

Winona ORC Transition Program Analysis

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ABSTRACT

The goal of the School Transition Program at Winona ORC Industries is to provide vocational training and income-producing employment to high school students with disabilities. During the past 13 years, extensive records have been kept on the approximately 120 students who have participated in the Transition Program. This paper summarizes and analyzes that information. It was found that employment immediately after completion of the Program is related to various participant characteristics but that long-term employment cannot easily be predicted by these factors.

BACKGROUND

The mission of Winona ORC Industries is to provide vocational rehabilitation, employment opportunities and related social services to adults with disabilities. For the past 13 years, however, ORC Industries has participated in a School Transition Program, serving high school students with disabilities. The School Transition Program offers job training services and income-producing employment to students, in an attempt to maximize their future vocational potential.

PURPOSE OF THE STUDY

During the past 13 years, approximately 120 high school students participated in the School Transition Program. Winona ORC Industries has kept extensive records for each individual. The purpose of this study is to summarize that information and to determine which factors are the most significant in predicting future employment success for Transition Program participants.

DATA DESCRIPTION

Data was collected from the written files kept at ORC Industries and from ORC employees who were knowledgeable about the participants. Both personal information, such as birth date, disability or marital status, as well as job-related information as salary, dependability, or job satisfaction were recorded. It was also noted whether participants found employment immediately after they left the program and what their general employment history was for the three subsequent years.

Because of the large amount of information available, relevant variables needed to be chosen. Some data, such as number of persons in the household, was not used because of incomplete records. Other information was combined into a single variable, for example,

yearly wage history was recorded as an overall average wage. Still other data, such as birth date, was not used because it did not seem relevant to the purpose of this study.

Since information about whether participants worked full-time or part-time after they left the program or about how long they stayed with an employer was not available, data describing employment history was recorded simply as whether the participant was “generally employed” or not. If records showed that a participant worked sometime during at least two of the three years subsequent to leaving the program, they were considered to be “generally employed”.

Fourteen variables were finally chosen as being the most relevant and most complete:

- Disability (mental retardation / behavior disability / other disabilities)
- Gender (male / female)
- Chemical dependence (yes / no)
- High school diploma received (yes / no)
- Criminal conviction or jail time prior to or during program (yes / presumed no)
- Criminal conviction or jail time after leaving program (yes / presumed no)
- Months in the program
- Average overall rating of participation in the program (1 = worst, 5 = best)
- Average attendance percentage
- Average hourly wage
- Participation in program during last semester in school (yes / no)
- Reason leaving the program (graduation or maximum age attained or found employment / school or other program / quit or terminated)
- Job immediately when leaving the program (yes / no)
- Generally employed for three years after leaving the program (yes / no)

PROFILE OF PARTICIPANTS

There were 119 participants in all.

Disability:	MR: 54.6%	BD: 25.2%	Other: 20.2%
Gender:	Male: 66.4%	Female: 33.6%	
Chemical dependency:	Yes: 12.6%	No: 87.4%	
High school diploma:	Yes: 68.1%	No: 31.9%	
Last semester participation:	Yes: 37%	No: 63%	
Criminal conviction before or during ORC program:	Yes: 14.3%	Presumed No: 85.7%	
Criminal conviction after leaving the ORC program:	Yes: 9.2%	Presumed No: 90.8%	
Reason leaving the program:	Completed: 40.3%	Terminated: 25.2%	Other: 34.5%
Job when leaving program:	Yes: 43.7%	No: 26.1%	Unknown: 30.3%
		(62.2% of Known were employed)	
Generally employed:	Yes: 69.7%	No: 9.3%	Unknown: 21%
		(88.2% of Known were employed)	

	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Standard Dev</i>
Months in program	17.02	1	69	13.53
Average rating of performance	3.76	1	5	0.82
Average attendance percentage	88.07%	23%	99.33%	12.54%
Average hourly wage	\$3.11	\$0.07	\$5.28	\$1.32

RELATIONSHIPS BETWEEN VARIABLES

Using Chi-square analysis, categorical variables were compared, giving the following valid relationships. (Relationships not listed were invalid due to small cell counts.)

