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ABSTRACT

A Canadian study of the school-to-work transition followed students enrolled in grade 11 in 1990 (n=177), 1992 (n=172), and 1994 (n=347) in Seven Oaks School Division's three high schools. Based largely on questions from the Statistics Canada (SC) School Leavers Survey and SC Graduates Study (1997), the telephone survey focused on these elements: background and demographic variables; high school experience; post-high school employment and education; skills used in current employment; and perceptions of where particular skills were acquired. A preliminary path analysis revealed significant variables contributing to high school and postsecondary experiences, skill development and use, and workplace outcomes. Cohorts differed notably in factors contributing to attainment at high school and postsecondary levels. Gender differences existed at the high school level on a range of outcomes from grades, completion rates, and goal setting; gender was not a significant factor contributing to postsecondary enrollment and completion. Background factors were more important predictors of economic and educational outcomes than participation in a particular educational program. Males made more money than females, and a postsecondary credential was associated with permanent employment and pay satisfaction. Communication skills were consistently rated most important in current jobs, and working with others was rated second most important. On-the-job learning and general life experience were viewed as important to development of all skill areas more frequently than were secondary or postsecondary education. (Contains 29 references.) (YLB)

Transition and Skills Development Through Education, Training and Work Experiences: A Follow-up Study, Seven Oaks School Division[1]

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Abstract

The WRNET project is concerned with linkages between education, training, and labour market outcomes, recognizing that these linkages may be numerous and complex. As part of the WRNET project, five Manitoba case studies were designed to investigate these linkages by interviewing individuals in various stages of the work career regarding past and present education and work activity. This paper provides an overview of the research being conducted within one of the Manitoba case studies. The Seven Oaks study surveyed three cohorts of high school students who were enrolled in grade 11 in 1990 (n=177), 1992 (n= 172), and 1994 (n=347). The results provide information on student backgrounds, high school experiences, postsecondary experiences, and work activity and attitudes. A preliminary path analysis reveals significant variables contributing to high school and postsecondary experiences, skill development and use, and workplace outcomes. Relationships between significant factors were observed across and between cohorts, indicating the complexity of the school to work transition, and patterns of change in the transition process over time. This paper describes the trends observed during preliminary data analysis, outlines plans for further analysis, and raises issues suggested by the results with respect to the determinants of educational attainment for diverse populations, the economic returns to education as they are distributed across individuals and types of educational experiences, and the kinds of knowledge and skills that are important to success in the contemporary workplace.

Introduction

Concern about the role of schooling in preparation for work has been an important element of recent criticism of education from governments, business groups and others (B. Levin, 1998). In part, these criticisms have emerged because the labour market itself has been changing in ways that affect contemporary relationships between education, work and economic outcomes. A clearer understanding of these changing relationships is critical to appropriate policy making and to effective educational practice. The research reported in this paper was designed to contribute to a better understanding of the school to work transition in a Canadian context by studying the education and work experiences of groups of high school students for a number of years after their secondary schooling. Because the school to work transition is an increasingly long and complex process (Krahn & Lowe, 1993), it was necessary to tap information about individuals' background characteristics, their secondary and postsecondary educational experiences, their work experiences, and their perceptions about the importance of specific skills and where they are acquired. This paper presents an overview of the trends observed during preliminary analysis of these data, and raises issues suggested by the results with respect to the determinants of educational attainment for diverse populations, the economic returns to education as they are distributed across individuals and types of educational experiences, and the kinds of knowledge and skills that are important to success in the contemporary workplace.

Because the secondary school experience is an essential element of understanding the school to work transistion, collaboration with one or more

secondary schools was critical to the success of the research project. Under the auspices of the Western Research Network on Education and Training, a research partnership was forged between The University of Manitoba and the Seven Oaks School Division. Seven Oaks is a suburban district in Winnipeg, serving about 9000 students. The district has three high schools, each of which has a distinct demographic profile. One school represents a blue-collar area that has seen declining economic fortunes and an increasing number of families with economic and social problems. A second school is in a suburban area with a large number of managerial and professional families and a strong history of focus on post-secondary education. The third school is in a multi-ethnic community with a highly diverse student population in terms of background and aspirations. These varied school populations provided opportunities to analyze the data collected for trends that cross contexts, as well as trends that vary between contexts.

