers as sources for this data reproduces the dilemma faced in the compilation of the school students' Experimental subsamples used in addressing Research Question 1 of this study: volunteers are likely to be interested in the topic of investigation and when asked by a researcher to contribute they are only too willing to do so. Those of an indifferent or opposite view may hold back. These factors led to the sample analysed here being considered an opportunity sample (Burns, 1997).

Consequently, the findings from this sample cannot be generalised to a wider population (Allal & Cardinet, 1997). Nevertheless, they are valuable in that they contribute to a relatively small anecdotal literature concerning the attitudes and behaviours of host workplace mentors who actually work with school students in workplace learning (e.g., Bassi & Ludwig, 2000; Hillage et al., 1995; Hirsch, 1992; MacAllum & Charner, 2000; Misko, 1998; Pauly et al., 1995; Sweet, 1993).

MODES OF ANALYSIS

Data for Research Question 2 were collected by one post-facto four-point Likert-scaled survey questionnaire for host workplace personnel. Responses were ranked on a scale of -2 to +2 and provided a quantitative description that informed complementary qualitative analyses (Silverman, 1993). Negatively-worded survey

items were reverse scored. The qualitative data for Research Question 2 were generated by post-survey interviews with host workplace mentors. These qualitative data were analysed manually so that the researcher could maintain closeness with the data and exercise flexibility in the analysis when necessary (Krathwohl, 1998).

Data overview

To facilitate identification in subsequent analyses, each survey questionnaire respondent was identified as a numbered survey respondent and the date of survey. Interview respondents were identified as numbered interview respondent, gender, and date of interview. Respondents for the survey were drawn from the five of the six supermarkets hosting the high school students' workplace learning. The sixth supermarket involved in the program closed during 2000 and its staff was dispersed elsewhere. From the remaining five supermarkets, 32 host workplace personnel volunteered to complete the survey questionnaires.

At this stage of the analysis, the question was considered as to whether each supermarket work site should be analysed independently or whether the data were sufficiently homogenous to be analysed in their entirety as a single unit of analysis. To test the assumption of homogeneity, the entire data were analysed for error variance by way of the Kruskal Wallis test (Siegel & Castellan, 1988).

Level of statistical proof at the data overview stage

The secondary importance of this data overview in relation to the research question led to none of the null hypotheses being formally tested. This action adopted statistical inference '...as the standard of proof that the phenomenon exists...' (Cohen, 1988: 2), without proceeding to statements about '...the nature of the phenomenon's existence' (Cohen, 1988: 2) that may relate to directionality, effect size, or statistical power (Cohen, 1988). Before that could be accomplished, however, certain structures within the data were addressed in relation to their potential to affect the Kruskal Wallis test.

The Kruskal Wallis test utilises the chi-square statistical procedure to yield an asymptotically significant p value and consequently it is ‘...preferable that there are at least 4-5 respondents in each sample...’ (Peers, 1996: 237). Within these data, one supermarket site yielded one respondent’s completed survey questionnaire and the remaining four sites yielded from four to 13 respondents’ completed survey questionnaires. To facilitate the Kruskal Wallis test for these data, the single response from the first work site was combined with the four responses from a neighbouring work site, thus providing a composite work site of five respondents (Work Site 1). The remaining three work sites yielded nine, five, and 13 respondents respectively. Table 5.1 summarises the distribution of respondents across these four work sites.

Table 5.1 *Distribution of survey respondents according to work site*

Work site	Number of respondents	Percentage of total respondents#
1	5	15.63%
2	9	28.13%
3	5	15.63%
4	13	40.63%

Rounding errors are present.

Data error variance

As indicated above, it was necessary to establish if qualitative differences in the data set may be the result of some respondents coming from a different supermarket work site that constitutes a qualitatively different population in terms of its survey questionnaire responses. Moreover, in considering the data from host workplace employees’ survey responses, it is apparent that there is an overrepresentation of respondents from Work Site 4. Therefore, testing for error variance would indicate whether there were differences occurring in the data that could be attributed to factors

other than chance, such as differences in prevailing attitudes at some work sites or the numerical overrepresentation noted above.

Compilation of data into workplace context layers

Survey questionnaire items targeted respondents' views by workplace context layer and were located randomly in the survey questionnaire. The correspondence between aggregations of survey questionnaire items and workplace context layers is depicted in Table 5.2.

Table 5.2 *Survey items' correspondence with workplace context layers*

Survey questionnaire item	Workplace context layer
Q3, Q7, Q9	Individual workers
Q1, Q4, Q5	Work teams or groups
Q2, Q8	Work section or department
Q6, Q10	Enterprise

Data error variance by workplace context layer

The data were tested by questionnaire items' compilation into workplace context layers simultaneously with their supermarket work sites of origin. SPSS output tables for all workplace context layers and work sites are included in Appendix E at Tables E1 to E4 inclusive. No statistically significant differences were found. Table 5.3 summarises these results.

Table 5.3 *Data error variance by workplace context layer and questionnaire survey item*

Workplace context layer	Survey questionnaire item	<i>p</i> value
Individual workers	Q3	.36
	Q7	.41
	Q9	.62
Work teams or groups	Q1	.85
	Q4	.07
	Q5	.62
Work section or department	Q2	.11
	Q8	.08
Enterprise	Q6	.27
	Q10	.07

Since statistical significance has been adopted as the standard of proof (Cohen, 1988), the data has been shown to be sufficiently homogenous so as to rule out any factors other than ‘...the kind of variations that are to be expected among random samples from the same population’ (Siegel & Castellan, 1988: 206). Thus, in relation to work sites, the data are presented wholly as a single unit of analysis. At the descriptive level of analysis, they are presented by questionnaire items’ compilation into discrete workplace context layers as depicted in Table 5.2. An overview of responses from the survey questionnaires is presented in Table 5.4 and Figure 5.1.

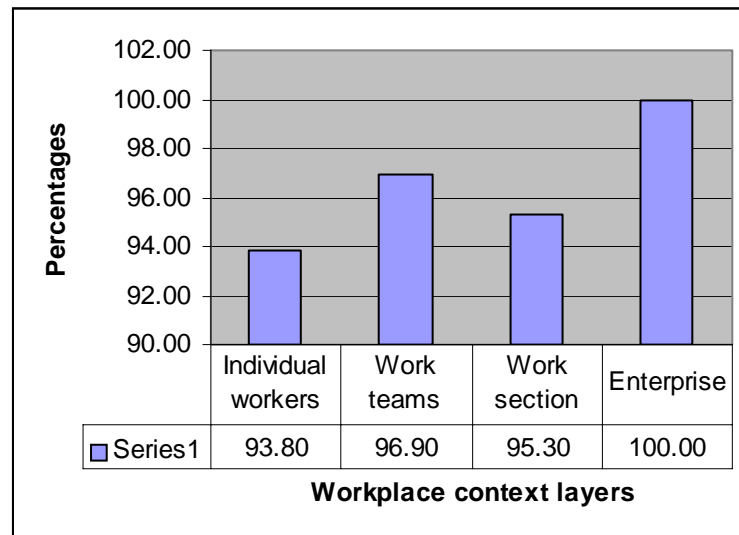
These overviews reveal high proportions of positive responses in each of the workplace context layers, with unanimity of response reached at the enterprise

workplace context layer. These data overviews were complemented by qualitative data analyses.

Table 5.4 *Summary of mentors' responses to survey questionnaire items by workplace context layers*

Responses	Workplace context layers							
	Individual workers		Work teams or groups		Work section or department		Enterprise	
	No.	%	No.	%	No.	%	No.	%
Positive	90	93.80	93	96.90	61	95.30	64	100.00
Negative	5	5.20	3	3.10	3	4.70	0	0.00
No response	1	1.00	0	0.00	0	0.00	0	0.00
Totals	96	100.00	96	100.00	64	100.00	64	100.00

Figure 5.1. Mentors' positive responses by workplace context layer



QUALITATIVE DATA ANALYSIS FOR RESEARCH QUESTION 2

This aspect of the study sought to identify positive affect attending mentoring activities by host workplace personnel (Isen & Baron, 1991). George and Brief's (1992) model of spontaneous affect was adapted for this analysis, but limitations in research resources led to their spontaneous affective states being identified as longer term affective traits (George & Brief, 1992). Nevertheless, when combined with the application of O'Connor's (1994b) workplace context layers, this aspect of the research addressed Côté's (1999) call for investigation of workplace affect at several levels of analysis. Table 5.5 depicts the proxy relationships between questionnaire survey items, workplace context layers, and identified attendant affective behaviours.

Table 5.5 *Questionnaire survey items' correspondence with workplace context layers and attendant affective behaviours*

Questionnaire survey item	Workplace context layer	Attendant affective behaviours
Q3, Q7, Q9	Individual workers	Helping co-workers, Developing oneself
Q1, Q4, Q5	Work teams or groups	Helping co-workers, Developing oneself
Q2, Q8	Work section or department	Helping co-workers, Developing oneself
Q6, Q10	Enterprise	Spreading goodwill

These qualitative analyses are based on survey questionnaire rankings from 32 host workplace mentors, optional written comments on survey questionnaires, and interviews with eight host workplace mentor volunteers. These interviewees were selected from 12 volunteers because of their potential to add new information to the research.

Selection of interviewees.

As indicated in Chapter 3, survey questionnaires were administered in the presence of the researcher. At the time of completion of the survey questionnaire, respondents were invited to indicate whether they would be available for a follow-up interview based on their responses to the questionnaire. Twelve respondents indicated that they would be available for interview.

Preliminary analysis of the quantitative data from 32 survey questionnaires indicated that four of the potential interviewees would add little information to the research. This conclusion was based on a paired comparison of these potential interviewees' response profiles with other respondents concerning their response profiles' level, dispersion, and shape (Nunnally, 1967). This information is summarised in Table 5.6.

Table 5.6 *Comparative survey questionnaire data from potential interviewees and other respondents*

Pairings	Median	r_s	Squared Euclidean distances
Survey respondent 8#	1.0	.61	2.00
Survey respondent 1	1.0		
Survey respondent 6#	1.0	.70	5.00
Survey respondent 19	1.0		
Survey respondent 9#	1.5	.60	2.00
Survey respondent 21	1.5		
Survey respondent 7#	2.0	.36	3.00
Interview respondent 1	2.0		
#Potential interviewees			

The four potential interviewees were paired according to their survey questionnaire responses' median rankings with respondents of an exact median rank. Spearman's

correlation for ordinal data (r_s) was calculated for each pair's responses (Peers, 1996) and the shape and dispersal of the paired response profiles were calculated using the squared Euclidean distance measure (Cronbach & Gleser, 1953; Nunnally, 1967). Thus, within the pairs there were exact matchings at the level of median ranks, positive correlations between survey questionnaire responses, and minimal dissimilarities in the shape and dispersal of response profiles as indicated by the low values of the squared Euclidean distance measures. Moreover, nothing in the optional written comments provided by the four potential interviewees in their survey questionnaire responses suggested that they would be likely to provide new information.

Accordingly, the following analyses of data from 32 survey questionnaire responses and eight interview responses deal with these data in respect of their relevance to each of the workplace context layers underpinning this aspect of the study (O'Connor, 1994b), and the attendant presence of positive affect with workplace mentoring roles (Côté, 1999; George & Brief, 1992; Isen & Baron, 1991).

Synopsis of surveys of host workplace personnel

As reported in Chapter 2, host workplace enterprise and mentors sometimes consider their role as one of giving rather than receiving in undertaking workplace learning for school students: they give time and resources to hosting school students yet they perceive little benefit to themselves (Hillage et al., 1995; Nichols Education Consulting Group, 1996). Sometimes, hosting workplace learning is seen mainly as a cost by the host enterprise (Pauly et al., 1994). Nevertheless, there is some evidence that host workplace mentors personally value their roles in school-sponsored workplace learning (e.g., MacAllum & Charner, 2000). Thus, the purpose of this analysis is to explore the attendant presence of positive affect with workplace mentoring (George & Brief, 1992; Isen & Baron, 1991) by structuring the research at multiple levels of analysis (Côté, 1999) across four workplace context layers (O'Connor, 1994b).

Interviewees' backgrounds

It is likely that interviewee's perceptions of their workplaces will be affected by their roles in those workplaces and the experiences they have brought to their current workplace (Darrah, 1992). Accordingly, at the beginning of each interview, interviewees were asked to provide some background information related to their current role in the host enterprise's workplace and relevant background experiences that may relate to that role. These responses are provided verbatim to provide evidence for conclusions that may be made about them in the contexts in which they are cited in the analyses below.

I'm currently Produce Manager here at [Work Site 2]. I've been working for the company for 10 years now, participating in different tasks throughout the shop, different departments...I've worked in a number of different stores and have recently, 6 months ago, became Produce Manager at [Work Site 2]...(Interview respondent 1, male, 19/10/00).

I worked ... for approximately a year, then I started a retail traineeship. I finished that, that took a year, about two months after that I got promoted and transferred to one of the service supervisors at [the host enterprise] at [Work Site 1], I've been out here for about a year and a half. I'm involved with keeping the front end, the check out area, running smoothly, making sure that all the customers get what they want at the end of the shopping. That's pretty much my whole role, making sure the customers are served to the best that we can (Interview respondent 2, male, 20/10/00).

I've been a deli manager of [the host enterprise] for about four or five years. When I first started, I started on checkouts as a casual and then I became full time with a traineeship. I worked on most of the departments and learnt a bit about every department like ordering systems and just different hours, and stuff like that (Interview respondent 3, female, 21/10/00).

...I've been here at [Work Site 2] for one year, looking after the dairy department which involves frozens, and perishable items. Previous to that I worked [elsewhere], I was there for 5 years doing the same sort of work, and I started out at [the host enterprise] at [another supermarket] working on the fruit and vegetable department (Interview respondent 4, male, 3/11/00).

I've been working for [the host enterprise] for four years. Started off packing shelves, checkouts, that's about it and then I built up to service desk, relieving for service managers breaks and went to deli for relieving breaks on deli, fruit and veg, now general merchandising manager and also training to be back-up assistance operator (Interview respondent 5, female, 23/11/00).

I've worked for [the host enterprise] for six years. I've worked on checkouts, in the deli, in the bakery. I'm now staff trainer and impact manager and basically just the general floater, duty manager at times (Interview respondent 6, female, 26/11/00).