<i>Disability * Gender</i>	p = .025 higher percentage of male BD 87% BD were male, 60% MR were male, 58% Other were male
<i>Disability * High school diploma</i>	p = .299 no significant relationship
<i>Disability * Reason leaving</i>	p = .024 BD more likely to quit or be terminated 48% BD were terminated, 16% MR terminated, 27% Other terminated
<i>Disability * Last semester participation</i>	p = .003 higher percentage of BD not participating 87% BD not participating, 51% MR not participating, 67% Other not participating
<i>Disability * Job when leaving</i>	p = .052 no significant relationship
<i>Gender * Chemical dependence</i>	p = .980 no significant relationship
<i>Gender * High school diploma</i>	p = .116 no significant relationship
<i>Gender * Criminal conviction before</i>	p = .692 no significant relationship
<i>Gender * Reason leaving</i>	p = .995 no significant relationship
<i>Gender * Last semester participation</i>	p = .374 no significant relationship
<i>Gender * Job when leaving</i>	p = .048 higher percentage of females employed 78% female were employed, 55% male employed
<i>Gender * Generally employed</i>	p = .333 no significant relationship
<i>Chemical dependence * Last semester participation</i>	p = .042 CD less likely to participate 13% CD in last semester, 40% of non-CD in last semester
<i>Criminal conviction before * Diploma</i>	p = .000 lower % of CCB graduate 29% CCB receive diploma, 75% non-CCB receive diploma
<i>Criminal conviction before * Last semester participation</i>	p = .020 lower % of CCB participate 12% CCB in last semester, 41% non-CCB in last semester
<i>Diploma * Reason leaving</i>	p = .000 higher percentage of graduates complete 55% of those completing the ORC program receive diploma, 27% going into other programs receive diploma, 18% terminating ORC program receive diploma
<i>Diploma * Job when leaving</i>	p = .000 higher percentage of graduates have jobs 77% of those earning diploma have a job, 22% of those without diploma have a job
<i>Reason leaving * Job when leaving</i>	p = .000 higher % of those completing have jobs 91% completing ORC program have a job, 58% going to other programs have a job, 30% of those terminated have a job
<i>Last semester participation * Job when leaving</i>	p = .000 higher % of those in have jobs 91% of those in last semester have a job, 43% of those not in last semester have a job

Factors that may be related to having a job when leaving the program seem to be:

- Disability (BD are less likely to be employed)
- Gender (female are more likely to be employed)
- High school diploma (graduates are more likely to be employed)
- Reason leaving (those completing the program are more likely to be employed)
- Last semester participation (more likely to be employed)

However, none of the above factors can be statistically shown to be significantly related to being generally employed for the subsequent three years.

Next, Anova and t-tests were conducted to compare mean numerical variables according to different factors, with the following valid tests:

Disability:

Average wage was significantly lower for MR ($p = .000$): \$2.53 for MR vs \$4.13 for BD and \$3.48 for Other.

Months in program was significantly lower for BD as compared to MR ($p = .001$): 21.06 months for MR vs 10.57 months for BD and 14.13 months for other.

Gender:

No significant differences.

Chemical Dependence:

Average wage for Chemically Dependent participants was higher ($p = .039$): \$3.84 for dependent vs \$3.01 for non-dependent.

Criminal Conviction before or during participation in the ORC program:

Average months in program was less for those convicted of a crime ($p = .013$): 11.53 months for those convicted vs 17.93 for those not convicted.

Average wage was higher for those convicted of a crime ($p = .040$): \$3.81 for those convicted vs \$3.00 for those not convicted.

Criminal Conviction after leaving the program:

Average wage was higher for those convicted: ($p = .004$) \$3.81 for those convicted vs \$3.05 for those not convicted.

High School diploma:

Average months in program was higher for graduates ($p = .000$): 19.98 months for graduates vs 10.71 for non-graduates.

Reason for leaving:

Months in program was higher for those completing the program ($p = .000$): 23.56 months for those completing vs 13.63 for those transferring vs 10.73 for those quitting.

Last Semester Participation:

Months in program was more for those participating their last semester ($p = .000$): 20.35 months for those in their last semester vs 11.10 for those not participating.

Average wage was lower for those participating their last semester ($p = .000$): \$2.88 for those in their last semester vs \$3.44 for those not participating.

Job When Leaving:

Months in program was more for those having a job ($p = .001$): 20.35 months for those having a job vs 11.10 months for those not having a job.

Attendance percentage was higher for those having a job: ($p = .004$): 92.02% for those having a job vs 80.75% for those not having a job.

Generally Employed:

Average attendance was higher for those employed (p = .049): 88.66% for those employed vs 78.86% for those not employed.

Factors related to having a job when leaving the program are number of months in the program and attendance percentage. Attendance percentage seems to be the only factor related to general employment during the subsequent three years.

