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Robert Evert Cimera

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Utilizing Co-Workers as "Natural Supports"

Evidence on Cost Efficiency, Job Retention, and Other Employment Outcomes

Robert Evert Cimera, *University of Wisconsin at Oshkosh*

The present study sought to determine whether involving nondisabled co-workers in the training of supported employees could increase (a) cost efficiency, (b) tenure, (c) job retention, (d) hours worked, and (e) gross wages. The present study also sought to determine whether co-worker involvement was related to the supported employee's (a) IQ, (b) level of mental retardation, (c) age, (d) gender, (e) ethnicity, and (f) number of disabilities. Co-worker involvement did not increase cost efficiency, although it appeared to increase the tenure by more than a year (12.36 months). No other employment outcomes were related to co-worker involvement, nor was co-worker involvement associated with any demographic variable investigated.

Since being introduced by Nisbet and Hagner (1988), the concept of *natural supports* for supported employment (see Note 1) has been surrounded by controversy. Specifically, there are at least two main points of contention in the supported-employment literature. First, what are natural supports? Second, can natural supports really improve peoples' lives?

As documented by Test and Wood (1996), definitions of natural supports are plentiful and diverse. For instance, some definitions (e.g., those in DiLeo, 1991; Rogan, Hagner, & Murphy, 1993) have characterized natural supports as a strategy that could be used to facilitate positive employment outcomes (e.g., job retention). Another definition is that natural supports are a philosophy akin to "normalization" and "inclusion" (DiLeo & Luecking, 1995). That is, natural supports can promote social integration of workers with and without disabilities. Some individuals (e.g., Butterworth, Hagner, Kiernan, & Schalock, 1996) have claimed that natural supports are both a philosophy and a type of training strategy. Some authors even believe that no definition of natural supports is actually needed (e.g., Rusch & Hughes, 1996). Needless to say, few people seem to be in agreement as to what natural supports truly are.

The second topic of contention pertaining to natural supports is whether such a strategy or philosophy can actually enhance the lives of persons with disabilities. For example, Fabian and Luecking (1991) suggested that the costs of supported employment might be reduced if natural supports, such as co-workers without disabilities, are utilized. These authors argued that if co-workers aided in the training of supported employees, job coaches would be able to spend less time at job sites, thus reducing the amount of funding required for supported employees to maintain their jobs. Consequently, if program costs are reduced, more job seekers with disabilities may be placed within the community.

Other proponents of natural supports (e.g., Nisbet & Hagner, 1988) have suggested that supported employees would become more integrated within the social culture of workplaces if natural supports (e.g., involvement of co-workers in training supported employees) were utilized. As a result of this inclusion, according to Nisbet and Hagner, supported employees are likely to feel better about their employment status and thus retain their positions longer than supported employees trained via the "job coach model" (see Note 2).

Rusch and Hughes (1996), however, expressed concerns regarding who actually benefits from the concept of natural supports. These authors stated that natural supports are yet another way for the nondisabled establishment to have control over persons with disabilities. Instead of relying on supports, natural or otherwise, Rusch and Hughes advocated for philosophies and training strategies that allow persons with disabilities to assume control of their own lives.

Despite the tremendous amount of discussion of natural supports that has taken place, Test and Wood (1996) found in their review of the literature that empirical evidence either substantiating or refuting the claims made for natural supports was severely lacking. Other authors (Mank, 1996; Rogan, 1996) agreed, stating that there is a tremendous need for

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in-depth examinations of how natural supports relate to various outcomes.

The present study is an attempt to add to a growing foundation of empirical research on the use of natural supports as a training strategy. More precisely, the present study sought to determine if utilizing co-workers without disabilities to train supported employees increased (a) the cost efficiency of supported employment programs (see Note 3), (b) the supported employee's length of employment, (c) the likelihood of supported employees retaining their jobs over a 4-year period, (d) the number of hours worked per month by the supported employee, and (e) the gross wages earned by the supported employee. The present study also sought to determine if co-worker involvement was related to the supported employee's (a) IQ, (b) level of mental retardation, (c) age, (d) gender, (e) ethnicity, and (f) number of disabilities.