In addition to providing varied school populations, Seven Oaks also had a established research track record. In particular, the origins of the current study lie in a study undertaken by the Seven Oaks School Division to investigate former students' perceptions of their schooling and its impact on them (Bryant, Lee, & Levin, 1997). Assisted by a research team consisting of their teachers, administrators, and external researchers, high school students designed a survey and administered it by telephone to several hundred former students. Based on this research, Seven Oaks was approached in the initial stages of developing the proposal for what become WRNET to see if they might have a continuing interest in collaborating on projects involving post-school activities of their students. This study emerged from that collaboration.

Focused literature review

Although this study grew out of a previous research project on improving high school education done in the Seven Oaks School Division (Bryant, Lee & Levin, 1997), the current research was more strongly linked than the last project to existing research on and conceptualizations of the process of transition from school to work. In particular, the research team began with the following literature-based assumptions about school-work dynamics:

1. The transition from school to work is now a long process, often taking more than a decade, and involving varying combinations of schooling, training, and work (Krahn & Lowe, 1993; Donaldson, 1993). The school to work transition often starts in high school, in that most high school students are already working on a part-time basis (Krahn et al., 1997).
2. Background factors remain the most powerful predictors of economic outcomes for individuals, and have more impact than formal education. The most important background factors include family socioeconomic status and education; gender; and ethnicity (Corack, 1998; DeBroucker & Lavallée, 1998). All of these factors are predictive of both schooling and labour market outcomes.
3. Post-school outcomes are strongly related to tracking in high school, which is itself strongly related to students' socioeconomic status and ethnicity (Krahn & Lowe, 1993).
4. Despite the fact that women benefit more than men from formal schooling, women are still quite disadvantaged in the labour market in terms of access to

training, pay, and promotion. The labour market is more occupationally segregated by sex than are educational programs (Krahn, 1996; Myles & Fawcett, 1990).

5. More years of education, and, even more so, having advanced credentials are strongly related to better economic outcomes, even though any given level is now less advantageous than it used to be (Krahn, 1996; Human Resources Development Canada, 1996; Little & Lapierre, 1996). Completion of high school alone is of very limited value as a labour market qualification (Canadian Labour Force Development Board, 1994; Frank, 1996; 1998). At the same time, recent evidence indicates that labour market outcomes of those without postsecondary education are holding steady in relation to postsecondary graduates (Human Resources Development Canada, 1998).
6. Despite the rhetoric about the importance of technical skills, all the available outcome indicators for university education are more positive than for technical education in colleges or private training institutes (Rubenson et al., 1994; Human Resources Development Canada, 1996; Little & Lapierre, 1996). However, this may be at least partly because students from the highest socioeconomic groups are much more likely to go to university.
7. While the completion of a particular credential is related to economic outcomes, school, college and university grades, or achievement levels within a program of study do not predict economic success (Sturm, 1993; H. Levin, 1998).
8. The overall labour market situation in Canada for young people has deteriorated significantly in the past twenty years in terms of employment rates, availability of

full-time work, and especially in terms of relative wages (Green & Beaudry, 1988; Krahn, 1996; Statistics Canada, 1998). Non-standard employment for 22-24 year olds is now at about 40% of total employment (Statistics Canada, 1998).

9. Significant proportions of young workers (20-30%) see themselves as overqualified for their work (Statistics Canada, 1998), but there are also shortages of workers in particular areas (Kelly et al., 1997; Krahn & Lowe, 1993; Livingstone, 1993).
10. The role of schooling in obtaining work is not well understood. Young people go to school largely to acquire qualifications rather than to learn particular skills (Gaskell, 1991). However, employers say that they are looking for general skills and attitudes rather than specific levels of academic preparation. Evidence also suggests that the process of finding work seems to be mainly personal, influenced much more by family background and personal contacts than by counselling services, analysis of labour market data, or careful decision-making (Tepperman, 1988). Consequently, we do not know whether finding work depends primarily on formal qualifications, on skills, on personal qualities, on personal contacts, or on some combination of these factors.
11. The relationship between skills required at work and skills acquired in school is largely unknown, although young people are generally critical about the value of high school education in regard to work (Ontario, 1989). We simply do not know very much about the skills people actually use at work or how they acquire those skills. Technology skills, for example, appear to be learned primarily on the job rather than through formal training (Rubenson et al., 1994; Tan et al., 1991).