PREDICTING EMPLOYMENT SUCCESS

Logistic regression was used to try to predict employment success immediately after leaving the program and also for later employment.

All variables that were significantly related to having a job when leaving the program (gender, high school diploma, reason leaving, last semester participation, months in program, average attendance) as well as any variables significantly related to these first variables (disability, chemical dependence and criminal conviction before) were included in the regression equation for JOBEND. Inclusion of other variables did not increase the overall percentage of correct prediction for having a job when leaving the program.

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
WHY_LEFT			4.4784	2	.1065	.0788	
WHY_LEFT(1)	5.4094	2.6330	4.2208	1	.0399	.1697	223.4923
WHY_LEFT(2)	-.9405	1.2710	.5475	1	.4593	.0000	.3904
GENDER	3.4773	1.8097	3.6923	1	.0547	.1481	32.3725
DIPLOMA	.5409	1.0878	.2473	1	.6190	.0000	1.7176
MONTHS	.1109	.0712	2.4260	1	.1193	.0743	1.1173
ATTPER	.2594	.0974	7.0983	1	.0077	.2571	1.2961
LASTSEM	.4033	2.2138	.0332	1	.8555	.0000	1.4967
DISABILITY			2.5154	2	.2843	.0000	
DISABILITY(1)	-2.1448	1.7843	1.4448	1	.2294	.0000	.1171
DISABILITY(2)	.1672	1.4001	.0143	1	.9049	.0000	1.1820
CHEM	8.1902	42.1978	.0377	1	.8461	.0000	3605.3277
CRIMBEF	-6.249	0 42.2500	.0219	1	.8824	.0000	.0019
Constant	-25.4128	9.176	7.6700	1	.0056		

Coding for the variables WHY_LEFT and DISABILITY are the following:

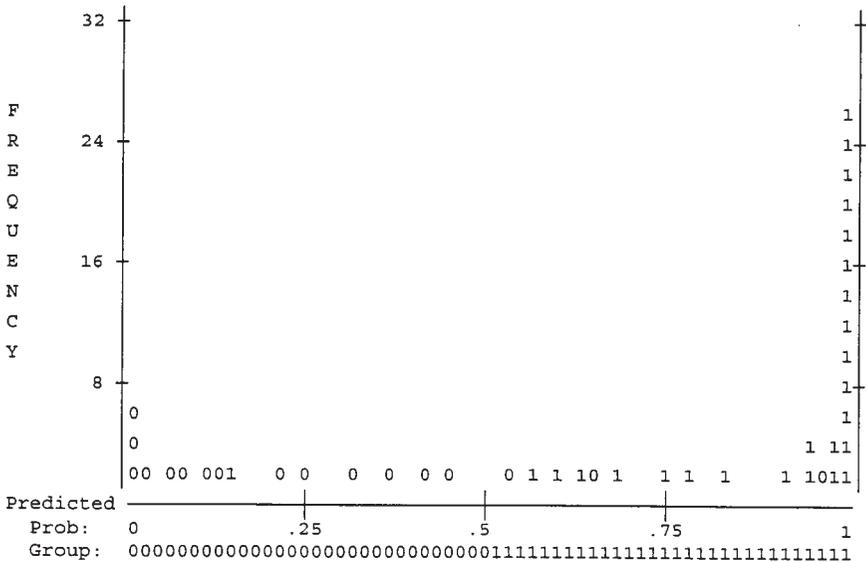
	Value	Freq	Coding (1)	(2)	
WHY_LEFT	.00	28	1.000	.000	graduate/maximum age/employed
	1.00	16	.000	1.000	school/other program/moved
	2.00	17	.000	.000	terminated/quit
DISABILITY	.00	35	1.000	.000	MR
	1.00	13	.000	1.000	Other
	2.00	13	.000	.000	BD

The Classification Table for JOBEND (0 = not employed / 1 = employed) follows. The Cut Value is .50 (If the probability of having a job is more than .50, that student is predicted to be employed.)

		Predicted		Percent Correct
		.00 0	1.00 1	
Observed	.00	16	3	84.21%
	1.00	2	42	95.45%
Overall				92.06%

Hence, the regression equation predicts “no job” 84.21% of the time when the participant did not actually have a job and predicts job success 95.45% of the time when the participant did have a job.

Observed Groups and Predicted Probabilities



1 denotes correct classification for probabilities greater than .50 and 0 denotes correct classification for probabilities less than .50. Each symbol represents approximately 2 cases.