Well I've worked with [the host enterprise] for six years and five of those years have been in the deli. The first year was the front end on the check out. That's about it really (Interview respondent 7, female, 2/12/00).

I'm the general merchandising manager here at [Work Site 4]. I've been in this job for three years, having been with [the host enterprise] for over nine years in the general merchandising manager role, that's variety, we sell similar items like our small appliances, electrical, light globes, just sort of non-food items...(Interview respondent 8, male, 9/12/00).

There is a preponderance of managers represented in this sample. Only two of the eight interviewees do not have responsibility for others in their normal roles: respondent 7 is a sales assistant in non-managerial role, and respondent 4 later identified himself as being sole employee in charge of a small department, usually working alone. The remaining six interview respondents lead others and take responsibility for them in their daily routines.

The gender distribution in the interview respondents' subsample was four female and four male. This distribution approximates the gender segregation of Australian retail trade noted in Chapter 3 (Harrison, 2002). As reported by Harrison (2002), during the period 1990 to 1995 the gender balance in Australian retail trade employment tipped from marginally female in 1990 to marginally male in 1995. The gender distribution for this phase of the study reflected the marginality of gender segregation in Australian retail trade and had little or no effect on the data collected. Adopting statistical significance as the standard of proof that gender differences were present in the data (Cohen, 1988), there were no statistically significant differences between the two gender-assigned subsamples when tested for error variance at any of the workplace context layers (O'Connor, 1994b). Associated output from SPSS for the several Kruskal Wallis tests for error variance are presented in Appendix E. at Tables E5 to E8 inclusive. These results are summarised in Table 5.7.

Table 5.7 *Data error variance for interview respondents' gender by workplace context layer and questionnaire survey item*

Workplace context layer	Survey questionnaire item	<i>p</i> value
Individual workers	Q3	.50
	Q7	.13
	Q9	.32
Work teams or groups	Q1	.43
	Q4	.75
	Q5	.50
Work section or department	Q2	.50
	Q8	.10
Enterprise	Q6	1.00
	Q10	.50

A majority of interviewees have work experience in supermarket roles other than their current role, and some were trained to nationally accredited standards. A number of interviewees have progressed from the status of casual, peripheral worker to core worker, thus gaining permanence and career progression (Atkinson, 1984). All interview respondents fit the majority profile of 53% of the Australian workforce who have been employed in their current job for between one to 10 years (Australian Bureau of Statistics, 2004). In an industry sector experiencing an annual labour turnover rate of 15.7%, a higher rate than the all-Australian industry average of 12.4% (Australian Bureau of Statistics, 2004), this group represents a more stable sample than is usual in the retail industry. These distinctions are pertinent in that it helps to allay fears that the interviewer's and interviewees' conversations about the host enterprise's training and operational systems were shallow and lacked common understanding at a deeper level (Silverman, 1993).

Analysis of the individual workers workplace context layer

Responses for three survey questionnaire items comprised the quantitative data for this workplace context layer: Q3; Q7; and Q9. For ease of access, these items are reproduced below:

Q3. I was pleased to be involved in the training of these students.

Q7. I think that helping these students improved my workplace skills.

Q9. I think that I became more responsible through helping these students.

These items' links with attendant affective behaviours are summarised in Table 5.8.

Table 5.8 *Survey items' links with attendant affective behaviours at the individual workers workplace context layer*

Questionnaire survey item	Attendant affective behaviour
Q3, Q7, Q9	Helping co-workers, Developing oneself

Item Q3 sought expressions of host workplace mentors' pleasure in accepting the presence of a high school student in their work environment and their willingness to instruct and interact with that student in aspects of their work. This item links with George and Brief's (1992) *Helping co-workers* attendant behaviour for positive affect, although as indicated above, its spontaneity was not tested. Nevertheless, it suggests the attendant presence of workplace mentors' positive affect (Isen & Baron, 1991), supported by George and Brief's (1992) observation that '...workers in positive moods are more likely to be helpful to co-workers' (p. 316) and Isen and Baron's (1991) suggestion that '...positive affect promotes specifically helping behavior [*sic*], not just any activity' (p.12).

No respondent answered negatively to this item. Among interviewees, males tended to answer more affirmatively than females as indicated by mean ranks from the Kruskal Wallis test reported in Table E5. Several interviewees and survey

respondents expressed pleasure at having a student with them, some of which seemed personal and some of which seemed vicarious. One interviewee expressed a personal sense of pleasure:

...I felt that, it made my job worthwhile, going to work each day and yeah, it felt... made me feel good about myself (Interview respondent 7, female, 2/12/00).

Similarly, another respondent said in interview:

Yeah, I...enjoyed having someone, how can I say it, being alongside me because I felt I was helping them and in a different way they were helping me, and I enjoyed explaining things and took a bit of leadership and I think they enjoyed working with me (Interview respondent 4, male, 3/11/00).

Another respondent took a more vicarious stance, expressing a sense of pleasure gained through the learning of others:

I enjoyed having the students in my department and helping them learn because when I did the course last year it was nice to know that people in the workplace want to help you learn (Survey respondent 15, 27/9/00).

Thus, this evidence, supported quantitatively by that of the entire sample, implies that host workplace mentors derived pleasure from helping co-workers through their participation in school students' workplace learning.

Item Q7 was prompted by Price's (1991) observations that workplace mentors' self-confidence was enhanced when they explained the complexities of their work to school students. In so doing, item Q7 explores the maxim that the act of teaching or instructing improves teachers' procedural knowledge of the subject of the instruction. Moreover, teaching practice improves teachers' instructional techniques and interpersonal skills in the light of feedback from their students. These factors are related to the organizational behaviour of *Developing oneself* (George & Brief, 1992) attending mentors' positive affect. This attendant presence emerged, particularly in terms of improvement in the development of instructional techniques and

interpersonal skills. Among interviewees males tended to answer more affirmatively than females, as indicated by mean ranks from the Kruskal Wallis test reported in Table E5.

Within the quantitative data for survey item Q7, two respondents from different work sites reacted negatively and one respondent failed to answer this item. Neither of the first two respondents could be identified for clarification, but the non-answering respondent made an optional written comment that tends to support the idea behind Q7 in that it supports the notion of passing on skills:

I think it is a good idea to show the young student what goes on in the workplace...
(Survey respondent 4, 26/9/00).

Several respondents' perception of the opportunity to practise their interpersonal skills when hosting school students for workplace learning emerged at the post-survey interview stage:

...it gives you training on staff management, getting to know your staff... your staff management, you never have enough if it, whether you've got one staff member or 10, you always can be learning here.... You're training them everything about the department and also it gives you training on staff management, getting to know your staff, making sure you know how to prepare everything in the produce department
(Interview respondent 1, male, 19/10/00).

...it's always good to meet new people ... as a senior staff member it helps me to get with the junior staff members and learn more about them, it helps me in relating with these staff members that are staying here, after work experience is finished
(Interview respondent 2, male, 20/10/00).

...being a staff trainer, I need to be able to interact with all age groups, we have a big age group that comes through our work area, and it gives me a chance to polish up on my skills, making sure that I can still relate to a younger person and understand their needs... (Interview respondent 6, female, 26/11/00).

I think at times we need revisiting and I certainly do in the way I communicate with my staff, individually and as a group. I think it certainly strengthens me in how I assess my job and look closer into my own little requirements and what expectations I need to do with individual persons, show them the way we want things done and communicate...(Interview respondent 8, male, 9/12/00).

These emphases on the development of host mentors' interpersonal skills during workplace learning probably arise from the preponderance of those in management roles within the host enterprise. Arguably, this is another effect of the opportunity status of the sample. It does provide, however, evidence that at the individual workers' workplace context layer, positive affect attends *Developing oneself* (George & Brief, 1992).

Q9 was intended to elicit expressions of responsibility for others felt by respondents working at their individual level, again embracing the positive affect attended by *Developing oneself* (George & Brief, 1992). Three respondents answered negatively to this item and none could be identified for clarification. Among interviewees, males tended to answer more affirmatively than females as indicated by mean ranks from the Kruskal Wallis test reported in Table E5. The remainder of the sample responded positively to this item. One survey respondent answered from a personal perspective, making the optional written comment that:

It gives you a sense of responsibility to teach someone what you have to learn in retail (Survey respondent 8, 27/9/00).

Two others responded in terms indicating that they felt a responsibility to show students what it was like in the workplace:

I think it is a good idea that we are to show the young student what goes on in the workplace of today and may-be [*sic*] show what it is like in the workforce (Survey respondent 4, 26/9/00).

... a lot of people have the perception that Blue Gum [High School] students are going to be rough heads, that they are not going to be worth having here, and I think it gives a lot of young kids a good chance to show them what they're in for if they don't have good marks at school (Interview respondent 6, female, 26/11/00).

At the interview stage, others responded more expansively to this question of responsibility and, once again, the large number of managers in the sample led to

comments tending to reflect their management role and positive affect attended by *Developing oneself* (George & Brief, 1992):

Definitely once again, your staff management comes into it, therefore I've had to be responsible for, at the time I think there was a stage in a day where there was [*sic*] two staff members, I've had to be responsible for, so that was three including myself and then later on in the day there was [*sic*] four of us so, that was really good so I got to see how much of a challenge it was to actually be able to manage more than one or two staff members, which was really good. (Interview respondent 1, male, 19/10/00).

As I said, you know, it sort of just gives you a brief visit of where you are at, sometimes you take things too much for granted and this sort of brings you back to base one, where you started and you reassess where you're going and it just seems to make things a lot easier for yourself (Interview respondent 8, male, 9/12/00).

Together with the quantitative evidence presented above, evidence from these host workplace mentors' responses indicate that overall host workplace mentors' positive affect attended mentoring high school students through pleasure in *Helping co-workers* and *Developing oneself* (George & Brief, 1992).

Analysis of the work teams or groups workplace context layer

Responses for three survey questionnaire items comprised the quantitative data for this workplace context layer: Q1; Q4; and Q5. For ease of access, these items are reproduced below:

Q1. Most of these students worked well in our teams

Q4. We wasted a lot of time when we had a student for training

Q5. Helping these students created too much extra work for our team.

These items' links with attendant affective behaviours are summarised in Table 5.9.

Table 5.9 *Survey items' links with attendant affective behaviours at the work teams or groups workplace context layer*

Questionnaire survey items	Attendant affective behaviours
Q1, Q4, Q5	Helping co-workers, Developing oneself

These survey items were intended to elicit responses that related to mentors' positive affect attending *Helping co-workers* and *Developing oneself* (George & Brief, 1992) in helping and leading students' workplace learning efforts and facilitating their integration into a work team or group activity. Hence, the two formerly separated proxy indicants of affect, *Helping co-workers* and *Developing oneself* (George & Brief, 1992), are considered concurrently in the following analyses. This led to the development of a more complex investigative entity subject to overlapping and intertwined responses across the three survey items.

In relation to the work teams or groups workplace context layer (O'Connor, 1994b), the term "team" was applied as a work group assembled for a specific task and then disbanded at the completion of the task. The task may be readily identifiable and formally structured, such as constructing an end-of-aisle merchandise display, or less visible and more fluid, such as the mutually-agreed informal allocation of tasks in an on-going workplace function that itself may change during the course of a day's work.

Item Q1 sought to establish the extent to which students fitted with work teams' accomplishment of their goals. Among interviewees, females tended to answer more affirmatively than males as indicated by mean ranks from the Kruskal Wallis test reported in Table E6. One female respondent reacted negatively, however, and in her response to the questionnaire's optional written comments she wrote:

One problem that we encountered was the customers don't always realise that the students are in training and not capable of performing all tasks required in a timely manner. I think it is a good opportunity for managers to improve their skills with training (Interview respondent 3, female, 26/9/00).

This respondent volunteered for an interview. When probed at the follow-up interview on 21/10/00, she elaborated on her negativity:

R: Yeah, I think in the deli, how we sort of work is say, we're fairly close knit but we have, how to put it, like just say for example we want to fill up our fresh chicken section, we might have one person filling there and one person sort of serving sort of but, protecting that person from the customers if, that sounds...

I: I know what you mean, yeah.

R: So like we can get the task done a bit quicker without stopping and starting and getting interrupted, we sort of work like that and then the next thing we might do like the sausages and someone else will fill and someone else will serve. When we do have students it's very difficult not to leave them just on the counter or because we sort of think oh, they're going to be slow doing this and we wanted the cabinet filled and they tend to miss out in areas like that, but because we only have them for one day, it just seems sometimes a bit of a waste of time teaching them all this other stuff that they're probably never going to use, or be any help to us kind of.

I: Okay, so you're identifying there that there is a lack of time to train the students, there's a lack of continuity with the students coming along to your department and therefore you feel as though there's not a role that they can fill with minimal training that would enable them to contribute to the work of the team.

R: No, only basic customer service and then a lot of times, customers just don't understand that this is their first day and as they're slow, they don't know which kind of ham is which, if we had them like one day a month for a year, you know, it would be different like.

I: So the delicatessen is a fairly complex work situation and there are lots of minor or not so much minor but there are lots of little differences that everyone has to know for example, I think you just said about the ham, that's the difference between leg ham and shoulder ham.

R: Yes. So... (Interview respondent 3, female, 21/10/00).

In this exchange the researcher (I) and the respondent (R) probed the issue. As established in the conversation, the delicatessen staff forms a work team or group where unusually complex activities are carried out with perishable stock in a hygienic environment and customer contact is direct and frequent. This leads to staff working as a team in replenishing stock, maintaining a hygienic environment and serving customers. With one day to train and accommodate a student the interviewee found this a challenging task and sought to initially place students in the least critical role in terms of product and hygiene: customer contact. Ultimately, this proved problematic in that the students did not have the product knowledge to meet customers' needs, thus drawing one team member away from their task to help and/or attend to the customer.

At this stage, Interview respondent 3 had articulated the negative effect of hosting a school student for workplace learning on her work teams' activities. As will be detailed below, this was the beginning of a dialogue in which Interview respondent 3 engaged in reflection-in-action in relation to this matter (Schön, 1983) that ranged across workplace context layers 2 and 3. At this stage her '...reflective conversation with the situation' (Schön, 1983: 242) had reached the level of surfacing, in that she was prepared to publicly state her concerns. The development of this process is resumed below.