Even in overview, this background literature reflects the complex nature of the school to work transition. A careful analysis of existing literature led to the design of a study that looked at several different components of the transition process, and specifically at those variables that have been linked to employment outcomes. The broad categories of data suggested by this literature include: background and demographic variables (such as gender and parental education); aspects of high school experience (such as career plans, academic track, or extra-curricular participation); post-high school employment and education; skills use in current employment; and perceptions of where particular skills were acquired. The temporal ordering of these literature-based categories determined the structure of the questionnaire and formed the basis for the causal structure of the path analysis. Within this structure, the focus on skills gives the current study a broader approach than many school to work studies which look only at employment outcomes, and often in a rather atheoretical way.

Method

Participants

The participants in this research attended grade 11 (Senior 3) at one of three high schools in the Seven Oaks School Division. The study involved follow-ups of students from the 1990-91, 1992-93, and 1994-95 grade 11 cohorts from each school. Students in the 1990-91 and 1992-93 cohorts had been identified during a previous study which used a telephone survey created by students in the Seven Oaks School Division to investigate former students' perceptions of high school (Bryant, Lee, & Levin, 1997). The 1994-95 cohort had not been previously interviewed. Name lists from which to sample potential respondents were provided by the school board, based

on their records. For the 1990-91 and 1992-93 cohorts, names to contact were randomly selected from those identified as having participated in the previous study, since the most current contact information was available for this group; for the 1994-95 cohort, names were randomly selected from all names on the list. A letter was sent to members of each cohort before data collection began, describing the study and indicating that they may be contacted by an interviewer.

The telephone survey

To optimize the response rate and the consistency with which data were collected, a telephone survey was selected as the best data collection strategy. The instrument was developed from a framework of major themes derived from the school to work literature, including: background and demographic variables; aspects of high school experience; post-high school employment and education; skills use in current employment; and perceptions of where particular skills were acquired. The telephone survey which resulted was based largely on questions drawn from the Statistics Canada School Leavers Survey and the Statistics Canada Graduates Study (1997). These items were chosen for their relevance to school to work transition issues in the local setting, and their potential for comparison with and contribution to a larger national data set. An early draft of the instrument was reviewed in a workshop setting by the research team, who consisted of university-based researchers, school board administrators, teachers, and students enrolled in a grade 12 (Senior 4) Language and Transactional English course. Based on these discussions, the instrument was modified to include questions of particular interest to the students

the teachers, and the division. Some questions that were collectively agreed upon to be less important were removed from the survey, in an attempt to reduce its length. As part of the instrument development process, students practiced administering the survey to fellow students, and made suggestions for improving the wording and sequencing of the survey. The final draft of the survey contained mostly multiple choice items designed for quantitative analysis, and a number of open-ended qualitative responses which were coded by the research team as part of the analysis. The comprehensive survey which resulted was organized into the following sections: high school experience; future plans/career goals; education/training experience; work experience; skills acquisition and use; extra-curricular and volunteer activities; and demographic information. Approximately forty-five minutes to one hour was required to complete each telephone interview.

Data collection

Data collection began as a school-based project, and was extended over the summer period to increase the size of the data base. During the school-based project, the data were collected by twenty students from across the three high schools in the division. In each school, students were directly supervised by their Language and Transactional English teacher. Students received partial course credit in their English class for their roles as student-researchers in all aspects of the research process. Students contributed to the development of the instrument; participated in workshops on research ethics, methods, and interpretation; and administered the survey. Throughout the process, students were encouraged to be critically aware of the

research process, and to engage their teachers and the university partners through discussion and journal entries about the concerns or questions they experienced.

In the first phase of data collection, students collected responses from 221 former students (47, 72, and 102 from the 1990-91, 1992-93, 1994-95 cohorts, respectively), over a four week period. Students were encouraged to attempt to contact a particular person a number of times, but were reminded that in this kind of research, it was not always possible to contact every person. After the data collection period, students participated in coding some of the data, interpreting the data, and asking their own questions of the data. Each of the three groups of students then wrote reports and presented their results to their class, parent groups, and the school board. During the process, students consulted with teachers on an ongoing basis. The students also met with a university research partner on a weekly basis, to receive assistance and to discuss any concerns.