To find the probability of a student having a job immediately after leaving the program, use the formula: $\text{probability} = 1/(1 + e^{-Z})$, where Z is given by the sum of the terms obtained

by using the above coefficients and the values of the variables. For example, find the probability of a student with the following characteristics:

WHY_LEFT		maximum age	
WHY_LEFT(1)	5.4094	1	5.4084
WHY_LEFT(2)	-.9405	0	0
GENDER	3.4773	1 (female)	3.4773
DIPLOMA	5409	0 (not graduate)	0
MONTHS	.1109	10	1.109
ATTPER	.2594	85%	22.049
LASTSEM	.4033	1 (yes, in last semester)	.4033
DISABILITY	MR		
DISABILITY(1)	-2.1448	1	-2.1448
DISABILITY(2)	.1672	0	0
CHEM	8.1902	0 (not chemically dependent)	0
CRIMBEF	-6.2490	0 (not convicted)	0
Constant	-25.4128		-25.4128
		Z = total =	4.8894

$Z = 4.8894$ and the probability of employment is $1/(1 + e^{-4.8894}) = .9925$ or approximately 99%. If this student had been convicted of a crime, however, $Z = -1.3596$ and her probability of employment would be approximately 20%.

Logistic regression was next used to try to predict later employment success. Factors that give the best prediction results for later employment success are attendance percentage, job when leaving program, average wage and crime conviction after leaving.

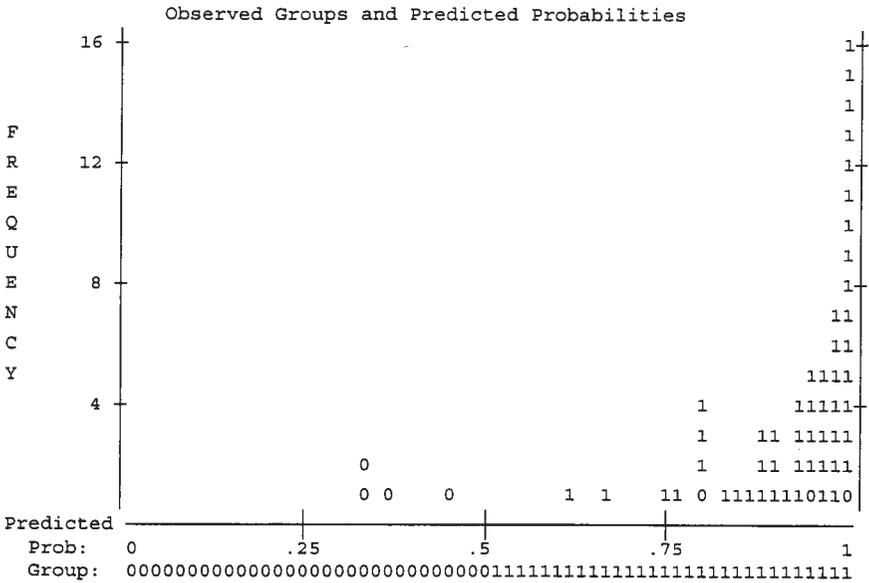
Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
ATTPER	.0481	.0348	1.9163	1	.1663	.0000	1.0493
JOBEND	2.0937	1.2034	3.0271	1	.0819	.1546	8.1151
AVGWAGE	.6390	.4728	1.8264	1	.1766	.0000	1.8945
CRIMAF	-2.4184	1.3066	3.4258	1	.0642	-.1821	.0891
Constant	-4.6065	3.2816	1.9704	1	.1604		

Classification Table for JOBGEN (Cut Value = .50)

Observed	Predicted		Percent Correct
	.00	1.00	
0	4	3	57.14%
1	0	52	100.00%
Overall			94.92%

The 50% cutoff for prediction to be generally employed is 100% correct for students who were actually employed, but only 57.14% correct for students who were not actually employed. Hence regression analysis tends to classify students as being successful and does not do a good job in picking out factors that will distinguish unsuccessful students.

Observed Groups and Predicted Probabilities



1 denotes correct classification for probabilities greater than .50 and 0 denotes correct classification for probabilities less than .50 Each symbol represents 1 case.

In general, having a higher attendance rate, having a job immediately after leaving the program and earning higher wages seems to be positively associated with being employed later. Being convicted of a crime after leaving the program is negatively associated.

DETERMINATION OF ACCEPTANCE OF STUDENTS INTO THE ORC PROGRAM

Is there some criteria which can be used to determine which students would most benefit from acceptance into the ORC Transition Program?