Meanwhile, another respondent from the same work site but from an unspecified work section supported the notion of limited time for training in the optional written comments in the survey questionnaire:

Having the students for only one or two days in the department was hard with limited time to cover all the departmental routines – more time would be required to cover this function (Survey respondent 2, 26/9/00).

This survey respondent did not volunteer for a follow-up interview. For other respondents responding to item Q1, however, examples of positive affect were more evident.

Well I had one of the Blue Gum [High School] trainees helping me in grocery and he worked very well and picked everything up so quick [*sic*]. (Survey respondent 9, 27/9/00).

When they had a chance to return to the produce department they had remembered most things that I had taught [*sic*] them first time (Optional written comment, Interview respondent 1, male, 19/10/00).

Nevertheless, the team work aspect of the workplace learning program remained controversial. Among interviewees' responses to item Q4, males tended to answer more affirmatively than females as indicated by mean ranks from the Kruskal Wallis test reported in Table E6. Female interview respondent 3 again responded negatively. When probed at the follow-up interview the following dialogue took place:

I: Yes. All right, thank you for that. The other one in Workplace Layer 2 or another one in Workplace Layer 2, we wasted a lot of time when we had a student for training, and you've agreed with that.

R: Yeah. It's hard to explain. It's just, I think again because you only have them for one day, you want them to learn as much as they can because its only fair to them, but then we see it as a bit of a waste of time still I think and you think you've explained something properly and then they do it differently and we realise that we haven't explained what we really wanted, because we know what we're explaining... we do it all the time and we say like can you fill and rotate this and they do it, but they might use the wrong tray and we've just assumed that they're going to know and then some one said to me do the task and it's not their fault, it's ours but if you know what I mean.

I: Yes, I understand. It would be a fairly critical area I would imagine in the delicatessen particularly with hygiene that you are able to keep track of clean trays and dirty trays and all that kind of stuff.

R: Yeah, like, it is extra work but it's something, because normally they are an extra, like we still have our rosters and our staff, and they are just like say a bonus, they can, like once we teach them to serve, they might be slow but they're still an extra person but they do create a lot of work but it's still worthwhile, to have that extra person on the counter, I think so. (Interview respondent 3, female, 21/10/00).

Towards the end of this conversation, this respondent is acknowledging that the extra person is worthwhile despite the difficulties associated with training for her department. Her newly-surfaced criticisms articulated in relation to responses for item Q1 provided a background for a more reflective view through her restructuring of the issue. This is evident in her acknowledgment of the difficulty of passing on to the students knowledge about the activity that she and her co-workers hold as tacit knowledge that is ‘...implicit in ...[their]... patterns of action and in ...[their]... feel for the stuff with which ...[they]... are dealing’ (Schön, 1983: 49). Elsewhere, there were areas in supermarket operations where the presence of a learner in a work team was viewed positively.

No, not at all, I think that there was more productivity, there was more work achieved and at the end of the day we had a better result through having that help (Interview respondent 4, male, 3/11/00).

I did disagree with that, because perhaps a few people around might, might disagree with my comments here on that, but it’s like anybody, they’ve got to start somewhere, you put the time and effort into showing somebody the job to do, they pick it up and it is done confidently. If you just put them out into the shop to do it on their own, of course things aren’t going to go well but you’ve got to spend time to make time and in the long run it pays for your business too, to be able to show them to do that so yeah, I do disagree with it (Interview respondent 8, male, 9/12/00).

These respondents’ work responsibilities were in areas less demanding of the strictures of maintaining a hygienic environment, replenishing stock, and direct customer contact, that is fresh produce and general merchandising (non-food items) respectively. This raises the question of whether workplace learning programs should take account of workplace complexity such as that shown in the delicatessen example above. One other respondent identified as the manager of a delicatessen department at Work Site 2 but did not volunteer for an interview. This respondent’s optional written comments are informative:

As the deli [*sic*] department manager I found that by training them in the department, which is very customer focused, helped the students’ confidence (Survey respondent 23, 29/9/00).

This respondent confirmed the intensive customer focus of the delicatessen role but appears to have taken the training element in his/her stride as part of the management role. Nevertheless, these responses should not be interpreted as a denial of the delicatessen manager's concerns reported above.

A sales assistant (non-manager) from the delicatessen at yet another work site volunteered for an interview and in the interests of revealing other views about this issue her responses were examined. In order to maintain fluency a transcript of that interview relating to questionnaire items Q1, Q4, and Q5 is reproduced below:

I: Right. The next Workplace Layer we're looking at is that of working in teams and we define teams as being groups of people who come together to do a common task but after that task is completed, they may break up and go off and to form different teams. It's not a formalised structure, it's a matter of people helping each other to get the job done and once that particular part of the job is done then they may move onto something else, they may form into different teams. 'Most of these students work well in our team' and you have strongly agreed with that.

R: Yeah, because in deli, it's a strong team environment, as we work, we work, everyone works as a team, yeah.

I: That's partly because of the nature of the work in the delicatessen is it?

R: Yeah, yeah.

I: People have to do their work properly because there's high standards of hygiene and the food has to be looked after properly.

R: Yeah.

I: Good. Another one to do with working together in teams that you responded to was that we wasted a lot of time when we had a student training and you strongly disagreed with that.

R: No, I don't think we wasted a lot of time because they are, as they are there to learn and we've got to have people to teach them.

I: Did you ever regard it as an investment, that is if you were able to teach the person how to work in a team, the team would benefit from it later on because there would be an extra person to help.

R: Yeah, definitely.

I: And another question in workplace layer 2, is: helping these students created too much extra work for our team. A little bit different to the other one but this one is more on, did you think there was too much extra to do when you had to show someone else was it was that they had to do.

R: Well yeah because we had our work to do plus there was other to show how to do [*sic*].

I: You strongly disagreed though with that one so it looks as though you feel that, that wasn't necessarily the case with your strong disagreement.

R: It's tricky.

I: Do you think that once again that was a matter of making the investment in time and effort to train a person.

R: Yeah. (Interview respondent 7, female, 2/12/00).

This interviewee (R) answered somewhat less expansively than some other interviewees and the interviewer (I) tried several prompts to elicit information about work in the delicatessen. She does provide an example of a limitation of qualitative research: a bad interviewee (Silverman, 1993). Nonetheless, Interview respondent 7 confirms that the delicatessen is a strong teamwork environment and that high standards of hygiene are necessary. She does identify the effort required to train someone as an extra in her workload, but as indicated in the interview her survey questionnaire response indicated that she saw such effort as worthwhile. This may have been because of the interviewer's explanation leading up to the question not being included at the survey questionnaire stage. As the interviewee said, 'It's tricky'.

This trickiness illustrates the artfulness of managing; artfulness that enables managers and workplace mentors to deal with ‘...situations of uncertainty, instability, uniqueness, and value conflict’ (Schön, 1983: 50). This interview respondent has, undoubtedly, tacit knowledge but it is not well articulated (Schön, 1983). Consequently, it is difficult to identify a ‘...reflective conversation with the situation’ (Schön, 1983: 242) in this dialogue because of the relatively high level of prompting used by the interviewer (I). Therefore, this respondent’s contributions should be viewed as supportive of Interview respondent 3’s reflection-in-action, but not as an example of it (Schön, 1983).

Meanwhile a trainer with store wide responsibilities expressed the importance of recognising students’ learner status:

I find basically the students are nervous when they come here, you put them with the right person or the right group of people in the department, they seem to be able to show more of what they can do rather than being left alone, they haven’t worked before, they sort of what do I do, what do I do. If they’ve got a little bit of encouragement through the day they enjoy the day a lot better, so that and they come back the next time happier to come back ... (Interview respondent 6, female, 26/11/00).

As intimated above, Item Q5 was intended to elicit responses related to the extra work involved in training a student as distinct from having to spend more time with them. It may arise where poorly completed work by the student has to be done again, perhaps by a more skilled worker. One respondent responded negatively to this item. This respondent did not volunteer for an interview, and his/her optional written comments were not relevant.

Among interviewees, males tended to answer more affirmatively than females as indicated by mean ranks from the Kruskal Wallis test reported in Table E6. As reported above, female interview respondent 7’s observation that she had her work to do as a delicatessen sales assistant as well as instruct the student may well be pertinent here. However, Interview respondent 3, the delicatessen manager

interviewed above, responded positively to item Q5, recognising the longer term advantages of training:

Yeah, like, it is extra work but it's something, because normally they are an extra, like we still have our rosters and our staff, and they are just like say a bonus, they can, like once we teach them to serve, they might be slow but they're still an extra person but they do create a lot of work but it's still worth while, to have that extra person on the counter, I think so (Interview respondent 3, female, 21/10/00).

At this stage, Interview respondent 3 appears to have reached the final stages of reflection-in-action, restructuring and applying intuitive understanding of experienced phenomena (Schön, 1983). At this stage she has identified the attainment of a goal, '...once we teach them to serve' (Interview respondent 3, female, 21/10/00). The identification of a goal, however, tends to reinforce the technical rationalist approach to the problem (Schön, 1983) but does little to advance towards the desired solution as indicated by her earlier response:

...you think you've explained something properly and then they [the students] do it differently and we realise that we haven't explained what we really wanted, because we know what we're explaining, we do it all the time and we say like can you fill and rotate this and they do it, but they might use the wrong tray and we've just assumed that they're going to know and then some one said to me do the task and it's not their fault, it's ours... (Interview respondent 3, female, 21/10/00).

Obviously, the respondent feels professionally challenged in managing this situation. In Schön's (1983) terms her restructuring has not yet assumed the character of problem setting (Schön, 1983) in that it has resorted to the "more of the same" solution, i.e. make the training more effective by repeating it, by teaching them to serve, (the initial activity) arguably assuming the solution to be a continuation of the conduit metaphor (Reddy, 1979).

The conduit metaphor (Reddy, 1979) models a one-way style of instruction typified by a more knowledgeable instructor telling a less knowledgeable learner what to do without adopting an interactive stance. This is understandable, as the interviewee has drawn on her intuitive understanding of the training process (Schön,

1983), an understanding possibly reinforced by her exposure to similar training in her formative years in the job. In so doing, Interview respondent 3 appears to have adopted the conduit metaphor and has been ‘...drawn into a very real and serious frame conflict’ (Reddy, 1979: 165) about language that has affected its effectiveness in the training activity. Whilst the links between cognitive and affective aspects of training practice is acknowledged (Krathwohl, 1964), analysis of cognitive workplace learning processes and outcomes was beyond the scope of this study. Thus, in this instance there is evidence of negative affect revealed by this respondent’s reflection-in-action *Developing oneself through Helping co-workers* (George & Brief, 1992) throughout this episode.

Other respondents expressed positive sentiments about the extra work involved in teaching a student:

Yeah, because to me it was just still doing our day-to-day business, nothing changed when we had these students in there, we were still putting up our stock, we were still doing back stocks, nothing changed, we were doing our day to day routines and they actually learnt, well we hope they learnt from that experience of doing our day to day routines. I don’t think you could have changed the way you do business, they were just there and they just go through with it so as I said our staff were more than happy to show them and it wasn’t any extra time, in fact it was probably more a help to us than a, than not a help (Interview respondent 8, male, 9/12/00).

Yeah, I didn’t find that we lost time or things that are normally done weren’t done, I think that extra work was achieved. (Interview respondent 4, male 3/11/00).

No, I think the more hands on the better. The first half an hour might be a little bit difficult, oh I’ve got to show someone when you could just go and do it yourself, but in the long run you know, once they’ve been here for a couple of hours, they’re doing half your job... (Interview respondent 7, female, 26/11/00).

These responses to the work teams or groups workplace context layer demonstrate the way in which host workplace mentors’ positive affect related to their *Helping co-workers* and *Developing oneself* (George & Brief, 1992) attended students’ presence in their work teams or groups.

Analysis of the work section workplace context layer

Responses for two survey questionnaire items comprised the quantitative data for this workplace context layer: Q2 and Q8. For ease of access, these items are reproduced below:

Q2. Most of these students were too young for our department.

Q8. Most of the students in our department learned quickly.

These items' links with attendant affective behaviours are summarised in Table 5.10.

Table 5.10 *Survey items' links with attendant affective behaviours at the work section or department workplace context layer*

Questionnaire survey items	Attendant affective behaviours
Q2, Q8	Helping co-workers, Developing oneself

There is a degree of overlapping intention of inquiry between the work teams and work section or department workplace context layers. The defining difference between the two layers is in the matter of permanence of entity. The workplace team is assembled ad hoc and disbanded after the task is accomplished; the work section or department is a permanent entity from which members are recruited to perform work in teams. Therefore, the intention of items Q2 and Q8 is to elicit respondents' opinions as to the suitability of students to form such a reservoir of team labour. The workplace suitability of personnel in this reservoir influences the capacity of work teams formed from it and affects host mentors' workplace functioning in their departments. Hence, there is embedded here the notions of *Helping co-workers* and *Developing oneself* (George & Brief, 1992). Moreover, the increased complexity of personnel interaction that was identified in respect of the work teams workplace context layer was present in this analysis.

Item Q2 was intended to elicit respondents' opinions about students' maturity, implying, but not explicitly stating, the effects of issues such as employee responsibility for occupational health and safety and responding to workplace cues. All respondents responded positively to this item. Among interviewees, males tended to answer more affirmatively than females as indicated by mean ranks from the Kruskal Wallis test reported in Table E7. As already noted above the presence of students was a challenge to some managers in implementing their training effectively. Nevertheless, when interviewees were probed they generally supported the presence of students in their work sections:

R: I don't think you're too young to work in a supermarket or too old you know, it's the sort of area where any age could do the job and I think showing the younger kids what work life is all about when they get out of school, gives them a bit of a chance to decide where they want to go with their future.

I: Has occupational health and safety been an issue with the younger students?

R: No, not here it hasn't been, no. (Interview respondent 6, female, 26/11/00).

Another interviewee responded thus:

R: No, I don't think that there was an age problem, I think that it was up to the individual that they were willing to get in and have a go and most of them were pretty keen to learn some new things and some knew what things were and were just happy to be part of a team and work alongside you.

I: Did you find the students coped with occupational health and safety requirements?

R: I'm stuck, can you run that one by me again.