The second phase of data collection occurred immediately following the school-based project. Three of the students were hired to continue the data collection over the summer, supervised by one of the university partners. In this second phase of data collection, respondents were sampled from the entire list of students in the 1990-91 and 1992-93 cohorts , not only from the lists of students who had participated in the previous study. Over a period of 2-3 months, data were obtained from an additional 475 former students, for a total of 696 surveys completed to date (177, 172, and 347 from the 1990-91, 1992-93, 1994-95 cohorts, respectively). Pending data analysis, it is possible that another round of data collection will be conducted by gathering more information on the three cohorts in 1999-2000.

A path analysis of the Seven Oaks data

The WRNET project is concerned with linkages between education, training, and labour market outcomes, recognizing that these linkages may be numerous and complex. The Seven Oaks study follows three cohorts of high school students who were enrolled in grade 11 in 1990, 1992 and 1994, and provides information on student backgrounds, high school experiences, postsecondary experiences, and work activity and attitudes. Given such a complex data set, path analysis is a useful technique to assess the linkages between education, training and labour market outcomes. Path analysis involves the identification and specification of causal relationships, or links, between activities and the measurement of those links using linear models (Knoke, 1985).

In the case of the Seven Oaks data, a path analysis can be started with the link between background and high school experience. First, a group of background factors such as education of parents, visible minority status, English as a second language, and gender can be identified as "B". A second set of factors associated with the high school experience such as attainment of a high school degree, establishment of career goals in high school, academic achievement, and the holding of a part-time job can be identified as "H". Using path analysis, B can be related to H: causal chains, or links, could run from each background variable to each of the variables representing the high school experience.

Statistical support for the linkages specified can be established by making an empirical assessment of the importance of the various linkages using linear multiple regression. Since many of the factors to be explained are binary or dummy variables

taking on a value of zero or one, nonlinear modeling (e.g. probit or logit modeling) might be attractive option in future research. These modeling techniques could also be extended to systems of equations to account for links between contemporaneous factors (e.g. academic achievement and holding a part-time job). Thus, any element of H (e.g., attainment of a high school degree) could be explained in terms of background variables B, and standardized regression coefficients for each factor would provide estimates of the partial correlation coefficient between that factor and attainment of a high school degree (Hayduk, 1987). The significance of each coefficient can then be assessed using standard regression criteria (t-values).

The analysis becomes more complex as more paths are added. In the case of the Seven Oaks data, links to postsecondary experiences (P) referring to such measured factors as postsecondary attendance and attainment of a degree or diploma can be added. Then background factors (B) would have both direct and indirect links on P. The direct links from B to P would bypass, and hence add to, any indirect links from B to P via H (e.g. from father's education to postsecondary attendance through high school academic achievement). To incorporate both direct and indirect links, both B and H would need to be included in a regression to explain individual factors associated with P. Regression coefficients for B would represent direct links with P while coefficients for H would represent both direct links between H and P and indirect links to P through B.

Similarly, a fourth layer of complexity involving work activity and attitudes (W) could be added, referring to such factors as job stability, job satisfaction, qualifications and skills used, and earnings. Then background factors B might have

direct link to W plus indirect links through H and P. High school experience factors H might have both direct links to W plus indirect links through P. And postsecondary experience P would have direct links to W. These direct and indirect links would be captured in a regression explaining factors of W in terms of B, H and P. This approach is summarized in Figure 1, which also provides a complete list of variables considered at each stage.

(Insert Figure 1 about here)

The task, then, is to estimate by multiple regression these four sets of links. In Figure 2, preliminary results are presented in terms of significant factors for each variable in each stage (B, H, P and W) for those respondents who were working and not in school at the time of the survey (Spring, 1998). An estimate of the correlation of the residual factor for each regression is also provided. The correlation of the residual factor is given by $1-R^2$, where R^2 is the coefficient of determination, which indicates the proportion of total variation in the dependent variable explained by the independent variables or regressors. The first set of results on the left-hand side of Figure 2, for example, indicate the significant background factors and their direct correlation with high school experiences. Thus, young women are more likely to receive a high school diploma by the time of the survey than young men, with a correlation coefficient of 0.16 (a one standard deviation increase in the proportion of students who are young women would increase the proportion of students receiving high school diplomas by 0.16 standard deviation). Since the three cohorts of students have been combined, a dummy variable has been included to identify each

respondent's cohort. Not surprisingly, those in the latest (1994) cohort are significantly less likely to have received their high school diploma by 1998.

