

**An Evaluation of the Manufacturing  
Technology Partnership (MTP) Program**

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## EXECUTIVE SUMMARY

The Manufacturing Technology Partnership (MTP) Program has established itself as one of the country's premiere school-to-work programs. In the short span of a few years, the program has matured from concept to full operation. What is remarkable is that MTP was conceived, developed, and launched locally, using local resources, at a time when the national school-to-work initiative was just germinating and there were few models or resources upon which the Flint, Michigan partnership could rely. The program has encountered its share of impediments and growing pains as would be expected of a pioneer; but its excellent reputation at the local, state, and national levels indicates that the partnership organizations and individuals affiliated with the program have blazed a trail that others will follow.

The MTP Program originated as a pre-apprenticeship program, but it has evolved into a more general school-to-work program that prepares young people for careers in manufacturing. It was designed to be a school-based program that prepared 11th and 12th grade high school students to take the General Motors/United Auto Workers (GM/UAW) skilled trades apprenticeship test. A particular goal was to foster the participation of minority students and women. The program, as originated, supplemented a formal curriculum in manufacturing at the Genesee Area Skill Center (GASC) Technology Center with work-based experiences at GM. Over time, however, additional employers joined the MTP team, and the presence of these new partners has resulted in a broadened program that prepares youth for manufacturing, not just skilled trades in the automotive sector.

This study presents the findings and recommendations from an evaluation of the MTP Program. A particular emphasis of the evaluation is the estimation of the impacts of the MTP Program on students. After all, no matter how highly regarded an educational intervention is, success must be measured by its effects on student outcomes. The intent of the impact study is to answer the question of how outcomes for the students who encounter MTP compare to what would have happened to these young people if MTP did not exist. That is to say, the focus of the study is on determining *net* impacts rather than *gross* impacts. Net impacts are determined by using a comparison group design. Comparison groups of students who were observationally similar to the first two classes of MTP students were developed. Then the high school

experiences, postsecondary program attendance, and labor market outcomes of the MTP students were compared to the comparison group members. The differences in outcomes between the MTP and comparison groups are attributed to the MTP Program.

The analytical findings suggest that MTP had relatively positive net effects, particularly in high school. The average high school grade point averages and average class ranks were higher for the MTP students than for their comparison group counterparts. Furthermore, MTP dramatically reduced absences. Comparisons of coursetaking patterns were somewhat less positive. As would be expected, the MTP students had considerably higher levels of vocational education credits than did the comparison group students. But the question remains as to what courses they were not taking. On a positive note, it turns out that MTP did not diminish the number of math or science courses for the first MTP class. In fact, the first MTP class ended up with more math and science credits in addition to having more vocational credits relative to their comparison groups. However, the evidence suggests that the second MTP class substituted some vocational education (or MTP) courses for math and for science relative to their comparison groups.

At the postsecondary level, the average attendance rates were generally higher for the MTP classes than for the comparison groups. However, these findings are not very strong empirically nor are they statistically significant.

A final outcome that we examined was labor market measures, such as employment rates, wage rates, and average hours worked. The evidence suggests that MTP bestows young people with advantages in all three areas. Half of the first MTP class were seniors when they enrolled in MTP and, for them, the latest employment data that we collected measured their status almost two and one-half years after high school graduation. We found that 80 percent of these individuals reported themselves to be employed at an average wage of \$10.69 per hour as compared to just under 70 percent of the comparison group who reported an average wage of \$5.92. (Presumably this differential is due partially to a number of ex-MTP students becoming employed at the GM Truck and Bus Plant.) The average number of hours worked per week was virtually identical for these two groups. When the entire first MTP class (both those who started as seniors and as juniors) is compared to all of the comparison group members, the employment

rate, wage rate, and average hours of weekly employment are all greater. The wage advantage is almost 75 percent—\$9.79 per hour compared to \$5.59.