I: Did you find the students cope well with occupational health and safety, were they...did they have a sufficient level of maturity to be able to handle their responsibilities for occupational health and safety?

R: I would have found that the ones I worked with them were fairly mature and sensible about what they'd done, if there was a mess to clean up, they'd do it straight away and not sort of overlook problems that might of caused a problem with a

customer or caused an interference, it might, someone might have got hurt (Interview respondent 4, male, 3/11/00).

...and another...

R: Yeah, because we get a lot of the young ones in our department, like casuals and so on and I think they've got to start somewhere so yeah, so I don't know.

I: Being young, did it make any difference to them.?

R: No.

I: Were there any occupation health and safety issues that arose because they were young people?

R: I don't think so.

I: With the use of knives and things like that?

R: No.

I: Slicing machines?

R: They, when they come into the department they can't use those, that equipment anyway...(Interview respondent 7, female, 2/12/00).

...yet another...

R: Yes, I think, probably going back to a few previous answers, I think yeah, it's not a matter of being too young, it's a matter of being given an opportunity and I think with these students, I think to gain the experience they have to go into the departments and realise what the day to day functions are of this department of this group, of this company, and without that you don't get any experience and there's no chances of them securing employment so I think everybody has got to be given a chance. In my situation with my staff levels here, I actually have a senior team, where I'm probably the youngest of, so I've probably got over 40 [years old] staff but in that regard too, I've just re-employed a casual who is turning 18 years old, so he's got a great chance there for the future to train him up into my day to day job and gaining the experience that he needs to be able to diversify around our supermarkets,

because it's not only general merchandise, it's the dairy case, it's grocery, it's fruit and vegetables, and throughout this time if I can train him in my department to be competent then some other staff members may be able to give him a full time job in another area which I'm only too pleased to do because I think everybody needs a start and with this, if they can take that start, options open everywhere.

I: Basically what you're saying there I think is the students are showing themselves to be responsive to training.

R: Yeah, very positive.

I: They can be brought to a level of competency and then that trainability if you like can then be extended to other areas in the supermarket.

R: That's correct, with that your competencies or efficiencies, you know, they become confident in what they are doing and then they can just take off...(Interview respondent 8, male 9/12/00).

...and finally, another...

I: Good. The next Workplace Layer is the one that is connected with your department, your formal and established department, in your case it's the delicatessen. Most of these students were too young for our department, and you've disagreed with that.

R: Oh, I just don't think, I think the younger they are, they don't mind doing the washing-up, or serving, if they were like say 21 or 18, it's a bit harder to tell someone that sort of age, you know, we just want you to wash up and that's it or we want you to serve and that's it. Whereas when they are that age... like they're more willing to do whatever you want, like they see like, me more as an older person I suppose than an authority figure whereas, if there is another 15 year old in Deli, that wanted them to do something, they probably wouldn't do it, you know what I mean, like just how they relate back I think, it's like at school, I think like, they've got to listen to the teacher but they're not going to listen to the other class mates... (Interview respondent 3, female, 21/10/00).

All these respondents emphasised ability over age, that is, they viewed positively a student's potential to learn and perform ahead of any limitations related to inherent characteristics such as age. Where students' maturity for the task was evident, these managers were happy to have them in their department and, given normal training and supervision, were confident that they would be able to meet the operational requirements of their department.

Item Q8 followed the theme of suitability for the department in terms of learning ability, the ability to quickly learn tasks and begin to contribute to the productivity of the department. Among interviewees, males tended to answer more affirmatively than females as indicated by mean ranks from the Kruskal Wallis test reported in Table E7. Female Interview respondent 3, responded negatively to this item:

I think our problem was we just didn't explain stuff properly like, because we all, we're a service department, but we also have to fill our cabinets and when we do explain stuff, just like again, we know what we're going to do and we just don't explain it properly and the particular students we had this time, they just weren't, really interested... (Interview respondent 3, female, 21/10/00).

The first line of this response reveals the extent to which this interviewee was '...drawn into a very real and serious frame conflict' (Reddy, 1979: 285) in her earlier responses. The immediacy of the task in the delicatessen comes through again as a limiting factor in the opportunity for training, but the same mode of training is adopted. The reflection-in-action is profound: '...we just didn't explain stuff properly ... when we do explain stuff, just like again, we know what we're going to do and we just don't explain it properly' (Interview respondent 3, female, 21/10/00). These comments revealed a willingness for introspection brought on by negative affect that '...improves performance on tasks requiring systematic information processing, such as decision-making tasks involved in piloting an airplane or selecting personnel [or managing a delicatessen]' (Côté, 1999: 67). Moreover, by chance this manager may have been allocated students of lesser levels of motivation to learn, students who '...didn't want to be too involved...' (Interview respondent 3, female, 21/10/00).

Nevertheless, this respondent was still motivated by a need for *Developing oneself* (George & Brief, 1992) as demonstrated by her willingness to accommodate the competing priorities of training the students and addressing the fact that '...we're a service department...' (Interview respondent 3, female, 21/10/00). Yet, as indicated

above, Interview respondent 8 found high levels of potential for training in his exposure to these school students. Several others confirmed this:

Oh, they were really good, they learn, they picked it up really quickly (Interview Respondent 7, female, 1/12/00).

...never really had a problem, a few questions but they've always come up and said look, I don't know how to do this, can you show me, and it's like yeah, not a problem and if there is something wrong, we'll just sit them down and say look, it's not done this right, this way, we just need you to change it to do it this way (Interview respondent 5, female, 23/11/00).

Yes, I found that anything that I explained or showed or asked one of the students to do, they were very quick to know what you were explaining to them and they were happy to go and do it and with confidence (Interview respondent 4, male, 3/11/00).

... we've rarely had to tell any of them anything twice, they all picked it up pretty much on the spot (Interview respondent 2, male, 20/10/00).

... they certainly did and I, I feel you know, half of it was the students' learning ability and the other half was the way that they've been instructed to do the job and shown how to do the job so, you know it's really up to both parties... (Interview respondent, 1, male, 19/10/00).

Some host workplace mentors felt that the timing and location of the learning were important factors in students' progress in learning:

Having the students for only one or two days in the department was hard with limited time to cover all the departmental routines – more time would be required to cover these functions (Survey respondent 1, 26/9/00).

The skills and responsibility they learn here would be very difficult to teach them in a different environment (Survey respondent 19, 28/9/00).

The suggestion that '...positive affect may also promote a tendency to maintain that state' (Isen & Baron, 1991: 12) has been demonstrated in this analysis. In all but one instance, positive affect was maintained throughout the research sample, evidenced by way of survey response and interview. Where negative affect was present it provided an opportunity for reflection-in-action (Schön, 1983) that may lead to resolution of problems associated with training in complex work environments.

Analysis of the enterprise workplace context layer

Responses for two survey questionnaire items comprised the quantitative data for this workplace context layer: Q6 and Q10. For ease of access, these items are reproduced below:

Q6. It was not worth the effort for [the host enterprise] to train these students.

Q10. I think that we have improved [the host enterprise's] public image by training these students.

These items' links with attendant affective behaviours are summarised in Table 5.11.

Table 5.11 *Survey items' links with attendant affective behaviours at the enterprise workplace context layer*

Questionnaire survey items	Attendant affective behaviours
Q6, Q10	Spreading goodwill

These two survey questionnaire items were intended to elicit responses from host workplace employees about their perceptions of the effects of the workplace learning program on the host employer's enterprise. The first item, Q6, implies a cost/benefit perspective related to training the school students (e.g., Pauly et al., 1994) but is also ascertaining the potential worth of the affective conduit afforded by the students' ambassadorial roles in representing the host enterprise in places and situations elsewhere (George & Brief, 1992; Price, 1991). The second item, Q10, seeks expression of host employees' perspectives of benefits to the enterprise in terms of public relations in more explicit terms, again using the workplace learning as an affective conduit but within the host enterprise's workplaces. Thus, items Q6 and Q10 are linked to *Spreading goodwill* (George & Brief, 1992).

Item Q6 asked for respondents' perceptions of the value of the program to the enterprise in terms of the effort associated with conducting the training for the school students. There were no negative responses to this survey questionnaire item and, among interviewees, there was no difference in response by gender as indicated by mean ranks from the Kruskal Wallis test reported in Table E8. To the contrary, there was generally strong support from a quantitative viewpoint and as revealed below, the support was generally expressed as a benefit for the students, thus equipping them as ambassadors for the host enterprise:

By giving them this experience while they're at school it gives them something to strive for in the future...I hope that we will continue to give these young future workers a chance to gain some vital skills for the day when they enter the workforce (Survey respondent 11, 27/9/00).

I think it is a good idea that we give this job work placement because it give [*sic*] the students to get [*sic*] casual job and also later in the 'futer [*sic*] to get a fulltime job (Survey respondent 10, 27/9/00).

I think it is a good idea that we are able to show the young student what goes on in the workplace of today and may-be [*sic*] show what it is like in the workforce (Survey respondent 4, 26/9/00).

I think it's good of [the host enterprise] to take them on and give them a feair [*sic*] go (Survey respondent 9, 27/9/00).

Some host workplace mentors' recognition of the value of the program for motivating students to further their studies either to gain employment in the retail industry or to aim for employment elsewhere aligned with MacDonald and Black's (1987) findings on employers' perceptions of the role of workplace learning:

I feel that giving theses students a chance to learn in a work environment can benefit not only their schooling but their social and work skills with others from outside of the school environment. It helps them to grow more confident mature an [*sic*] see what the other side of the coin offers after school, could even influence them to go onto [*sic*] further studies (Survey respondent 5, female, 26/9/00).

This program, I believe is (or should be) a vital part of any high school. It shows high school people what the workplace is all about, thereby enabling them to either "get

their foot in the door” or helping them to decide to try harder at school and heading in a different direction (Survey respondent 19, 28/9/00).

Item Q 10 aimed to elicit responses related to the host workplace personnel’s perceptions of the value of the program to the host enterprises’ public image. Among interviewees, males tended to answer more affirmatively than females as indicated by mean ranks from the Kruskal Wallis test reported in Table E8. One male interviewee was quite pertinent in his response:

Certainly, you do get a lot of customer comments when you do have the students on work placements and saying, the customers will come in and say oh you’ve got a new staff member, and you just say, you know they’re on work experience and [*sic*] Blue Gum High School...certainly not everyone you tell, but you know if they just comment and say, you know, there’s a new staff member and you just say oh they’re on work experience, the customers do see the rewards as well, they can see that there’s something actually being done in their community so (Interview respondent 1, male, 19/10/00).

Yeah, it does a lot of good just, a lot of good will put out there to see the public walking in, they can see us explaining something to obviously a younger person. If they are later to find out that they’re actually here on work experience, presents a good public image... (Interview respondent 2, male, 20/10/00).

Item Q10 did elicit responses focused on the recruitment role played by hosting school students for workplace learning:

Yeah I agree in the fact that we’re actually out there doing something, ready for students when they leave school, rather than wait for them to leave school and then try and employ them, or you know, look like we’re just waiting you know, for anyone to employ. It shows that we are actually trying to improve our chances of getting in good people as well so that helps (Interview respondent 7, female, 6, 26/11/00).

The recruitment value of an employment trial through workplace learning compared to a job interview was seen as important:

...if you do get particularly good students, it gives you the opportunity to maybe if they want a job, you know what they’re like a little bit, more than, if you had an interview, you sort of get a surface, but you don’t really get to see the real person, whereas even though they might not be in your department for say like the whole time, it might even be for one day, you still see them in other departments, you can talk to them on your

lunch break and you can approach them a bit more and ask them questions and then see if they are interested or they're not, before actually having to commit yourself, I think is, it's good, it's like for both sides (Interview respondent 3, female, 21/10/00).

Another respondent recognised the role students themselves played in the establishment of a good public image for the host enterprise:

...I think parents actually get quite happy to see the kids being involved in jobs and it's a start to their future, and I think that's where [the host enterprise] are maybe are helping this cause and the kids certainly are the ones that are pushing it because they're the ones that are impressing us during the day to sort of say we like that person, they've got a bit of kick in them, they've got a chance to go somewhere (Interview respondent 8, male, 9/12/00).

Once again positive affect attended host mentors' views of the workplace learning program's capacity for *Spreading goodwill* (George & Brief, 1992). George and Brief (1992) found that 'People who experience positive moods at work are more likely to evaluate the organization favourably and, hence, spread goodwill' (p. 317). This may be caused by increased social contact within and outside the organization, social contact that is fostered by positive affect that, in turn, leads to positive perceptions of the organization and its products, leading ultimately to favourable representation of the organization to others outside the organization.

Summary of findings related to Research Question 2

By surveying and interviewing host workplace personnel directly involved in school students' workplace learning, this quantitative and qualitative inquiry has attempted to peel back the superficiality of analysis that sometimes surrounds these relationships. Increased complexity of personnel interaction at the work teams or groups and the work section workplace context layers led to difficulty in separating and analysing responses in the workplace behaviours of *Helping co-workers* and *Developing oneself*. This unwanted aggregation of data inhibited the strength of the analysis. Nevertheless, two factors were most striking: firstly, the high level of agreement about the program's positive outcomes for students and the enterprise and,

secondly, the positive affect attending mentors' *Helping co-workers*, *Developing oneself*, and *Spreading goodwill*.

The overwhelmingly positive response about workplace learning and its role in improving learning outcomes for students and host workplace personnel confirms the personal value mentors place on such roles (MacAllum & Charner, 2000). The host enterprise is a leader in workplace learning (Institute for Working Futures, 1995) and its role in creating a positive learning environment in the host workplaces was evident.

Those who responded negatively in some aspects of the surveys and interviews made valuable contributions about the way in which workplace learning programs are structured and the value of negative affect in some circumstances. Perhaps workplace learning organizers need to fully appreciate the complexities of some workplace tasks and allow more time for on-the-job learning. Student readiness became another issue of concern. Despite the students volunteering to participate and undergoing an induction program about the nature of the learning and the host workplace employer's expectations, some individuals were reported as lacking in interest.

CONCLUSION

The research question addressed in this chapter was:

Does positive affect attend host workplace mentoring roles in school-sponsored workplace learning?