(Insert Figure 2 about here)

Among background factors (B), gender and father's education are consistent significant factors in explaining whether respondents included postsecondary schooling in their goals, made definite plans, or received a particular level of grades. Gender is a consistent significant factor in explaining whether students received a high school diploma, established a career goal in grade 11, failed courses, or took "S" level (university entrance) courses. Father' education is a significant factor in explaining whether students took "S" level mathematics. An exception to the strong influence of gender and father's education on high school outcomes is that only visible minority status is significant in explaining part-time employment in high school: students who are not members of a visible minority are more likely to hold a part-time job.

The second, or middle, set of results in Figure 2 explain postsecondary education experiences in terms of background and high school experience. Postsecondary enrollment is (significantly) positively correlated with completion of high school, establishment of a postsecondary schooling goal by grade 11, and enrollment in "S" level courses and "S" level mathematics in grade 11. Enrollment in a university degree program is (significantly) positively correlated with completion of high school, establishment of a school goal, enrollment in "S" level courses, and mother's education. Across cohorts, enrollment in a university degree program is (significantly) negatively correlated with the establishment of a career goal. Both the

1992 and 1994 cohorts are less likely to have enrolled in a university degree program or any postsecondary program since high school. This observation likely reflects the shorter period of time between grade 11 and the time of the survey for these respondents. Enrollment in a postsecondary diploma program is (significantly) positively correlated with high school completion, and negatively correlated with establishment of a school goal and mother's education.

These results suggest, not surprisingly, that academic performance by grade 11 is a significant factor determining postsecondary enrollment during the first 3-7 years after leaving high school. Students establishing postsecondary school goals by grade 11 tend to be directed toward university degree programs rather than other postsecondary diploma programs. Among background factors, only mother's education has a direct link to postsecondary enrollment (positive for university programs and negative for other postsecondary diploma programs). Despite findings that young women perform better in high school, are more likely to take "S" level courses, are more likely to complete high school, and are more likely to have postsecondary school ambitions, there is only an indirect link between gender and postsecondary enrollment through high school academic performance. Similarly, there is an indirect link between father's education and postsecondary enrollment through school goals and enrollment in "S" level math in high school. Factors often thought to play a significant role in postsecondary enrollment, such as English as a second language, do not appear to be important in this population.

Finally, the results in the right-hand column relate background factors (B), high school experience (H), and postsecondary enrollment (P) to work outcomes (W).

There are a large number of results in this column, many of which require further analysis. In overview, several patterns are notable. First, the generation of high school and postsecondary academic goals are two factors that are negatively correlated with possession of a permanent job in 1998, probably because some of those with postsecondary ambitions had not completed a chosen program, and were working on an interim basis to support their studies. Second, those with career goals in high school, good high school grades, and males are more likely to receive higher annual pay and higher hourly wages. Since young women are more likely to have had career goals and higher grades, it would appear that males somehow compensate (or are compensated) for these deficiencies when it comes to earnings. Third, a part-time job in high school and a postsecondary diploma both contribute toward satisfaction with pay, perhaps because recent university graduates and part-time employees are at a much earlier stage in their long-term employment search and less likely to be focused on pay as a primary outcome at this point.

A number of questions concerning the use of various skills – technical, communication, math, design, working with others, and analytical – were also used to measure outcomes, but no clear patterns emerged. Based on the analysis to date, it is possible that these skill categories should form an intermediate stage of path analysis between postsecondary experience and work outcomes, and that B, H, and P are factors linked with skills, which in turn are linked with work outcomes. More detailed analysis of the skills acquisition and use data is planned.

Generally speaking, correlation of the residual factor remains large in all analyses. It is smallest in explaining university degree program enrollment (0.76),

annual pay (0.81) and hourly wage (0.87), but is above 0.9 in all other cases. In the case of job satisfaction, none of the factors considered was found to have a significant influence. The general lack of explanatory power is somewhat disappointing, although considerable unexplained residual variation is a common feature of studies of the factors determining work outcomes across individuals. These preliminary results suggest that a more fine-grained analysis of this rich data base would be worthwhile.