Method

Data for the present study came from the Illinois Supported Employment Projects (ISEP) database. Additional information on the ISEP database was provided by Ellis, Rusch, Tu, and McCaughrin (1990), Cimera (1998), and Cimera, Rusch, and Heal (1998).

Sampling Procedures

An initial sample of 166 supported employees who had a primary diagnosis of mental retardation; were either African American (34%) or European American (66%); were between the ages of 21 and 69 by August 21, 1990; and were employed during the last two quarters of fiscal year 1990 was randomly selected from the ISEP database. The sample was stratified based upon equal representation with regard to eight cells: (a) ethnicity (African American vs. European American), (b) gender (male vs. female), and (c) IQ (high vs. low). Individuals in the high-IQ group had mild mental retardation; the low-IQ group contained individuals with moderate, severe, and profound mental retardation. Due to size of the database, only six of the eight cells contained 25 participants. The two remaining cells (i.e., African American men and women in the low-IQ groups) contained fewer participants due to a lack of supported employees meeting the appropriate criteria ($n = 10$ and 6 for men and women, respectively).

Of these initial 166 participants, 31 were replaced during the study with supported employees possessing similar demographics (i.e., gender, ethnicity, and level of mental retardation). Reasons for replacement included (a) supported employees could not be contacted because the service agency went out of business ($n = 5$), (b) the service agency refused to participate ($n = 24$), and (c) supported employees declined to sign the consent form ($n = 2$).

Of the 197 surveys mailed (166 initial plus 31 replacements), 111 surveys were returned, resulting in a 56.3% response rate. Analyses of variance found that the respondents ($n = 111$) and the nonrespondents ($n = 55$) were not significantly different based upon IQ, level of mental retardation, age, or gender.

Participants

Of the 111 respondents, three subgroups were identified: (a) those individuals who were employed ($n = 57$), (b) those who were unemployed ($n = 24$), and (c) those whose surveys were unusable due to a lack of information ($n = 30$). These three subgroups were not statistically different based upon IQ, level of mental retardation, gender, or age. Further, within the employed subgroup, two additional cohorts emerged: (a) individuals who had kept their same job from 1990 to 1994 ($n = 26$) and (b) individuals who separated from their 1990 job but were re-employed by 1994 ($n = 31$). These two cohorts did not differ significantly based upon IQ, gender, age, or ethnicity.

Survey and Procedures

In 1990 and 1994, a seven-page survey was sent to the adult service providers of 166 supported employees included within the ISEP database. This survey contained four sections: (a) Worker Characteristics, (b) Job Coach/Co-worker Involvement, (c) Benefit–Cost Analysis, and (d) Job Separation.

Demographic information (e.g., date of birth, gender, IQ) was sought in the Worker Characteristics section. The Job Coach/Co-worker Involvement section collected data on the amount of time that job coaches were present at the job site and on the number and gender of nondisabled co-workers, and it included the Co-worker Involvement Instrument (Rusch, Hughes, & McNair, 1988). The Benefit–Cost section accumulated data on the employee's rate of pay per hour, amount of taxes withheld, benefits earned, and public subsidies received. Finally, the Job Separation section of the ISEP survey obtained information on the type of business at which the worker was employed, as well as the date of, and reason for, job separation (if applicable).

In addition to the ISEP survey, adult service providers were sent a consent form, a letter explaining the importance of the project, and an invoice allowing respondents to collect $25.00. Reminder letters were sent to nonrespondents after 4 weeks had passed. Follow-up phone calls were made as needed.

Variables

The present study considered a number of variables. Each is described briefly below.

Dependent Variables. There were eight dependent variables.

1. *Cost efficiency* was calculated from three different perspectives (i.e., the worker's, the

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taxpayer's, and society's). To complete these calculations, a structured cost-accounting procedure was utilized to formulate benefit–cost ratios (i.e., gross benefits divided by gross costs); benefit–cost ratios greater than 1.0 indicate various degrees of cost efficiency. Table 1 lists the monetary benefits and costs for each of the three perspectives examined. For a more in-depth review of cost-efficiency methodology, see Cimera (in press), Cimera and Rusch (1999), or Layard and Glaister (1994).