The most recent employment data that we collected from the second MTP class and its comparison group are confounded by the fact that many of these young people are in the first semester of a postsecondary program. So noting, we found that the average wages earned and the average hours of work per week reported by the MTP students are greater than for their comparison group counterparts. On average, the second MTP class members were earning \$5.81 per hour and working 31.2 hours per week as compared to \$5.20 and 25.2 hours per week.

In addition to addressing the net impact questions, the evaluation included a process study that examined the day-to-day operation of the program. Over the course of a year and a half, project staff visited the program several times and conducted structured interviews with individuals who held a stake in it. They interviewed students, teachers, administrators, employers, postsecondary administrators, and representatives of school districts and other organizations that were involved with MTP.

Our site visits spanned the second and third year of instruction in MTP and gave us the opportunity to interview students in both of the first two MTP classes. Our general observation was that the program changed considerably over time and that each class was distinct. The evolutionary nature of the program has, for the most part, been positive. The program has been learning by doing. In its first year, the program accepted some students who did not meet all of the entrance requirements and found that it had to dismiss a substantial number of students who did not progress sufficiently. As a consequence, the program has been more careful in maintaining its acceptance criteria.

The curriculum has changed over the years in response to employers' suggestions and instructors' experiences. The changes have not been dramatic in scope, but rather they have been of a marginal nature with each change intended to improve the program. It strikes us that the flexibility and adaptability that the MTP Program has demonstrated fits well the milieu within which the program's employer partners operate. It is quite appropriate that a program that strives to provide students with world-class manufacturing skills should itself have the flexibility and adaptability that are hallmarks of today's manufacturers.

A change that strikes us as less positive is the retrenchment on promises made to students and the lack of curriculum coordination between the GASC Technology Center (also called the Skill Center) and postsecondary education. All parties rationalize carefully that there have been no broken promises, but it is clear, from early case study notes and program literature, that the intent of the program was to support a student's progress toward an associate's degree in Manufacturing Sciences as long as he or she passed the apprenticeship test and made adequate progress. It should be noted that the federal Job Training Partnership Act (JTPA) Program, which was to have supported some training, has been substantially curtailed since the beginning of the program. Thus part of the retrenchment emanates from federal cutbacks in training.

This report presents several findings and recommendations. However, several shortcomings of the evaluation merit mention. First, the MTP Program has been developing and changing over the course of its short lifetime. Curriculum, employer partners, students, instructional staff, and funding levels have all changed, for example, which makes the program a moving target to evaluate. The results reported here pertain to the first two classes of students at the Skill Center and are relevant to the program as it operated between fall 1992 and fall 1994. The conclusions may not characterize the program that operates today or its students.

Second, the student outcomes that have been tracked include high school, postsecondary education, employment, and earnings through September 1995. This timeframe allows the measurement and observation of student outcomes for between one-half year to about two and one-half years after high school graduation. However, the impacts of the MTP Program on students may be greatest after several years have passed. (The MTP Program may result in skilled trade apprenticeships, for example, or it may result in postsecondary courses of study that take several years to complete.) In this case, not enough time has passed to draw a reasonable picture of the program's success.

Third, although the impact evaluation method on which we relied was the most rigorous that was feasible, it is still open to criticism. We attempted to construct comparison groups of students that were similar to the MTP students, but we know that there were still important differences between the MTP students and the members of the comparison groups. Finally, the study's sample sizes are modest. This emanates from the fact that the size of the MTP classes are

limited and from the difficulty in enlisting comparison group members. Furthermore, the outcome data that have been tracked were collected over a period of three years, and sample attrition occurred.

These limitations need to be kept in mind in interpreting the findings and recommendations within this report. Despite facing challenges along the course of its development from concept to the classroom, the MTP Program has achieved many successes. Perhaps its most successful accomplishment is that in a rather short period of time, the MTP Program has become a pre-eminent school-to-work program. It has earned considerable public attention in Genesee County, in the State of Michigan, and even in the nation. It is the core from which Flint area educators are developing their school-to-work programming. The program has expanded along virtually all of its dimensions. In its first year of classes, MTP worked primarily with a single school district and with a single employer (the Truck and Bus Plant). In ensuing years, many more districts have sent students to MTP. Also, more and more employers have become program partners. In the span of a few years, the program has gained countywide recognition from educators, from employers, and from organized labor.