Isen and Baron's (1991) observation that '...positive affect may also promote a tendency to maintain that state' (p. 12) has been demonstrated in this analysis. The positive affect attending mentoring roles (Côté, 1999; Isen & Baron, 1991) largely has held throughout multi-level analyses over four workplace context layers (Côté, 1999; O'Connor, 1994b). Host enterprises should anticipate maintenance of their

employees' positive affect through hosting school students for workplace learning. Apart from some relatively minor exceptions, host workplace personnel maintained their positive affect throughout this program.

Mentors benefited from their involvement and some saw the interaction with school students as an opportunity to exercise opportunities in *Developing oneself* (George & Brief, 1992) through their application and transfer of extant learning thus improving the status of their workplace learning and enhancing their career prospects in more conventional terms (Billett & Cooper, 1998). In at least one instance reflection-in-action (Schön, 1983) was observed. Yet, the presence of positive affect facilitates such transfer and leads to improved workplace performance (Côté, 1999; George & Brief, 1992). Therefore, appraisal of the attendant presence of positive affect in workplace mentoring roles exhibited in behaviours such as *Helping co-workers* and *Spreading goodwill* (George & Brief, 1992) plays an important role in establishing knowledge of the effects of workplace mentoring on employees and, through them, the future prospects for the enterprise itself.

CHAPTER 6

DISCUSSION AND RECOMMENDATIONS

INTRODUCTION

In this concluding chapter findings for the two research questions reported in Chapters 4 and 5 are discussed in relation to the research context established in Chapter 1 and the literature reviewed in Chapter 2. Recommendations for consideration by systemic policy makers, school-level administrators, and host workplace enterprises are addressed, together with their implications for future research.

The two research questions are:

Research Question 1: Does participation in school-sponsored workplace learning improve socio-economically disadvantaged high school students' motivation for school learning?

Research Question 2: Does positive affect attend host workplace mentoring roles in school-sponsored workplace learning?

Research such as this is located in the genre of the social science project in that it has sought to add to ‘...the availability of knowledge within the community’ (Ozga, 2000: 41) by adopting a problem-solving perspective rather than a critical theory approach (Ozga, 2000). In its problem-solving guise, this research identified socio-economically disadvantaged high school students’ low levels of motivation for school learning as a problem and subsequently evaluated the use of school-sponsored workplace learning as a curriculum extension aimed at improving their motivation for school learning. Moreover, this study also increased ‘...the availability of

knowledge...' (Ozga, 2000: 41) by identifying and articulating affectivity attending workplace mentoring roles at multiple levels of analysis.

In so doing, this study adopted a quasi-experimental stance (Campbell & Stanley, 1963; Cook & Campbell, 1979) in addressing Research Question 1, employing as a theoretical underpinning the Affective Domain Taxonomy (Krathwohl et al., 1964), and a combined quantitative and qualitative approach to answer Research Question 2 (Silverman, 1993) structured by workplace context layers (O'Connor, 1994b). In relation to the former, this study's quasi-experimental research design allowed measurement of high school students' motivational changes through charting their levels of internalisation of motivation for school learning within the Affective Domain Taxonomy (Krathwohl et al., 1964).

Investigation for Research Question 2 was based on organizational behaviour research related to workplace mentoring and affectivity (George & Brief, 1992; Isen & Baron, 1991). O'Connor's (1994b) workplace context layers provided a discursive framework to articulate the affectivity attending mentoring roles in workplace learning at multiple levels of analysis (Côté, 1999), thus providing rich descriptions of quantitative and qualitative aspects of workplace mentoring. Together, these approaches contributed to closing the descriptive – correlational – experimental research loop for this field of enquiry (Rosenshine & Furst, 1973).

Characterizing the descriptive – correlational – experimental research loop in this study

The descriptive – correlational – experimental research loop serves as a model to exemplify this study's contribution to the completion, on the one hand, and the beginning, on the other, of research in this field of study. In signifying completion, it presents evidence from descriptive, correlational and experimental phases of research activity that complements and/or confirms extant studies and, in heralding the beginning of research activity, poses new questions for descriptive, correlational and

experimental phases of research to explore concomitant findings that this study may not have made clear.

In relation to the research loop's descriptive component, this study has reviewed a large body of literature reporting descriptive accounts of the links between workplace learning and improved motivation for school learning (e.g., Browne et al., 2001; Green & Smith, 2002; Grubb, 1992; Hudson, 1996; Hughes et al., 1999; MacDonald & Black, 1987; Raffo, 2003; Rusch & Chadsey, 1998; Scharaschkin, 1995; Stern et al., 1992; Sweet, 1993). This study also described the attendance of affectivity in workplace mentoring, producing a rich, multi-layered illustrative account of its presence in the workplace interaction between school students and their mentors. This latter aspect of the study contributes to a relatively modest extant literature (e.g., MacAllum & Charner, 2000).

This study's correlational research phase led to deeper understandings and new insights in relation to its comparability with earlier studies such as Keeves' (1974) research and internal relationships between its components such as the development and confirmation of reliable survey instruments and monitoring the progress of its qualitative component.

The experimental phase of this study was facilitated by the availability of quality-assured host workplaces (Carmichael, 1992; Kazis & Goldberger, 1995; Tasmanian State Training Authority, 1998). Implementation of the experimental phase took account of the realities of field research in the social sciences, recognising that random sampling is sometimes neither possible nor ethical (Cook & Campbell, 1979). Thus, a quasi-experimental research design for a non-equivalent control group was adopted (Campbell & Stanley, 1963; Cook & Campbell, 1979), thereby aligning this phase of the research with Hughes et al.'s (2001) classification of a research design based on a comparison group.

Pair matching of individuals within the Experimental and Control subsamples was by individuals' pretest survey median ranks (Reichardt, 1979) and individual's pretest survey response profiles (Cronbach & Gleser, 1953; Keeves, 1997; Nunnally, 1967). The non-parametric Wilcoxon Signed Ranks Test for matched pairs and the Sign Test were used corroboratively to test null hypotheses about the treatment effect and determine their rejection or non-rejection (Siegel & Castellan, 1988). Use of the Sign Test allowed a treatment effect to be calculated from pre- and post-treatment pair differences (Cohen, 1988; Reichardt, 1979) and, where statistical significance (Peers, 1996) and power (Cohen, 1988) requirements were met, the null hypotheses were rejected and the alternative hypothesis implied in the research question was adopted.

Further review of this study's outcomes

Whilst there is a common theme of affectivity in the two research questions, its mode of expression is different for each question. In Research Question 1, the theme's focus is on school students' motivation for school learning and, in Research Question 2, its focus is on evidence of positive affect attending mentoring roles. Moreover, the research method for the first question was quantitative while that for the second combined quantitative and qualitative research methods. Thus, the research findings for these two research questions are reviewed separately at this stage. Part 1 addresses concluding issues for Research Question 1 and Part 2 addresses the same for Research Question 2 and common themes are drawn together in the final stages of this chapter.

PART 1

RESEARCH QUESTION 1

Does participation in school-sponsored workplace learning improve socio-economically disadvantaged high school students' motivation for school learning?

Table 6.1 summarises the results for Research Question 1.

Table 6.1 *Summary of treatment effects by gendered subsample*

Research subsample	Affective Domain Taxonomy			Decisions for H_0
	Level 1	Level 2	Level 3	
	Effect size	Effect size	Effect size	
Gender neutral	Medium negative	Large positive	Medium positive	None rejected
Female	Medium positive	Large positive	Large positive	Level 3 H_0 rejected
Male	Medium positive	Medium positive	Large positive	None rejected

As explained in Chapter 4 and Appendix D, where statistical significance (Peers, 1996) and statistical power (Cohen, 1988) requirements were met, null hypotheses were formally tested in relation to the effects of school-sponsored workplace learning on school students' motivation for school learning. As indicated in Table 6.1, this led to the rejection of the null hypothesis for the Experimental Female subsample at Level 3 of the Taxonomy. This resulted in the adoption of the alternative hypothesis, H_1 :

After participating in school-sponsored workplace learning, socio-economically disadvantaged female high school students will report improved motivation for school learning at Level 3 of the Affective Domain Taxonomy.

The importance of this research finding for socio-economically disadvantaged female high school students should not be underestimated. As indicated in Chapter 3, individuals learning at Level 3 (Valuing) of the Taxonomy demonstrate internalisation of motivation that supports their taking initiatives to direct and maintain their learning. The value of this level of self-motivation at the individual, community, and government policy levels is recognised and was mentioned in Chapter 1.

To recapitulate, for the individual in the globalised workplace van Liemt (1992) has counselled active participation in training and retraining by ‘...encouraging others (your employer, the government) to provide you with the opportunity to do so’ (p. 466). At the community level, O’Connor (1994a) has observed that the new “freedoms” of the deregulated workplace concomitantly carry new responsibilities for the community of workers to address the ‘...fewer career options and fewer opportunities to access education and training...’ (p. 17) that accrue from increased fragmentation and insecurity of employment. In relation to education and training, O’Connor (1994a) argues that these employment and workplace contexts mean that workers need to take initiatives for themselves ‘... and requires that they actively seek out these [learning] opportunities’ (p. 17). The theme of self-responsibility for learning in the more flexible work arrangements of the 21st century school and workplace (e.g., Atkinson, 1984) are now acknowledged in government policy. For example, the Tasmanian government policy document *Towards the future...* encourages self-direction and motivation in learning:

Students will need to be prepared for learning throughout their lives.... They will often need to be able to work independently and in a self-directed way. Students’ learning will need to be more self-regulated and self-controlled. Students will need to be personally motivated and responsible for their learning... (Tasmania, Department of Education, Community and Cultural Development, 1996: 34-35).

Therefore, socio-economically disadvantaged female students’ acquisition of improved motivation for learning at the depth of internalisation inherent in the Valuing level of the Taxonomy while still in the compulsory phase of education will increase their likelihood of success at school and add to the quality of their lives as students, workers, parents and citizens (Williams, 2004). The importance of post-compulsory retention in education and/or training for all Australian students remained unchanged for the duration of this study (Helme & Polesel, 2004), but the particular vulnerability of early school-leaving females in accessing secure post-school employment, education and/or training opportunities has assumed new significance. Helme and Polesel (2004) found that in relation to post-school employment and education from 2001 to 2003:

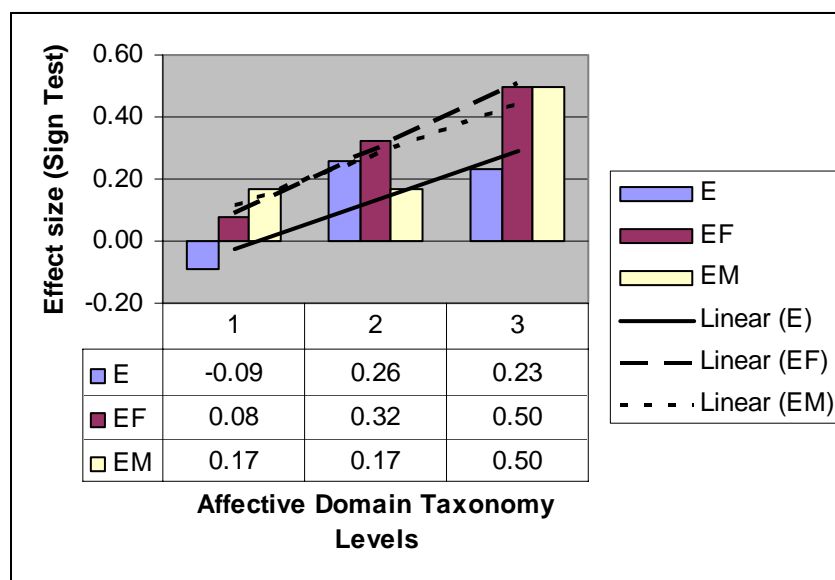
Female early leavers fared less well than their male counterparts. While a substantial number of males had found apprenticeships, females were almost three times more likely than males to be working in part-time or casual jobs, revealing a situation of significant labour market disadvantage for female early leavers who risk being trapped in a cycle of precarious under-employment (p. 64).

Thus, while Australian apprenticeship opportunities steadily increased in the period 1995 to 2000 (National Centre for Vocational Education Research, 2001) and females' share of apprenticeships improved from 16.5% to 31.0% in the same period (National Centre for Vocational Education Research, 2001), early school-leaving remains riskier for females than for males. As noted in Chapter 1, since 1992 Australian school leavers have had to compete against older people for apprenticeships (National Centre for Vocational Education Research, 2001) and 'The proportion of teenagers in the [apprenticeship] system has fallen from over half in 1995 to only a little over a third' (National Centre for Vocational Education Research, 2001: 88). Therefore, female early school-leavers are doubly disadvantaged by their gender and by their youth. Their risk of '...labour market disadvantage ...[and] ...precarious underemployment' (Helme & Polesel, 2004: 64) arising from early school leaving links directly with the uncertain labour market for peripheral workers reported in Chapter 1 of this study (Sengenberger, 1992; van Liemt, 1992) and reiterated above. Consequently, this study has considerable implications for policy makers at all levels. These implications and other recommendations for further research are addressed in the closing stages of this chapter.

While females' improved motivation for school learning at Level 3 of the Taxonomy justified adoption of the alternative hypothesis cited above, positive treatment effects accrued for both genders at all surveyed levels of the Taxonomy. Figure 6.1 depicts the effect sizes for the Experimental (E), Experimental Female (EF), and Experimental Male (EM) subsamples. Notable in these analyses are the general trends towards increasing internalisation of motivation for school learning from medium negative and medium positive effect sizes at Level 1 through successively higher levels of the Taxonomy to medium and large positive effect sizes

at Level 3. Linear trend lines in Figure 6.1 portray this increasing internalisation. No studies were found where the data analysis allowed the presentation of measures of students' internalisation of motivation for school learning following their participation in school-sponsored workplace learning in the manner depicted in Table 6.1.

Figure 6.1. Treatment effect sizes by Affective Domain Taxonomy level



Empirical research published before and since the experimental phase of this study in 1999 corroborates the improvement in motivation for school learning demonstrated in this socio-economically disadvantaged research cohort (e.g., Hayward & Tallmadge, 1995; Kemple & Snipes, 2000; Linnehan, 2001 & 2003; Maxwell & Rubin, 2001; Rivera-Batiz, 2003). Some of these studies reported on more broadly-scoped programs such as career academies where workplace learning's integration into a more complex educational entity such as school re-organisation for participants may have blurred its link with improvements in students' motivation for school learning (Kemple, 1997). Nevertheless, these research findings draw attention to the positive outcomes associated with the inclusion of school-sponsored workplace learning for minority, marginalised, at-risk and low SES youth. These are

summarised in Tables 2.1, 2.4 and 2.5 in Chapter 2 and are reiterated below.