2. *Length of employment* was defined as the number of months from the supported employee's employment start date at the currently held job until the date that the survey was completed.
3. *Job retention* was defined as maintaining the same employer from 1990 to 1994 ($n = 26$). Eighty-one individuals did not retain their 1990 positions.
4. *Hours worked per month* was defined as the average number of hours supported employees worked in a month.
5. *Gross pay* was determined by multiplying the average number of hours worked per month by the supported employee's hourly rate of pay.
6. *IQ, level of mental retardation, gender,* and *ethnicity* were provided by respondents on the ISEP survey. IQ was used in addition to level of mental retardation due to the often subjective nature of labeling students with cognitive disabilities.
7. *Age* was determined by subtracting the supported employee's date of birth from the date the survey was received.
8. *Number of disabilities* was defined as a categorical variable (i.e., one disability vs. multiple disabilities). In addition to level of mental retardation, survey respondents indicated whether the supported employee had been diagnosed with any secondary disabilities. Secondary disabilities included, but were not limited to, mental illness, deafness, blindness, speech impairment, and epilepsy.

Independent Variable. The independent variable in the present study was collected by the Co-worker Involvement Instrument (McNair & Rusch, 1992; Rusch, Hughes, McNair, & Wilson, 1989). The Co-worker Involvement Instrument assesses the involvement of nondisabled co-workers with training supported employees. Specifically, as the Co-worker Involvement Instrument stated, "Coworkers support target employee [the supported employee] by providing on-the-job training of social or vocational skills which have been identified in the IWRP [Individualized Written Rehabilitation Plan]" (McNair & Rusch, 1992, p. 26). The potential answers to this question were collapsed into two categories: (a) co-workers provided no training and (b) co-workers provided some training.

TABLE 1
Cost-Accounting Variables for Each Cost-Efficiency Perspective

Cost-accounting variable	Worker	Taxpayer	Societal
Gross wages	Benefit	*na*	Benefit[a]
Fringe benefits	Benefit	*na*	Benefit
Forgone wages	Cost	*na*	Cost[a]
Taxes withheld	Cost	Benefit	*na*
Taxes refunded	Benefit	Cost	*na*
Interest on taxes withheld	*na*	Benefit	*na*
Reduction in subsidies	Cost	Benefit	*na*
Alternative program costs	*na*	Benefit	Benefit
Supported employment costs	*na*	Cost	Cost
Taxes lost due to tax credits	*na*	Cost	Cost

[a]The primary benefit to society from supported employment programs is *increased earnings* (i.e., gross wages minus forgone wages). Forgone wages technically are not a cost to society, though they have been included here as such.

Two reliability measures were applied when the Co-worker Involvement Instrument was originally developed: interrater reliability and test–retest reliability. McNair and Rusch (1992) indicated that interrater reliability was measured twice (i.e., .82 and .80). Additionally, test–retest reliability was .88. A complete discussion of reliability and validity measures of the Co-worker Involvement Index can be found in McNair and Rusch (1992), McNair (1989), and Rusch and Minch (1988).

Statistical Analysis

Four analyses were undertaken for the present study. The first compared employment outcomes (i.e., cost efficiency, length of employment, job retention, hours worked, and gross wages paid) to the degree of co-worker involvement in training supported employees (i.e., no involvement vs. some involvement). The second compared supported-employee demographics (i.e., IQ, level of mental retardation, age, gender, ethnicity, and number of disabilities) to degree of co-worker involvement. Both of these analyses were repeated using 1990 and 1994 data. Analyses of variance were performed for the nominal-scale variables of gender, ethnicity, level of mental retardation, and employment outcome. Pearsonian correlation coefficients were generated for the continuous-scale variables (i.e., age, IQ, and length of employment).

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Results

Employment Outcomes

Cost Efficiency. Cost efficiency in the present study was examined from three perspectives (i.e., the worker's, taxpayer's, and society's) and for fiscal years 1990 and 1994. Thus, to determine whether co-worker involvement increased cost efficiency, six analyses were conducted (i.e., 3 perspectives × 2 years).