In order to answer this question, the only information that is available about a student before acceptance into the ORC Transition Program is Disability, Gender, Chemical Dependence, and Crime Conviction Before. (A further study might consider school performance, home environment or other factors.) Hence we will try to relate these four variables to Having a Job Immediately After Leaving the Program (JOBEND) and Being Generally Employed During the Subsequent Three Years (JOBGEN). Logistic regression for JOBEND is:

If we use the Cut Value 0.30, then all students who are successful in finding a job immediately after leaving the ORC Transition Program would be accepted into the Program. And only students who did not find a job would be rejected. (However there would also be some students accepted in the Program who did not find a job.)

Trying all different combinations of gender, disability, chemical dependence and criminal conviction, and using the 30% cut value, we find that the following types of students would have less than a 30% chance of obtaining a job immediately after leaving the program:

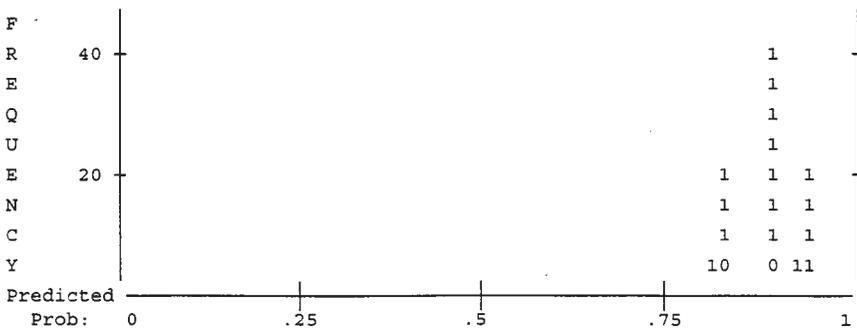
Male, MR, Convicted of a Crime, Not Chemically Dependent	12%
Male, Other, Convicted of a Crime, Not Chemically Dependent	10%
Male, BD, Convicted of a Crime, Not Chemically Dependent	5%
Female, MR, Convicted of a Crime, Not Chemically Dependent	28%
Female, Other, Convicted of a Crime, Not Chemically Dependent	21%
Female, BD, Convicted of a Crime, Not Chemically Dependent	11%
Male, BD, Convicted of a Crime, Chemically Dependent	15%

In other words, any student Convicted of a Crime and Not Chemically Dependent should be rejected, as well as any student who is male, BD, Convicted of a Crime and also Chemically Dependent.

It is interesting to note that the combination of being convicted of a crime and also being chemically dependent is actually better than being convicted of a crime and not being chemically dependent. The reason for this may be that a person that is chemically dependent is not by nature "criminal" but can be a productive citizen once the chemical dependence is overcome.

The logistic regression analysis for Being Generally Employed Three Years After (JOB-GEN), however, gives no useful results. It is not possible to distinguish between those students who will be successful and those who will not be successful as the following graph indicates. Since the ORC does not want to reject any student who will be successful in the future, we look for a cut value such that any student with probability below that cut value will *not be* successful. However, whatever cut value is chosen, there will be students whose probability of success is less than that cut value but who will be successful. (That is, in the following graph, there are 1's to the left of a 0.) This graph also shows that the probability of *anyone* being generally employed within three years is more than 75%.

Observed Groups and Predicted Probabilities



Each Symbol Represents approximately 5 Cases.

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
GENDER	.5906	.8517	.4808	1	.4880	.0000	1.8050
DISABILI			.4327	2	.8055	.0000	
DISABILI(1)	.5044	.8033	.3942	1	.5301	.0000	1.6559
DISABILI(2)	.4876	.9846	.2453	1	.6204	.0000	1.6284
CHEM	.6774	1.4093	.2310	1	.6308	.0000	1.9687
CRIMBEF	-.6354	1.0645	.3563	1	.5505	.0000	.5297
Constant	1.5511	.6456	5.7719	1	.0163		

The above table gives the coefficients for the regression equation. Noting the signs of the coefficients, we find that Females have a higher probability of success than Males, in fact, Females are about 1.805 times more likely to be employed. Both MR and Other in the Disability category have higher probabilities of success than BD. Also, being Convicted of a Crime *and* being Chemically Dependent has a higher probability of success than being Convicted of a Crime and *not* being Chemically Dependent.

LIMITATIONS OF THE STUDY

Incomplete data about the employment success of participants after they left ORC Industries was the biggest problem in this study. The employment situation for only about 75% of participants was known. (This rate, however, is actually quite high as compared to other studies. The 1996 Comprehensive Survey of Youth Apprenticeship Graduates, conducted by the Department of Workforce Development of the State of Wisconsin, for example, had only a 57.6% response rate.