The cohort variables are significant in many of the regressions emerge in predictable ways. For instance, respondents from the later (1992, 1994) cohorts are less likely to have completed schooling and settled into permanent employment. Analysis of the data from the 1990 cohort alone may provide the most useful insights into the transition from school to work, since this group is most likely to have completed that transition. These preliminary findings are consistent with established trends for long-term transitions from school to work, and also support the argument for sustaining the longitudinal follow-up of the cohorts participating in this research project.

Discussion

The complex and variable dynamic that characterizes relationships among formal education, training, and work experience is reflected in the experiences of the graduates who participated in this study. Preliminary analyses of the data can be organized around three central questions and their implications for practice, policy, and further analysis of the data set:

- what are the determinants of educational attainment for diverse populations?

- how are economic returns to education distributed across individuals and types of educational experiences?
- what kinds of knowledge and skills are important to success in the contemporary workplace?

The determinants of educational attainment

With respect to the factors that contribute to educational attainment at secondary and postsecondary levels, the rich data set collected permitted a more fine-grained analysis than is usually reported. Across cohorts, there were notable differences in the factors contributing to attainment at the high school and postsecondary levels. For instance, while gender differences existed at the high school level on a range of outcomes from grades, completion rates, and goal setting, gender was not a significant factor contributing to postsecondary enrollment and completion. In addition, a number of significant patterns were observed that contribute to understanding the mechanisms by which well-established global factors such as gender or parents' education exert their influence. As an example, fathers' education was observed to influence the likelihood that students would make definite plans for postsecondary education. Not surprisingly, making definite plans was a significant factor in postsecondary enrollment, and on choosing a degree program in particular. While these results are consistent with widely reported trends for background factors to be more powerful predictors of economic and educational outcomes than participation in a particular educational program, they also suggest ways to mitigate some of the negative influences of socioeconomic factors that seem impervious to

control. Further analysis will focus on differences observed between secondary and postsecondary educational environments and across individuals to determine which contextual influences should be considered in both practice and policy setting.

The implications of these data for education practices are notable, given the strength of background variables on educational and economic outcomes. On the surface, these factors seem to be difficult or impossible to influence through education and training. A preliminary analysis of the data collected in this study suggests that, by examining influences associated with these background variables, it may be possible to integrate learning experiences that compensate, to some degree, for students' social and economic circumstances. For example, setting career goals is a significant factor in reported income, and in the development of specific skills including communication and analytical skills. In addition, making plans for postsecondary study has a positive influence on postsecondary educational attainment and on the development of technical skills and the ability to work with others. These results also suggest that for this group, these behaviours are more strongly associated with some background variables (female; fathers' education). It may be that by explicitly teaching and practicing such behaviours, that personal skills associated with positive educational and employment outcomes can be acquired by a broader cross-section of students. From a policy perspective, these types of goal setting and self-management skills are among those identified by employers. Based on research results such as these, the development of these types of skills also can be argued from a comprehensive student success perspective to appeal to the broader educational goals set held by educators and parents. From a research perspective, these preliminary results call for further

attention to factors associated with background variables in the present data set, and further research in different contexts to determine the robustness of the trends observed.

A second kind of implication arises from emerging patterns of change in these data. In particular, the findings that males reported lower grades and failing more courses, run counter to established perceptions about gender and academic success. This phenomenon bears further analysis in the current study, and investigation in other contexts, especially in the light of growing evidence of underachievement among affluent young males (Flacks & Thomas, 1998).

Taken together, these data suggest that there is potential for leverage on the strong influence of background characteristics on educational and employment outcomes. To exercise leverage, however, policy makers will need to allow for flexibility to accommodate different circumstances; practitioners will have to monitor and identify the specific needs of their students; and school communities will need to conduct research to profile the needs of their students.