As indicated in Table 2, utilizing co-workers did not increase the cost efficiency of supported employment programs from the worker's perspective. In both 1990 ($r = 0.025$; $p = 0.868$) and 1994 ($r = 0.109$; $p = 0.430$), worker cost efficiency was not significantly correlated to co-worker involvement. In other words, workers did not benefit monetarily by having a co-worker train them.

Nor did utilizing co-workers enhance the cost efficiency of supported employment programs from the taxpayer's perspective (see Table 2). As from the worker's perspective, correlations between cost efficiency and co-worker involvement were negligible. Specifically, cost efficiency had a slight positive correlation with 1990 co-worker involvement ($r = 0.007$; $p = 0.964$) and with 1994 co-worker involvement ($r = 0.087$; $p = 0.530$).

Similarly, co-worker involvement was not strongly associated with cost efficiency from the societal perspective (see Table 2). Co-worker involvement in 1990 was negatively correlated with societal cost efficiency ($r = -0.169$; $p = 0.260$), whereas 1994 co-worker involvement was positively correlated to societal cost efficiency ($r = 0.170$; $p = 0.216$). These correlations, however, were not statistically significant.

Length of Employment. Relationships between co-worker involvement and length of employment were not significant at the .05 level in either 1990 or 1994. A noteworthy relationship, however, was detected between months employed and 1994 co-worker involvement ($r = 0.214$; $p = 0.114$). In 1994, supported employees trained by their co-workers maintained their jobs an average of 44.51 months ($SD = 24.31$ months) compared to 32.15 months ($SD = 24.26$ months) for supported employees who did not receive co-worker training.

Job Retention. Chi-square analyses found no significant relationships between co-worker involvement and job retention. More precisely, 1990 co-worker involvement was not significantly related to whether supported employees retained their 1990 job until 1994, $\chi^2(1, N = 57) = .035$, $p = .851$. This was also true with 1994 co-worker involvement, $\chi^2(1, N = 57) = 1.496$, $p = .221$.

Hours Worked and Gross Wages. As indicated in Table 2, no significant relationships were detected between co-worker involvement and hours worked or gross wages.

TABLE 2
Correlations Between 1990 and 1994 Co-Worker Involvement and Employment Outcomes

Employment outcome	1990 Co-worker involvement[a]	1994 Co-worker involvement[a]
Work cost efficiency	0.025[b]	**0.109**
	0.868[c]	**0.430**
	46[d]	55
Taxpayer cost efficiency	0.007	0.087
	0.964	0.530
	46	**55**
Societal cost efficiency	–0.169	0.170
	0.260	0.216
	46	**55**
Months employed	–0.110	0.214
	0.537	0.114
	37	**56**
Hours worked	0.132	**0.183**
	0.429	**0.174**
	47	57
Gross wages	0.073	**0.139**
	0.628	**0.304**
	47	57

[a]No co-worker involvement = 0; some co-worker involvement = 1. [b]Pearson product-moment correlation. [c]Probability that the obtained correlation equals 0. [d]Number of cases on which the correlation was based.

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Supported Employee Demographics

As Table 3 shows, neither IQ nor level of mental retardation was related to co-worker involvement in 1990 or 1994. In fact, none of the six demographic variables examined in the present study (i.e., IQ, level of mental retardation, age, gender, ethnicity, and number of disabilities) were significantly correlated to either 1990 or 1994 co-worker involvement (see Table 3). Gender, however, was noticeably associated with 1990 co-worker involvement (r =0.243; p = 0.100), with female supported employees (M = 0.79, SD = 0.41) averaging more co-worker involvement than male supported employees (M = 0.57; SD = 0.51).

Discussion

The findings of the present study extend the supported employment literature in several ways. First, they furnish evidence as to the impact of utilizing a natural-support training strategy (i.e., involving co-workers in the training of supported employees) on employment outcomes (i.e., cost efficiency, length of employment, job retention, gross wages, and hours worked). Second, the present study examined whether supported-employee demographics (i.e., IQ, level of mental retardation, number of disabilities, age, gender, and ethnicity) were associated with the use of this natural supports strategy. Consequential findings are discussed below.