They include:

- Increased grade point averages, reduced failure rates (Hayward & Tallmadge, 1995);
- Reduced dropout rates, improved attendance at school, increased academic course-taking, increased likelihood of timely graduation (Kemple & Snipes, 2000);
- Improved grade point averages and school attendance (Linnehan, 2001);
- Improved belief in the relevance of school (Linnehan, 2003);
- Heightened student motivation, increased probability of postsecondary retention, greater likelihood of lifelong learning (Maxwell & Rubin, 2001); and
- Increased enrolment in mathematics and science courses, reduced likelihood of dropout, improved prospects of labour-market participation (Rivera-Batiz, 2003).

Whilst these engagement indicators are proxies for students' motivation for school learning, the general support for the motivational effectiveness of school-sponsored workplace learning summarised in Chapter 2 agrees with the findings from this study. Criticisms of the inclusion of vocational education in schools were reviewed in Chapter 2 also (Watkins, 1985; Welch, 1996; White, 1993; Wolf, 1998). Without wishing to promote pragmatism as sufficient justification for action, the findings of this study and those cited above do support its continued presence in schools within the broader entities of curriculum extensions (Ainley, 1996; Cumming, 1998; Irving, 1993) and school-to-work programs and models of career development in schools (Blustein et al., 1997; Lent et al., 1996).

Gender imbalance towards females' participation was present in this study and was noted in several other studies (e.g., Linnehan, 1996; 2001; 2003). Some studies noted a relationship between gender imbalance and the type of industry

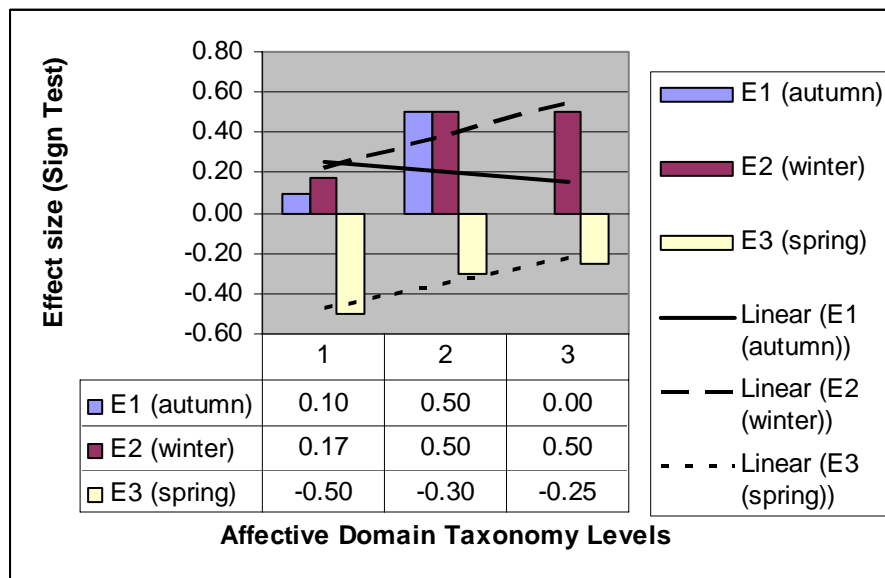
hosting workplace learning programs (e.g., Fullarton, 1999; Haimson & Bellotti, 2001).

It is unlikely that the location of this study's workplace learning program in the retail industry influenced this study's female-biased gender-segregation in its Experimental subsample. As indicated in Chapter 3 and Chapter 5, the real-world gender-segregation profile for Australian retail industry is marginally male dominant (Harrison, 2002). Although the initial gender representation in the Experimental subsample tended towards females ($n = 30$, female to male ratio 18:12, 60%), it is more likely that their lower mortality rates ($n = 28$, female mortality ratio 16:2, 11%) compared to males' ($n = 12$, male mortality ratio 6:6, 50%) contributed more to the research outcomes than did choice of industry type for this study. This assertion is defensible in terms of the adoption of the research method detailed in Chapter 3 where all forms of bias were controlled and minimised (Kerlinger, 1973).

Moreover, this study accounted for limitations of case studies noted in Chapter 3 and Chapter 4 where uniformity of research timing (Robinson & Thomson, 1998) can impinge on research findings. Table 6.2 and Figure 6.2 summarise and illustrate treatment effects related to the timing of subjects' workplace learning during the academic year.

Table 6.2 *Summary of treatment effects by temporally-disaggregated subsample*

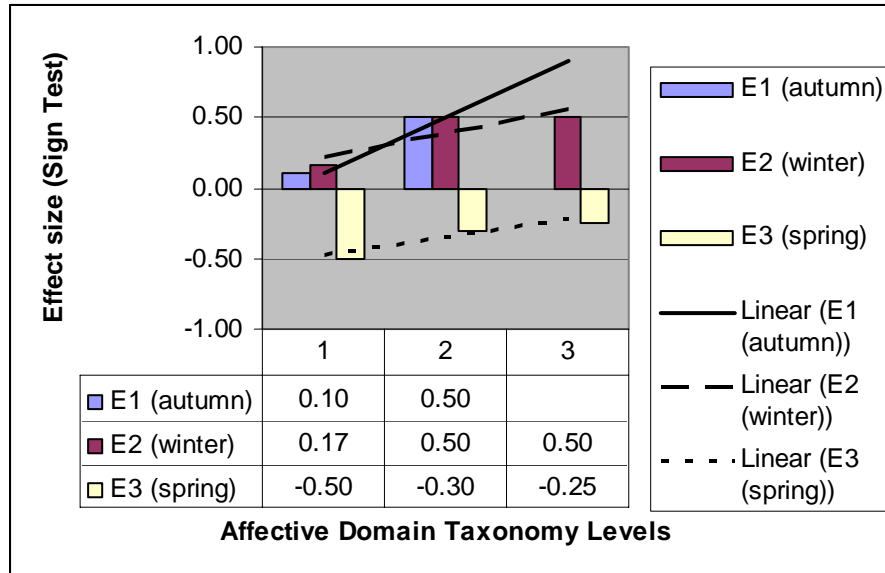
Research subsample timing	Affective Domain Taxonomy			Decisions for H_0
	Level 1	Level 2	Level 3	
	Effect size	Effect size	Effect size	
Autumn	Small positive	Large positive	Neutral	None rejected
Winter	Medium positive	Large positive	Large positive	None rejected
Spring	Large negative	Large negative	Large negative	None rejected

Figure 6.2. Treatment effect sizes for temporally-disaggregated subsamples

Autumn and winter experimental subsamples showed increasing positive treatment effects for the first two levels of the Affective Domain Taxonomy (Krathwohl et al., 1964), and the winter subsample's rising positive treatment effect continued through to Level 3. The spring subsample showed no evidence of positive treatment effect at any level of the Taxonomy, but the magnitude of its negativity progressively reduced at higher levels of the Taxonomy, indicating a growing internalisation of motivation for school learning. Linear trend lines portray the increasing internalisation for the winter and spring subsamples.

In Figure 6.2 the autumn subsample's trend line slopes counter to those of the winter and spring subsamples, largely due to its neutral treatment effect size at Level 3 of the Taxonomy. This trend line negates the achievement of positive treatment effect at Levels 1 and 2 of the Taxonomy and may contribute to an erroneous conclusion about its affective value for school students based on a single event that showed no negative treatment effect. Therefore, if this outcome is laid aside temporarily, then the autumn subsample's trend line assumes a slope comparable to the other two temporal subsamples. Figure 6.3 depicts this effect.

Figure 6.3. Modified treatment effect sizes for the autumn subsample



Thus, within these analyses, there is a general tendency towards lesser negative and greater positive effect sizes at successively higher levels of the Taxonomy that is unrelated to the timing of the experimental treatment. This general pattern holds for two of the three temporal subsamples' increasing internalisation of motivation for school learning from Level 1 through to Level 3 of the Taxonomy and corresponds to trends depicted in Table 6.1. A similar trend slope for the autumn subsample at Levels 1 and 2 of the Taxonomy is evident, also. Hence, in general terms, the seasonal timing of workplace learning for this study had little or no effect on the positive value of school-sponsored workplace learning as a curriculum extension in improving low SES school students' motivation for school learning.

PART 2

RESEARCH QUESTION 2

Research Question 2: Does positive affect attend host workplace mentoring roles in school-sponsored workplace learning?

In relation to Research Question 2, this study provides evidence that positive affect attends workplace mentoring roles in school-sponsored workplace learning. By moving beyond the more accessible, but sometimes limited, imprecise impressions of management staff (Hillage et al., 1995), and accessing host workplace personnel directly engaged with school students, this study shows that affectivity attends the mentoring role at each of the four workplace context layers surveyed (O'Connor, 1994b).

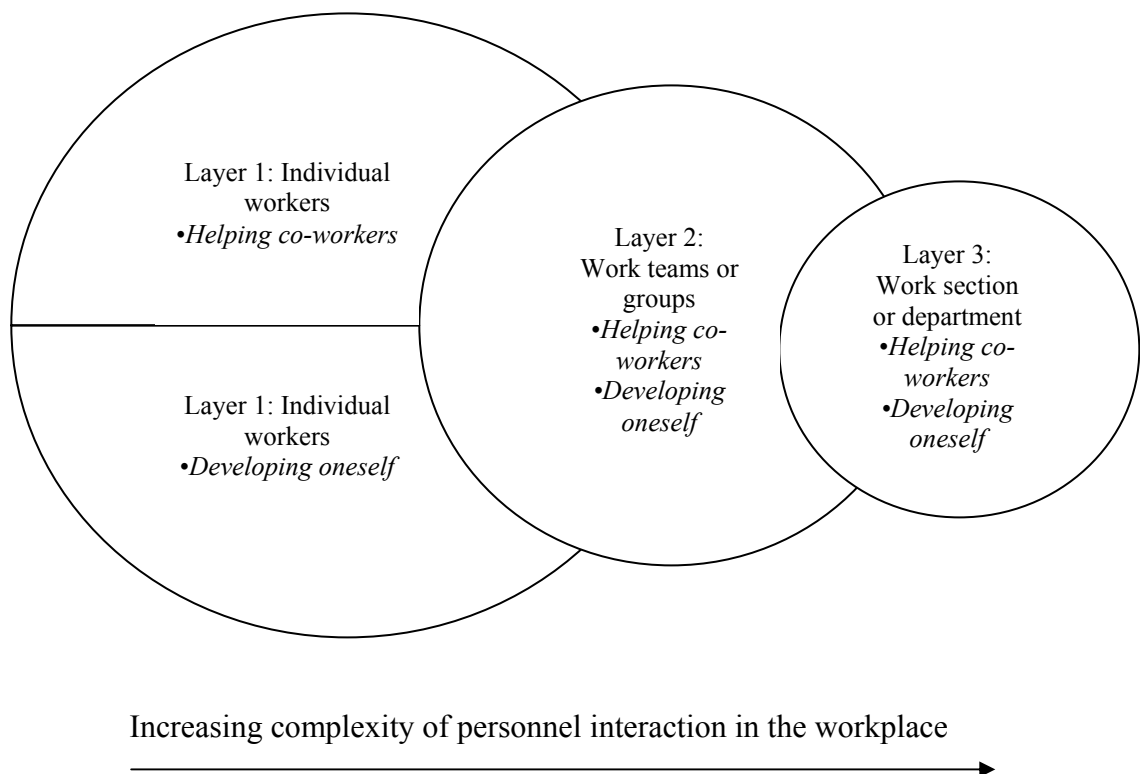
Evidence from the organizational behaviour literature presented in Chapter 2 links mentoring in workplaces with positive affect (Isen & Baron, 1991) and the presence of positive affect has been found to outrank job satisfaction as a motivator in the workplace (George & Brief, 1992). Thus, it is argued, employers hosting school-sponsored workplace learning stand to benefit through having in their workplaces ‘...happier individuals [who] are more productive, and also...more productive individuals [who] are happier...’ (Côté, 1999: 67).

This study adapted mood at work-organizational spontaneity relationship indicators described by George & Brief (1992) as proxy indicants of positive affect attending workplace mentoring. These proxy indicants were: *Helping co-workers*; *Developing oneself*; and *Spreading goodwill*. The findings from this study and its relationship to the research in organizational behaviour and other related research is reviewed below.

As indicated in Chapter 5, these data analyses were characterised by a degree of overlap that defied discrete classification in some instances. Despite initial intentions to do so, the presence of two affective indicants, *Helping co-workers* and *Developing oneself*, proved difficult to separate in analyses of each of the second and third workplace context layers, work teams or groups and work section or department, respectively. Thus, an identifiable pattern emerged in the data analyses: as the numbers of people involved in activities in a workplace context layer increased

in the first three workplace context layers, workplace complexity increased. Hence, the two surveyed proxy indicants of positive affect, *Helping co-workers* and *Developing oneself*, became more difficult to disentangle from their operational backgrounds. This pattern applied to the first three workplace context layers, but not to the fourth, where *Spreading goodwill* was the sole positive affect indicant surveyed. The two abovementioned proxy indicants' pattern of increasing overlap in progressively complex workplace contexts is demonstrated below in Figure 6.4.

Figure 6.4. Increased overlapping analyses of proxy indicants for positive affect through increasing workplace complexity



In Figure 6.4 workplace context layers are depicted as a series of exploded concentric circles (O'Connor, 1994b). As explained above, the presence of positive affect was indicated in relatively uncomplicated ways in workplace mentoring

relationships at the individual workers context layer (Layer 1) where the evidence of positive affect was self-defining (O'Connor, 1994b). The discreteness of this relationship is represented by two semi-circles, one for each of the two proxy indicants of positive affect, *Helping co-workers* and *Developing oneself*. As the complexity of workplace interaction moved beyond mentors solely interacting with school students towards more complex interactions in work teams and work sections, however, these two proxy indicants became more closely interlocked and defied separation for analysis. This is represented by the enclosure of the two indicants of positive affect, *Helping co-workers* and *Developing oneself*, within one circle for each of the second and third workplace context layers.