The distribution of economic returns

The key indicators of economic returns were whether the current job was perceived as permanent or temporary, level of pay, satisfaction with job, satisfaction with pay, and perceived over-qualification. Across cohorts, the experiences reported by participants were consistent with existing research literature: males made more money than females; and a postsecondary credential was associated with permanent employment and satisfaction with pay. However, patterns of significant factors also

varied across cohorts. In particular, the 1992 cohort reported less satisfaction with part-time jobs and the pay received for part-time work. At this point in their transition to the workplace, the 1992 cohort also reported lower annual incomes if they held only a high school diploma. In this same cohort, females and immigrants were more likely to feel overqualified for their jobs; and visible minorities were less satisfied with their pay. These shifts in patterns across cohorts suggest that transition to work is a long term process that changes over time. Perhaps more importantly, the persistence of established patterns of inequity in the workplace related to education, gender and ethnicity demonstrate that policies and programs to address the employment challenges faced by new comers to the labour market, by women, and by minority groups have not had the intended impact. Further data analysis will focus on identifying possible patterns of events extending back into high school experiences that might strengthen the strategies currently used.

A finding that was not reported in the research on which this work is based is the importance of setting career goals. Across all cohorts, setting career goals was a significant factor related to income. However, the 1992 cohort also demonstrated an important relationship between setting career goals and obtaining permanent employment and job satisfaction in the longer term. From a practice perspective, one way to address some of the inequities observed may be to encourage educators and employers to emphasize career goal setting, beginning at the high school level. At the very least, goal setting is a variable that merits more attention in research on transitions between education and work.

The experiences of the respondents also underline the importance of postsecondary education to job satisfaction and income. Notwithstanding arguments about inflated job requirements, a postsecondary credential of some kind has become the entry requirement for many career paths. This trend, and long-established evidence on job satisfaction and income, raise policy questions around access to postsecondary programs as a fundamental equity issue.

Important kinds of knowledge and skills

The existing research literature reveals gaps between skills sets desired by employers, developed in the high school curriculum, and perceived by students to be important. This literature also questions whether we really know what skills are actually used in the workplace, as opposed to skills merely perceived as important.

Respondents reported strong views on which skills were most valuable to them in the workplace. Across cohorts, communication skills such as writing and speaking were consistently rated most important in current jobs, and working with others was consistently rated second. Both choices were reported with overwhelming margins compared to technical, problem solving, design, or mathematical skills. Also notable was the observation that a variety of experiences contributed to skill development. Respondents indicated that their high school courses were more important to the development of their mathematical and technical skills than their communications or people skills. In contrast, on-the-job learning and general life experience were viewed as important to the development of all skill areas more frequently than either secondary or postsecondary education. At a policy level, these

preliminary results suggest that the articulation between formal education and the needs of the employment community could be improved. At a practice level, the role of work experience and real life applications appears to have broader cognitive effects than enhancing employability. Further analysis of this data set will include in-depth examination of important skill sets and how they are acquired, and whether these patterns vary across job categories.

Conclusion

Understanding which education and training strategies optimize the work and life experiences of different groups has never been more important. The education and training sector is facing unprecedented criticism and demands for accountability. However, neither the shortcomings identified nor the solutions to address them can be understood from the perspective of the education system alone. In the contemporary context, both policy and practice decisions must be made through a complex set of contextual filters that include pressures from the labour market, changing social values with respect to education and to life in general, diminishing financial resources, and competing educational goals. Research to support decision making must generate knowledge about the processes of education and transition throughout the life span, and the contexts in which these processes take place. The current case study illuminates some of these issues and, when data analysis is completed, will provide a more comprehensive understanding of how the school to work transition can be optimized for different kinds of learners.

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B ——> H ——> P ——> W

BACKGROUND ——> HIGH SCHOOL ——> POSTSECONDARY ——> WORK

GENDER

ENGLISH AS 2ND LANGUAGE

VISIBLE MINORITY

FATHER COMPLETED H.S.

MOTHER COMPLETED H.S.

LONG-TERM DISABLED

COMPLETED H.S.