Cost Efficiency

The present study found that there were no significant relationships between co-worker involvement and the cost efficiency of supported employment programs. That is, utilizing co-workers to train supported employees did not result in an increase of cost efficiency to the supported employee, taxpayer, or society in general. This is contrary to the claims made by proponents of natural supports (cf. Fabian & Luecking, 1991) who have suggested that co-worker involvement would increase cost efficiency. A possible explanation as to why this natural-support training strategy did not affect cost efficiency in the present study may involve how cost efficiency was formulated.

As Table 1 indicates, operating expenditures of supported-employment programs is one of the primary costs from the taxpayer and societal perspectives. This cost is incurred when job coaches are reimbursed for their services by state agencies (e.g., Department of Rehabilitative Services), which are in turn funded by taxpayers. Proponents of natural supports (Fabian & Luecking, 1991) have theorized that if co-workers were used to train supported employees, costs to taxpayers and society would decrease. This was based upon the assumption that

TABLE 3
Correlations Between 1990 and 1994 Co-Worker Involvement and Supported Employee Demographics

Demographic variable	1990 Co-worker involvement[a]	1994 Co-worker involvement[a]
IQ	0.089[b]	0.048
	0.551[c]	0.724
	47[d]	57
Level of mental retardation[e]	0.164	0.040
	0.271	0.767
	47	57
Age	0.015	–0.080
	0.920	0.554
	47	57
Gender[f]	0.243	0.032
	0.100	0.812
	47	57
Ethnicity[g]	0.015	0.009
	0.919	0.944
	47	57
Multiple disabilities[h]	–0.053	0.068
	0.725	0.613
	47	57

[a]No co-worker involvement = 0; some co-worker involvement = 1. [b]Pearson product-moment correlation. [c]Probability that the obtained correlation equals "0." [d]Number of cases on which the correlation was based. [e]High IQ = 0; Low IQ = 1. [f]Male = 0; female = 1. [g]European Americans = 0; African American = 1. [h]Without multiple disabilities = 0; with multiple disabilities = 1.

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with some training being provided to supported employees by co-workers, job coaches could fade from the job site more quickly—thus decreasing the amount of services funded indirectly by the taxpayer. Unfortunately, this was not the case in the present study.

In 1990, job coaches were present at job sites *more* often when co-workers were training supported employees than when there was no co-worker involvement ($r = 0.263$; $p = 0.101$). Specifically, when co-workers were not involved in training, job coaches were at job sites 22.22% ($SD = 32.70\%$) of the time supported employees worked. When co-workers were involved in training supported employees, however, job coaches were present 33.64% ($SD = 33.46\%$) of the time supported employees worked. Examining the duties of job coaches under the "job coach model" (i.e., no co-worker involvement) and the "natural supports model" (i.e., utilizing co-workers) may explain why job coaches were present more often when natural supports were utilized.

Under the job coach model, job coaches furnish all of the training required by the supported employee. In addition, they monitor the progress of supported employees and advocate for the supported employees' needs (Rusch, 1990). Under the natural supports model, job coaches still monitor and advocate for the supported employee but must also advise and provide support to the co-worker who furnishes a portion of the training (Nisbet, 1992). It appears likely that the amount of time job coaches saved by involving co-workers in training was less than the amount of time job coaches had to spend preparing these co-workers. The result would be a net loss. Thus, costs of supported employment services might increase when co-workers are involved.

Employment Outcomes

Length of Employment. Proponents of natural supports have suggested that utilizing co-workers might, in addition to increasing cost-efficiency, increase the length of time supported employees would remain employed (Nisbet & Hagner, 1988). The present study found some indication that this might be true. In the present study, supported employees with co-worker involvement averaged keeping their job more than a year longer (i.e., 12.36 months) than supported employees who received no co-worker involvement. Considering how much criticism supported-employee turnover has received in the literature (Mank, 1994; Nisbet & Hagner, 1988), this finding is of practical importance to the natural supports debate.

If adult service personnel can increase the length of time that supported employees hold their jobs, the gross cumulative benefits from all perspectives may increase. For example, if supported employees worked in the community a year longer than what is currently typical, they would generate an additional year's worth of earnings. Similarly, if supported employees could keep their jobs a year longer than what is currently typical, taxpayers and society would receive more revenue in the form of taxes withheld per supported employee. On the basis of this finding alone, utilizing co-workers to train supported employees appears to be a promising practice.