Such overlapping is inherent in defining workplace context layers in relation to the focus of an investigation (O'Connor, 1994b), in this case the detection of positive affect indicants discrete presence. This overlapping need not negate the value of the study, although 'It will be necessary to be conscious and vigilant about the "arbitrariness" of these exclusions and the need to re-include some variables or shift some of the boundaries to accommodate significant factors as required' (O'Connor, 1994b: 275). Thus, the nature and extent of overlapping analyses corresponding to increasing workplace complexity is illustrated in several excerpts from surveys and interviews discussed below.

Workplace Context Layer 1: Individual workers

Proxy indicants for *Helping co-workers* and *Developing oneself* were distinguishable at the relatively uncomplicated individual workers context layer. This is illustrated in several excerpts from surveys and interviews:

...I felt that, it made my job worthwhile, going to work each day and yeah, it felt, made me feel good about myself (Interview respondent 7, female, 2/12/00).

Yeah, I...enjoyed having someone, how can I say it, being alongside me because I felt I was helping them and in a different way they were helping me, and I enjoyed explaining things...(Interview respondent 4, male, 3/11/00).

I enjoyed having the students in my department and helping them learn... (Survey respondent 15, 27/9/00).

Pleasure and enjoyment in *Helping co-workers* is readily apparent in these three excerpts above. Similarly, a sense of *Developing oneself* emerged from the following excerpts:

...it gives you training on staff management, getting to know your staff... your staff management, you never have enough if it, whether you've got one staff member or 10, you always can be learning here... You're training them everything about the department and also it gives you training on staff management...(Interview respondent 1, male, 19/10/00).

As I said, you know, it [mentoring] sort of just gives you a brief visit of where you are at, sometimes you take things too much for granted and this sort of brings you back to base one, where you started and you reassess where you're going and it just seems to make things a lot easier for yourself (Interview respondent 8, male, 9/12/00).

Interview respondent 1 quickly grasped the significance of his mentoring role for his occupational development, particularly in relation to his management skills. He saw the hosting role as an opportunity to develop himself and perhaps improve his prospects for promotion to positions of greater responsibility. Interview respondent 8's response is more introspective and self-critical, although he does recognise the potential for enhancing his occupational skills through mentoring. For both mentors, though, the mentoring role has been attended by positive affect in relation to *Developing oneself*.

Workplace Context Layer 2: Work teams or groups

As the analysis progressed into workplace context layers involving more people and more complex relationships defined by '...their own distinctive internal structures, procedures and operations' (O'Connor, 1994b: 275), proxy indicants for *Helping co-workers* became more inextricably linked to *Developing oneself*. This emerged through host mentors' leadership roles in workplace learning activities at the work teams or groups context layer. The complexity of this relationship is illustrated in the following excerpts:

As the deli [*sic*] department manager I found that by training them in the department, which is very customer focused, helped the students' confidence (Survey respondent 23, 29/9/00).

No, I think the more hands on the better. The first half an hour might be a little bit difficult, oh I've got to show someone when you could just go and do it yourself, but in the long run you know, once they've been here for a couple of hours, they're doing half your job... (Interview respondent 7, female, 26/11/00).

Survey respondent 23's comment illustrates the degree of embedding of these behavioural indicators of positive affect at the work teams or groups context layer. His/her action in training encompasses a leadership component that draws on and adds to his/her competence as a delicatessen manager, thus *Developing oneself* in the role. His/her motives are to help the student (co-worker) to work competently in a way that will help '...the students' confidence' (Survey respondent 23, 29/9/00), thus presumably deriving pleasure from *Helping co-workers*. This embedding is present in the Interview respondent 7's excerpt, but the behaviours tend to be cloaked in pragmatism, that is, achieving productive work status for the student (co-worker). Nevertheless, the same workplace learning processes are evident in providing proxy indicants of the two affective behaviours. Interview respondent 7 takes the initiative, the leadership role, in accepting the difficulty of showing the student what to do and simultaneously expresses pleasure in the student's accomplishment, observing that '...once they've been here for a couple of hours, they're doing half your job...' (Interview respondent 7, female, 26/11/00).

Workplace Context Layer 3: Work section or department

The interconnectedness of these indicators of affectivity persisted into analyses for the work section or department context layer. Its presence is illustrated in the following excerpts:

I think our problem was we just didn't explain stuff properly like, because we... know what we're going to do and we just don't explain it properly... (Interview respondent 3, female, 21/10/00).

...never really had a problem, a few questions but they've always come up and said look, I don't know how to do this, can you show me, and it's like yeah, not a problem and if there is something wrong, we'll just sit them down and say look, it's not done this right, this way, we just need you to change it to do it this way (Interview respondent 5, female, 23/11/00).

Interview respondent 3 was introspective and self-critical and, as explained in Chapter 5, was engaged in reflection-in-action in relation to her mentoring role (Schön, 1983) as she sought to balance the competing priorities involved in hosting school students in her workplace. Despite not appearing to be deriving much pleasure from *Helping co-workers*, the positive affect inherent in her willingness to self-appraise and accept her and her colleagues' unwitting lack of empathy indicates that her mentoring is attended by a sense of *Developing oneself*. Interview respondent 3's introspection illustrates the '...invisible, ambiguous, irrational, [and] varying methods of performing the same work...' (O'Connor, 1994b: 276) that can distort communication in workplaces (Reddy, 1979). By contrast, Interview respondent 5's response is more sanguine. Positive affect indicating pleasure in *Helping co-workers* and *Developing oneself* are readily apparent in this excerpt, but its interconnectedness is still evident.

Workplace Context Layer 4: Enterprise

Analysis of mentor affect through the proxy indicant, *Spreading goodwill*, at the fourth workplace context layer, enterprise, stood separately from the pattern described in Figure 6.1. Among mentors, there was unanimous and unambiguous support for the suggestion that school-sponsored workplace learning promoted opportunities for *Spreading goodwill*. Despite staff reservations about hosting school-sponsored workplace learning, e.g., '... a lot of people have the perception that Blue Gum [High School] students are going to be rough heads, that they are not going to be worth having here...' (Interview respondent 6, female, 26/11/00), providing access to workplaces for school students fostered positive affect in the workplace. Moreover, it provided potential for *Spreading goodwill* by the students themselves to their families and friends and on into the entire school community.

...the customers will come in and say oh you've got a new staff member, and you just say...they're on work experience and [*sic*] Blue Gum High School...the customers do see the rewards as well, they can see that there's something actually being done in their community... (Interview respondent 1, male, 19/10/00).

...it does a lot of good just...they can see us explaining something to obviously a younger person. If they are later to find out that they're actually here on work experience, [it] presents a good public image... (Interview respondent 2, male, 20/10/00).

...I think parents actually get quite happy to see the kids being involved in jobs and it's a start to their future, and I think that's where [the host enterprise] are maybe are helping this cause... (Interview respondent 8, male, 9/12/00).

These sentiments support earlier research findings (e.g., Kazis & Goldberger, 1995) that philanthropy and self-interest are factors in motivating enterprises to become involved in school-sponsored workplace learning. Thus, whilst the financial costs and/or benefits associated with hosting workplace learning are readily quantifiable for enterprises (e.g., Bassi & Ludwig, 2000; Pauly et al., 1995), this study may prove instrumental in developing favourable cost/benefit arguments to further engage enterprises in school-sponsored workplace learning (Bailey et al., 2000).

Thus, the multi-level analysis of workplace affect sought by Côté, (1999) is partially satisfied in this analysis. At the first and fourth workplace context layers (O'Connor, 1994b), discretely classified evidence has been presented for the proxy indicants of positive affect related to *Helping co-workers* and *Developing oneself*, and *Spreading goodwill*, respectively. At the second and third workplace context layers (O'Connor, 1994b) overlapping responses impeded discrete classification by two proxy indicants, *Helping co-workers* and *Developing oneself*, demonstrating the complexities of workplace performance and interactions (O'Connor, 1994b) noted in Chapter 3. For example, as noted in Chapter 5, the affective behaviour *Developing oneself* may be facilitated through *Helping co-workers*, thus linking the two behaviours interdependently. Moreover, interdependent workplace relationships increasingly are subject to sophistication in modes of interaction (Engeström & Cole

1997) that one-dimensional communication modes cannot address satisfactorily (Reddy, 1979). Nevertheless, the general effect of workplace mentoring activity surveyed in this study supports the observation that workplace mentoring supports prosocial behaviours (Isen & Baron, 1991) that benefit workplaces at a number of levels of complexity in the host enterprise (Côté, 1999).

No studies were found based on the quantitative and qualitative multi-level analyses of host workplace mentoring reported in Chapter 5 of this study, although differently-structured evidence supporting affectivity attending mentoring roles in school-sponsored workplace learning programs was reported by MacAllum and Charner (2000) and is noted in Chapter 2 of this study.

MacAllum & Charner's (2000) study ranged widely over all participants in the Lansing Area Manufacturing Partnership, including '...business (General Motors Corporation), organized labor [*sic*] (the United Auto Workers), the school district (Ingham [County] Intermediate School District, Michigan), and the parents and guardians of the participating students' (MacAllum & Charner, 2000: 2-3). In sourcing their data related to workplace mentors' affectivity, MacAllum & Charner (2000) observed mentors' meetings, interviewed focus groups of students and employees, and interviewed mentors. The individual and organizational aspects of the host enterprise served as the analytical structures for their investigation into the presence of mentor affect.

Unlike this study, MacAllum and Charner's (2000) study directly reported overt behavioural outcomes (e.g., mentors reported pleasure and personal enrichment, improved morale, and increased communications skills and productivity), without taking those behavioural outcomes as proxy indicants for a more generalised set of affective outcomes that links to a theoretical or taxonomic underpinning. Additionally, MacAllum and Charner's (2000) study revealed little of its quantitative aspects and, concomitantly, the voice of dissenters. For example, whilst MacAllum and Charner (2000) cited agreement levels of 62% (increased communications skills)

and 42% (increased interest in further education and training), they presented no information about dissenting voices. As indicated Chapter 5 of this study, such dissent can provide penetrating insights into the complex interrelationships inherent in some workplace learning contexts (Schön, 1983). Nevertheless, despite employing a different analytical structure (individual and organizational) for assessing the effects of hosting school-sponsored workplace learning programs for workplace mentors and enterprises, MacAllum & Charner's (2000) findings corroborate the broad findings of this study.

Thus, this study contributes to an embryonic literature (MacAllum & Charner, 2000) in mentor affect in workplace learning that links with theoretical and taxonomic underpinnings from the organizational behaviour literature (Côté, 1999; George & Brief, 1992; Isen & Baron, 1991). These findings are valuable in that they provide host enterprises with evidence that, through affective influences, host mentors' productivity is likely to increase rather than decrease when school students are present for workplace learning. Hence, they strengthen cost/benefit analyses in favour of enterprises becoming involved in school-sponsored workplace learning that reaches beyond their more widely expressed philanthropic motivations (Bailey, et al., 2000; Kazis & Goldberger, 1995).

IMPLICATIONS AND RECOMMENDATIONS

Several implications and recommendations arise from this study that focus on consideration of workplace learning as a curriculum inclusion for socio-economically disadvantaged high school students. These considerations apply at system, school, and host enterprise levels.

Implications for school systems

There is a relatively high degree of acceptance by school system policy makers that workplace learning is a desirable inclusion in school curricula. It is seen rarely as a separate entity and is usually bound up in a body of knowledge and practice known

variously as career education, work-related learning, and vocational education (Blustein et al., 1997; Lent et al., 1996).

The current vocational education and learning policy of the Tasmanian Department of Education adopts such a structure (Tasmania, Department of Education, 2005c). It focuses on the content and implementation aspects of workplace learning as a component in the policy but does not yet recognise its potential to generate affective outcomes for students and hosts. Therefore, it is recommended that policy makers take account of this study's findings that when school students participate in school-sponsored workplace learning the following outcomes can be expected:

- Socio-economically disadvantaged female high school students' attainment of higher level valuing of their learning will facilitate their independence and self-direction, improved self-regulation and self control of learning, and their acceptance of greater responsibility for learning.

The implication of this finding is that it will assist with implementation of current policies in Tasmanian education that will require high levels of student motivation for school learning for their success. Prominent among these is the proposed increase in the school leaving age to 17 years from 2008 (Tasmania, Department of Education 2005b). This policy will require '...young people who have completed Year 10 or turned 16 ...to participate in further education or training:

- for a further two years; or
- until they have gained a certificate III vocational qualification; or
- until they have turned 17' (Tasmania, Department of Education, 2005b).

The role of vocational education is recognised as a legitimate educational activity in this policy, and recognition of its potential to improve affective outcomes for students should enhance its claim for inclusion. Similarly, for students not directly involved

in vocational education, a mix of school-based and work-based learning may be beneficial in maintaining their motivation for school learning.

This point is taken up in the Atelier Report's (Atelier, 2004) recommendations for including students with special and/or additional educational needs in relation to implementation of the Tasmanian Department of Education's Essential Learnings Framework (Tasmania, Department of Education, 2002). The Essential Learnings (Tasmania, Department of Education, 2002) curriculum initiative includes Tasmanian non-government Catholic and independent schools with provision for its realignment with their core beliefs and values where necessary (Tasmania, Department of Education, 2005a). Again, there are implications for this study's findings. Whilst the Atelier Report (Atelier, 2004) is not directly focused towards school students from low SES backgrounds, the fact of such students' educational disadvantage was established in Chapter 1 (e.g., Ainley et al., 1995) of this study. Moreover, as noted in Chapter 1, the policy document *Towards the future...?* acknowledges that '...the students in government schools will increasingly be from impoverished socio-economic circumstances...' (Tasmania, Department of Education, Community and Cultural Development, 1996:19). This sentiment is consistent with Mukherjee's (1999) finding that Australian students from the lowest SES decile, the socio-demographic location of this study, overwhelmingly enrolled at government schools. Hence, much of this discussion is directed towards government school systems, with the Tasmanian school system's Essential Learnings Framework (Tasmania, Department of Education, 2002) providing a setting for this study's implications for current policy.