CAREER GOAL DEFINED

POSTSEC. PLANS

(VERY)DEFINITE PLANS

GRADE LEVEL

FAILED COURSES

S" COURSES

MATH "S"

PART-TIME JOB

ENROLLED IN P.S. PROGRAM

ENROLLED IN BATCHELOR'S PROGRAM

ENROLLED IN GRADUATE PROGRAM

PERMANENT JOB

FEEL OVERQUALIFIED

SATISFIED WITH JOB

SATISFIED WITH PAY

JOB REQUIRES TECHNICAL SKILLS

JOB REQUIRES COMMUNICATION SKILLS

JOB REQUIRES MATH SKILLS

JOB REQUIRES DESIGN SKILLS

JOB REQUIRES WORKING WITH PEOPLE

JOB REQUIRES ANALYTICAL SKILLS

Figure 2: Seven Oaks Path Analysis Results

S[illegible]e of Those Now Working and not in School for all Cohorts (1990, 1992, 1994; n=483)

B--> H

B[illegible]ound-->High School

SignificantFactors[1] (correl. coeff.)	Measured Outcome (residual factor)
Female (0.16)	H.S.Diploma
1994 Cohort (-0.19)	(0.97)
Female (0.14)	Career Goal
Eng.2nd Lang.(-0.11)	(0.98)
Female (0.24)	School Goal
Father's ed. (0.15)	(0.96)
Female (0.19)	Definite Plans
Father's ed.(0.12)	(0.97)
Female (0.16)	Grades (3=A,2=B,
Father's ed.(0.11)	1=C)(0.98)
Male (0.14)	Failed Courses (0.98)
Female (0.17)	"S" Courses (0.98)
Father's ed.(0.16)	"S" Math (0.98)
Vis. Minority(-0.14)	Part-time Job (0.98)

B,H--> P

Background, H.S.--> Postsecondary

SignificantFactors (correl. coeff.)	Measured Outcome (residual factor)
H.S.Diploma (0.23)	P.S. enrolment
School Goal(0.20)	(0.82)
S" Courses(0.16)	
S" Math (0.12)	
1992 Cohort (-0.20)	
1994 Cohort (-0.27)	
H.S.Diploma (0.10)	B.A.
Career Goal(-0.08)	(0.76)
School Goal(0.28)	
S" Courses(0.21)	
Mother's ed.(0.17)	
1992 Cohort (-0.22)	
1994 Cohort (-0.18)	
H.S.Diploma (0.13)	P.S.Diploma
School Goal(-0.11)	(0.94)
Mother's ed.(-0.11)	

B,H,P--> W

B'ground, H.S., P.S.-->Work

SignificantFactors (correl. coeff.)	Measured Outcome (residual factor)
H.S. Diploma(-0.11)	Permanent Job
School Goal(-0.13)	(0.91)
Failed Courses(-0.09)	
P.S.Diploma(0.20)	
1992 Cohort(-0.18)	
1994 Cohort(-0.33)	
Definite Plans((.15)	Overqualified for Job
Mother's ed.(0.15)	(0.96)
1992 Cohort (-0.18)	
No factors significant	Satisfied with Job (0.98)
Part-time Job(0.09)	Satisfied with Pay
P.S.Diploma(0.19)	(0.96)
1994 Cohort(0.11)	
Career Goal(0.13)	Annual Pay (n=316)
Grades(0.19)	(0.81)
Male(0.34)	
1992 Cohort(-0.41)	
1994 Cohort(-0.51)	
Career Goal(0.14)	Hourly Wage (n=316)
Grades(0.16)	(0.87)
Male(0.24)	
1992 Cohort (-0.30)	
1994 Cohort (-0.48)	
School Goal(0.14)	Technical Skills
Father's ed.(-0.17)	(0.96)
Career Goal(0.11)	Communication Skills
Definite Plans((-0.14)	(0.96)
Grades(0.13)	
Grades(0.11)	Math Skills
Failed Courses(0.11)	(0.96)
1994 Cohort (0.14)	
H.S. Diploma(-0.12)	Design Skills
"S" Math(-0.23)	((0.94)
Male(0.19)	
Eng 2nd Lang(0.13)	
B.A.(0.24)	
P.S.Diploma(0.20)	
H.S. Diploma(0.13)	Working with Others
School Goal(-0.20)	((0.94)
Definite Plans(0.11)	
Part-time Job(0.12)	
Vis Minority (-0.11)	
H.S. Diploma(-0.19)	Analytical Skills
Career Goal(0.14)	((0.93)
Grades(0.12)	
B.A.(0.24)	
P.S.Diploma(0.19)	

[1]Effect is significant at 5% level (determined by ordinary least squares multiple regression)

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