The program's successes have been recognized in the Genesee County area, but also on the national scene. In June 1994, President Clinton signed the national School-to-Work Opportunities Act while sitting at a desk that was designed and fabricated by MTP students. Several MTP students and staff attended the bill-signing ceremony, at which the president recognized the exemplary nature of the program.

To earn its renown and to have become so well rooted in the community, the MTP Program must be offering effective program features. This appears to be the case. For example, the program has successfully crafted and implemented a dynamic curriculum. The curriculum integrated vocational and academic skills—before such integration became in vogue nationally. The curriculum development team has consistently included academic teachers. Another strength of the program is that its teachers came from industry and had years of applied experience in the field they were teaching. In addition to careful attention to the curriculum and staff experience, the MTP Program has tried to provide instructors and students with appropriate equipment. Finally, employers seem to feel ownership in the program. Several employers have made strong

commitments to the MTP Program as a way to improve the supply of skilled workers in the future.

Of course, the bottom line for the MTP Program is the students it is serving. Through our site visits and data collection, we became aware of some student success stories, and presumably program staff could relate many others. The type of success at which the MTP Program is aiming is epitomized by a minority individual in the first MTP class who scored in the top five percent on the apprenticeship test. He has been hired into a skilled trades apprenticeship at one of the area GM plants and is well on his way to a stable, high-paying career within a year after graduating from high school. Another student, a minority female, from the second MTP class has established a long-term employment relationship with a small employer. She worked for this employer during her first two years in the program, and the employer has subsequently decided to sponsor further education for her in an engineering discipline at General Motors Institute (GMI). A staff person at the employing company told us that without MTP, the company would have been highly unlikely to take a chance on a high school student, like this young lady. Besides these particular student success stories, it should be noted that MTP has achieved a high level of participation of females. Over one-third of its graduates have been young women.

The MTP Program has achieved many successes, but it also has several challenges to address. Perhaps its greatest challenge is to integrate successfully a postsecondary component into the program. The program did not carefully track where individuals attended postsecondary programs, nor did it attempt systematically to stay in contact with former students. Furthermore, the program's partners have been conflicted about whether financial support promises were made to students and by whom. Because of personnel and structuring changes at the two-year institutions in the area, former MTP students have been essentially cut loose to make it on their own.

A second major challenge for the program is the integration of work-based and school-based learning. An important premise of school-to-work programs is that the context of work activities will reinforce or enhance learning. Students will get to see the practical application of their skills and knowledge, or skills will be learned in a hands-on fashion. However, it seems clear that there must be significant coordination between the employers and program instructors to

achieve these ends. With MTP, we observed a considerable level of input from employers into what got taught in the school-based portion of the program. But we found scant evidence of any attempt to coordinate what was being done in the workplace with what was being learned at school.

We conclude the report with the following set of programmatic suggestions:

- **Develop pre-MTP skills enhancement classes for 9th or 10th graders or for elementary levels**
- **Reinvigorate the postsecondary component of the program**
- **Institute work-slot rotation in the 11th Grade**
- **Improve the coordination of school-based and work-based learning activities**
- **Re-energize the MTP Advisory Committee**
- **Establish support mechanisms for female MTP students**
- **Monitor program per student costs and strive to reduce them**

School-to-work programs such as the MTP Program have the potential to improve significantly the educational experiences and career prospects of America's young people. The extent to which these programs achieve their potential should be consistently monitored and evaluated. The MTP Program has achieved successes, but as with the manufacturing sector of the economy, it should be striving for a total quality approach. We hope that the findings and recommendations of this study will provide the impetus for a feedback loop that enhances the program.