The value for the category “generally employed in the subsequent three years” was often difficult to decide because of sketchy information available.

Information on number of months employed, whether employment was full-time or part-time and whether the job was competitive or supported, would have improved the results of this study.

Different data forms and methods of reporting during the thirteen years of this program also accounted for some missing or ambiguous information. And because there were too few entries in some categories, many of the chi-square statistical tests turned out to be invalid.

COMPARISON TO EMPLOYMENT STATUS OF ALL DISABLED STUDENTS AND TO ALL NON-COLLEGE-BOUND STUDENTS

The 1995 National Longitudinal Transition Study by the U.S. Department of Education reported that approximately 55% of all special education students out of secondary school up to 3 years were competitively employed. The ORC Transition Program participants had an 88% employment rate, significantly higher. However, as mentioned above, employment of ORC participants was not classified as competitive or supported and so these percentages may not be comparable.

The 1998 Condition of Education: Transition from High School to Work by the U.S. Bureau of the Census reported that the average employment rate three years after leaving high school for high school completers not enrolled in college and for high school dropouts was 70.5%. Again the 88% ORC employment rate would be significantly higher if the definitions of “employed” are comparable.

COMPARISON TO OTHER SIMILAR PROGRAMS

The goals of the federally funded Job Training Partnership Act (JTPA) Title IIC Youth Training Program in Minnesota (which has served thousands of youth since its inception in 1993) are similar to those of the Winona ORC Transition Program. The JTPA program targets economically disadvantaged youths between the ages of 14 and 21 and includes youth who are basic skills deficient, parenting youth, youth with disabilities, homeless youth, criminal offenders and school dropouts. The target population of ORC Industries is similar, although emphasizing students with disabilities. Services provided by the JTPA program include vocational counseling, academic and vocational training, work-based learning, private sector internships, on-the-job training and job placement assistance. These services are very similar to those of the ORC program. A study by the Minnesota Department of Economic Security in January, 1999, reported:

- Upon completion of the JTPA program, 53% of participants entered unsubsidized employment;
- Overall, 81% of participants either entered the workforce, studied to obtain their high school diploma or GED, or entered post-secondary vocational training.

The ORC Transition Program percentages compare well with the JTPA data: 62.6% of ORC participants were employed upon leaving the program and 88.2% were generally employed in the subsequent three years. However, as mentioned above, employment of ORC participants was not classified as subsidized or non-subsidized and so these percentages may not be comparable.

Studies of programs similar to ORC's Transition Program showed that the items outlined below are important features of effective transition programs for at-risk youth and youth with disabilities:

- **Longitudinal Planning.** Long-term planning with input from students, families and other significant adults.
- **Career Emphasis.** Programs organized according to the interests and aptitudes of each individual student, rather than by disability or categorical label. School-to-work programs should offer the same opportunities and choices to youth with disabilities that are available to all other youth, ranging from high technology to manufacturing industries.
- **Work-based Learning.** Paid work is an especially critical component of such a program. Students are significantly more likely to be employed as adults if they have engaged in real, paid work while in high school.
- **Connection to Community Resources.** Family support, living arrangements, income, peer interactions and other circumstances can significantly affect post-school outcomes. Student success is often contingent on linking students to necessary ancillary community resources that address these circumstances.
- **Sustained Involvement of Employers.** Employers should perceive direct benefit from participation and should have the opportunity to influence students' workforce preparation.

The ORC Transition Program addresses all of these components and has been assisting youth with disabilities to make the transition to adult life a more successful one.

FUTURE DIRECTIONS

Some suggestions for future studies are:

- Formally track participants using follow-up surveys to determine the extent of their employment success. For example, information about type of job, number of months working at each job, number of hours worked per week, wage history and whether the job was competitive or supported would be useful.
- Survey participants to determine which components of the ORC Transition program they felt were most beneficial to their employment success.
- Obtain data from the Winona school district or Winona County to compare employment success of students participating in the ORC program with success of disabled students not involved in the ORC program.
- Because connection to other community resources is also important for employment success, record information about participant involvement with other community, state or federal programs.
- Because student home life may be related to the success of the ORC program, determine a method to describe family stability and supportiveness.
- Instead of averaging the ratings of a student for the different areas evaluated, keep the ratings separate to determine if particular characteristics are related to employment success.
- Determine statistically which factors may be significantly related to completion of the ORC program.

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