The Essential Learnings Framework (Tasmania, Department of Education, 2002) acknowledges the role of schooling in developing students' awareness of their school and post-school lives. Amongst other things, it seeks to '...engage learners more deeply in their learning; make learning more relevant; ... [and]... support transfer of learning' (p. 4). In an implementation study for this policy, Atelier (2004) identified curriculum extension as a means to include all students in this process,

particularly those whose marginalisation contributes to a tenuous connection with school and schooling.

Amongst strategies to provide for disengaging students, Atelier (2004) identified curriculum extensions that involve off-site learning under the auspices of the enrolling school such as the workplace learning activity that is the subject of this study. Many of the qualities of such programs identified by Atelier (2004) were present in this research: learning in a wider and genuinely authentic environment; learning ‘...connected to broader pathways through appropriate accreditation’ (Atelier, 2004: 21), and harnessing community and business resources through school-business partnerships (Atelier, 2004). As indicated above, this is more likely to involve government schools enrolling students from low SES backgrounds (Ainley et al., 1995; Mukherjee, 1999). The benefits of such partnerships for students from low SES backgrounds are now well established (e.g., Hayward & Tallmadge, 1995; Kemple & Snipes, 2000; Linnehan, 2001 & 2003; Maxwell & Rubin, 2001; Rivera-Batiz, 2003). Implementation of workplace learning as a curriculum extension applied through the adoption of the Atelier Report (2004) from 2005 (Spurgeon, 2004a) will provide opportunities to gather empirical evidence of the relative benefits of school-business partnerships in the affective development of students and hosts, thus informing decisions concerning the harnessing of business resources for community capacity building.

Implications for school-level personnel

The findings of this study confirm the affective value of workplace learning in the school curriculum, especially in schools enrolling socio-economically disadvantaged students. As indicated above, improved motivation for school learning will assist implementation of programs reliant on high levels of student motivation, such as the Essential Learnings Framework (Tasmania, Department of Education, 2002) and school retention to 17 years of age (Tasmania, Department of Education, 2005b). Therefore, this study’s findings are implicated in these policies’ implementation at the school level.

Bailey et al. (2000) and Kazis and Goldberger (1995) identified the availability of suitable workplaces as a limiting factor on the continued growth of school-sponsored workplace learning. This study's findings relating to host workplace mentors provide an avenue of persuasion for school personnel that goes beyond relying on host enterprise philanthropy as a basis for a workplace-learning program and may yield new workplaces.

Implicit in the philanthropic motivation for participation is the notion that businesses that regularly expose themselves to public scrutiny, such as retailing, will find participation in school-sponsored workplace learning more attractive than those with a more modest public profile. Hence, there may be a range of businesses that feel less vulnerable to public opinion and not yet reached by school-sponsored workplace learning programs. These businesses may be responsive to persuasion focused on financial costs and benefits using this study's evidence of improved employee performance and productivity accruing from workplace mentors' positive affect attending their involvement in workplace learning. Moreover, greater involvement in teaching and learning may improve their morale (Price, 1991). Training for quality assurance in workplace learning may offer potential in this regard.

Workplace learning for compulsorily-enrolled high school students (Grades 7-10) is not quality assured, despite recognition of its value in re-engaging students at risk of early school leaving in the compulsory years of schooling (Cumming, 1998). Kazis and Goldberger (1995) raised concerns about quality assurance in workplace learning, a sentiment echoed by Hayward and Tallmadge (1995) and Cumming and Carbines (1997). As explained in Chapter 2, Australian workplace learning is evolving through several iterations from its original form of observation and minimal work engagement in the 1970s (Wright, 1976) to increasing formalisation, expressed in Australia as vocational education and training (VET) in schools for grades 11 and 12 students in post-compulsory schooling (Fullarton, 1999). It is unlikely, however,

that Tasmanian compulsorily-enrolled high school students will have increased access to VET in schools in the near future, and the present arrangements for unplanned work experience will continue (Tasmania, Department of Education, 2005d).

Therefore, schools may wish to establish enduring relationships with host enterprises and align them with mentor training in the manner of two studies reported in Chapter 2 (Browne, 2001; Linnehan, 2003) to enhance the quality of their workplace learning for junior high school students. There are further implications for this research related to research method and theoretical aspects of this field of inquiry which are discussed below under the heading *Implications for future research*.

Implications for host enterprises

As indicated above, Bailey et al. (2000) and Kazis and Goldberger (1995) noted that the limiting factor for the growth of school-sponsored workplace learning would be the supply of suitable host enterprises. The implications of this study for host enterprises is that traditional reliance on holistic organizational benefit such as increased community goodwill flowing from involvement in school-sponsored workplace learning (Bailey, et al., 2000; Bassi & Ludwig, 2000; Kazis & Goldberger, 1995) is now but one reason to be involved. Potential host enterprises should be aware of the concomitant employee benefits accruing from mentors' positive affect in the workplace. There is now the possibility that host enterprises can now '...measure the benefits that flow back to business' (Curtain, 2001: 33) from their involvement in school-sponsored workplace learning. These benefits may well take the form of improved workplace productivity through making employees happier (Côté, 1999). Where suitable training personnel are not present, perhaps mentor training for interested employees could be implemented in conjunction with the school partner in a manner similar to that cited as implications for school personnel above.

Implications for future research

Although unexpected sample mortality reduced some subsamples' statistical power, this study was small enough to capture essential aspects of the local character of the school that contributed to the findings and large enough to generate statistically significant and powerful findings at customary thresholds. The size of some larger studies can have a masking effect on some aspects of the research. For example, Kemple and Snipes (2000) found a slight positive effect for participants in career academies when data were averaged across their entire sample but, when they controlled for participants' SES and at-risk characteristics, significant positive effects emerged for reduced dropout rates, improved attendance, increased academic course taking, and increased likelihood of timely graduation. Thus, the smallness of this study is one of its strengths and, where customary thresholds for statistical significance and power were reached (Cohen, 1988; Peers, 1996), probability theory assured the generalisability of its findings (Allal & Cardinet, 1997). Its location in one school ensured a uniformity of approach, as did its location with one host enterprise. Nonetheless, there are some suggestions for further research that may add to knowledge in this research field.

Suggestion 1 (Methodological)

A longitudinal study combining quantitative and qualitative approaches to investigating school-sponsored workplace learning participants would confirm the value of workplace learning in school retention and longer-term commitment to learning and/or labour-market participation in the Australian context. This research could be linked retrospectively to affective outcomes aligned with the Affective Domain Taxonomy (Krathwohl et al., 1964) to measure the effect of higher-level positive affect at school on subsequent life chances. The usefulness of this measure is that it can be applied at earlier stages of schooling where timely detection and intervention may enable supportive interventions for students at risk of disengagement (Cumming, 1998), unlike other proxy measures such as graduation rates and labour-market participation that are detected at the conclusion of schooling. Maxwell and Rubin (2001) and Rivera-Batiz (2003) have reported similar

longitudinal studies in the United States, although they are not aligned with the Affective Domain Taxonomy.

Suggestion 2 (Methodological)

It is suggested that this study be replicated with a view to capturing larger samples of male students sufficient to meet statistical significance and power thresholds at small to medium effect sizes. Initially, this study attracted fewer males than females and unexpected sample mortality halved their original number. Whilst comparable effect sizes were found for males and females in some aspects of this study, insufficient statistical significance and power precluded rejection of null hypotheses. There is evidence related to gender differences in students' criteria for school engagement (Fullarton, 2002), and more extensive research with males could test whether similar factors may apply in school-sponsored workplace learning..

Suggestion 3 (Methodological)

The presence of indicators of positive affect attending workplace-mentoring roles for this study relied on retrospective self-reporting by workplace mentors as its source of data. Whilst this action did not threaten entirely the validity of this study (Wicker, 1969), Isen and Baron's (1991) reservations about the sole use of self-reporting were acknowledged in Chapter 3. Consequently, this field of inquiry may benefit from direct observation in workplaces to validate further workplace mentors' self-reporting as a data collection procedure. This action may allow also closer observations of mood in the workplace and thus determine the distinction between mood state and mood trait inherent in George and Brief's (1992) articulation of the indicators of affect adapted as proxy indicants for this study. Moreover, an element of direct observation may assist in disentangling the overlap between positive affect indicators noted above, thus progressing the research towards a discretely organised multi-level analysis. Again, a combined quantitative and qualitative research approach is recommended (Silverman, 2001). In this regard, corroborative on-site observation and/or self-reporting would complement a comparison group design that would add

precision to testing claims of productivity gains from workplace mentoring activities (Côté, 1999).

Suggestion 4 (Theoretical)

The association between school-sponsored workplace learning and students' improved motivation for school learning has been observed for over 20 years (e.g., Eggleston, 1982), yet there seems to be no explanation of any causal relationship underpinning this associative effect (Wonacott, 2002). Thus, continued research aimed at identifying and explaining the causal relationship between school-sponsored workplace learning and students' improved motivation for school learning could result in a more targeted and resource-efficient effort in using workplace-learning programs as a curriculum extension for educationally disadvantaged school students. For example, the gender differences found in this study and by Linnehan (1996) may or may not be an enduring feature of school-sponsored workplace-learning programs in the same way as they are in school engagement criteria (Fullarton, 2002).

A suitable starting point may be the emerging research findings supporting this study that address socio-economic disadvantage (or other forms of students' marginalisation) through workplace learning programs that engage and/or re-engage students with school (Kemple & Snipes, 2000; Linnehan, 2001, 2003; Rivera-Batiz, 2003). This research could range in scale from meta-analyses similar to those of Hughes et al. (2001), Saunders et al. (1996), and Wonacott (2002), to single-subject qualitative studies similar to that by Chin et al., (2004).

Summary

This research has addressed two questions related to school-sponsored workplace learning:

Research Question 1: Does participation in school-sponsored workplace learning improve socio-economically disadvantaged high school students' motivation for school learning?

Research Question 2: Does positive affect attend host workplace mentoring roles in school-sponsored workplace learning?

The first question was prompted by observation and anecdote that students participating in school-sponsored workplace learning appeared to return to school better motivated for their school learning. A large body of anecdotal literature supported these observations, but little empirical evidence was available. Therefore, a research project was established to measure the affective outcomes for school students participating in school-sponsored workplace learning. Positive effects on motivation for school learning were found for students of both genders at the first three levels of the Affective Domain Taxonomy (Krathwohl et al., 1964), with female students showing improvement of such statistical significance and power as to reject the null hypothesis and adopt the alternative:

H_1 : After participating in school-sponsored workplace learning, socio-economically disadvantaged female high school students will report improved motivation for school learning at Level 3 of the Affective Domain Taxonomy.

These findings confirmed the anecdotal evidence noted above and both have been confirmed by empirical research findings published since the experimental phase of this study in 1999. The value of this corroborative research lies in its informative power, in that recent policy formation and implementation in Tasmanian education will rely on more broadly based models of educational practice than those traditionally followed. In this regard, the demonstrated value of school-sponsored workplace learning for students' affective development will justify its place in school curricula.

The theme of affectivity was carried into the second research question in relation to host workplace mentoring roles. Isen and Baron (1991) identified mentoring as an activity that promoted positive affect and research by George and Brief (1992) into mood at work related to organizational behaviour was adapted to articulate the positive affect noted by Isen and Baron (1991). This model was then

applied to host workplace mentoring activities in the second phase of this research in 2000 and took account of Côté's (1999) recommendation to test the presence of positive affect at multiple levels in the organization. Accordingly, O'Connor's (1994b) workplace context layers provided contexts for discursive analysis of workplace interaction. Positive affect was found to attend workplace mentoring in activities related to helping co-workers, self-development, and spreading goodwill.

Limitations of this research

The presence of inherent biases in the research sample for Research Question 1 necessitated the adoption of Research Design 10 (Campbell & Stanley, 1963) for this study, and with that came certain limitations about its generalisability (Allal & Cardinet, 1997). As indicated in Chapter 2, randomised sampling is rare in this field of research (Hughes et al., 2001), and this study was no exception. Unexpectedly high sample mortality exacerbated this study's limitations, especially in respect of its findings relating to socio-economically disadvantaged males. Moreover, Control and Experimental subjects' access to each other at school during the pre- and post-test period meant that individuals' post-test responses might have been influenced by peer interaction. Nevertheless, the findings of this facet of the study are corroborated by later research and provide evidence about the effectiveness of school-sponsored workplace learning in improving socio-economically disadvantaged students' motivation for school learning.

With respect to research findings for Research Question 2, the opportunity sample comprising the surveyed host workplace mentors was limited to volunteers, and arguably self-selection through volunteering biased the sample towards the articulate and those most interested in the project. Thus, high rates of positive agreement should be read in view of that limitation. Likewise, volunteer interviewees would be similarly motivated, although extended dialogue with some about difficulties concerning students' accommodation in the supermarket delicatessen teamwork culture and departmental structure was illuminating in its frankness and provided penetrating insights through processes of reflection-in-action. This facet of

the study was unusual in that it sought to link knowledge of affectivity in the organizational behaviour literature with affectivity attending mentoring roles in school-sponsored workplace learning programs. Evidence was found confirming the attendance of certain positive affect indicators with workplace mentoring, although work site observation complementing subjects' self-reporting would have strengthened the validity of those findings.

CONCLUSION

This research makes an original contribution to knowledge in a number of ways. Firstly, it provides on reliable and valid data that yield generalisable findings of the effectiveness of school-sponsored workplace learning in improving socio-economically disadvantaged school students' motivation for school learning. This aspect of the research disentangles the effects of workplace learning from influences unrelated to the dependent variable, motivation for school learning, and concurrent changes in other motivating factors associated with an integrated program such as school organizational structures and school learning environments. Moreover, this aspect of the research is measured by motivational development through the structure afforded by the Affective Domain Taxonomy, thus providing more universally explicable measures than the more widely researched proxy measures that indirectly measure levels of motivation for school learning.

Secondly, this research links organizational behaviour research with school-sponsored workplace learning in a manner hitherto undetected in the literature. In so doing, the findings of this aspect of the research provide a basis for deeper inquiry into the productivity advantages for host enterprises participating in school-sponsored workplace learning. Such enquiry could focus on the positive effects of mentoring school students for employee morale, thus moving beyond the more commonly reported public relations promotion and recruitment benefits that are said to offset the financial costs of hosting workplace learning.

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