Job Retention, Hours Worked, and Gross Wages. Although co-worker involvement was related to length of employment, the present study found no evidence to support the notion that utilizing co-workers as trainers improved other employment outcomes (i.e., job retention, hours worked, and gross wages). It is possible, however, that co-worker involvement would have affected job retention had job retention been measured over a different length of time. For instance, had job retention been measured in terms of whether supported employees would maintain the same employer over 3-year period, rather than the 4-year period of the present study, it is likely that the majority of supported employees receiving co-worker training would have still been employed (i.e., their mean length of employment was 3.7 years). The majority of supported employees not being trained by co-workers, on the other hand, would most likely have been unemployed (i.e., their mean length of employment was 2.0 years).

Supported-Employee Demographics

In addition to examining employment outcomes, the present study investigated the relationships between the demographic characteristics of supported employees and the use co-workers as trainers. Surprisingly, the present study found no relationships between any of the six supported employee demographic characteristics (i.e., age, IQ, level of mental retardation, gender, ethnicity, and number of disabilities) and the utilization of co-workers as trainers. These findings would appear to indicate that co-workers are as likely to be involved with supported employees who have severe and multiple disabilities as with supported employees with mild mental retardation. Consequently, the use of natural supports as a training strategy appears to be feasible for all individuals.

Implications

Although the present study paints only a tentative portrait of the merits of natural supports, several important implications should be considered. First, if utilizing co-workers as trainers increases the length of time supported employees are employed, as this study suggests, the benefits would by appreciated by many people. For example, supported employees would earn more wages and increase their chances at becoming independent within the community. Employers who hire supported employees would benefit from having quality workers who maintain their positions, thus alleviating the employers' need to expend resources in order to constantly hire new employees. With supported employees working longer and earning more in cumulative wages, taxpayers and society would benefit from increased tax revenue and, perhaps, decreases in governmental subsidies received by supported em-

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ployees. Further, with supported employees maintaining their positions for longer periods of time, adult service agencies would be able to spend time locating jobs for individuals with disabilities who are unemployed.

Second, although supported employment was initially designed for individuals with severe disabilities (Will, 1984), it has traditionally been implemented for job seekers with milder infirmities (Kregel & Wehman, 1989). Results from the present study demonstrate that co-workers appear to be willing to train supported employees with diverse disabilities and functioning levels. Consequently, these findings support the enrollment of all individuals, regardless of disability level, within supported-employment programs.

Finally, the present study found that job coaches do not fade from work sites when co-workers are involved in training. In fact, it appears that job coaches increase the time that they spend at work sites when co-workers act as trainers. The reason for this is unclear, but it may be that job coaches are providing support to the co-workers as well as to the supported employee. Regardless of the reason for the increase, the more services that job coaches provide, the more supported-employment programs will cost taxpayers and society. Therefore, if supported employment is going to continue to receive funding from legislatures, service professionals must begin to develop and disseminate training strategies that promote supported-employee independence. While it is uncertain whether natural-supports strategies can facilitate this independence, the importance of the issue cannot be understated.

Limitations

Analyses in the present study were based upon data gathered over two 1-month periods (i.e., one in 1990, the other in 1994). We do not know if co-worker involvement was constant through the entire 4 years. In order to obtain a sharper picture of the true impact that co-worker involvement has on employment outcomes, a more longitudinal study will need to be undertaken. Further, involving co-workers in the training of supported employees is just one of the natural-supports strategies that job coaches can implement. Additional studies will need to examine the potential benefits that other natural-support strategies may offer.

Conclusion

The present study does not corroborate suggestions within the supported-employment literature that utilizing co-workers to train supported employees will increase cost efficiency. However, co-worker involvement did appear to increase the length of time supported employees held their jobs. Further, co-worker involvement was not affected by the demographics of the supported employee, indicating that co-workers are willing to aid in the training of all supported employees.

ABOUT THE AUTHOR

Robert Evert Cimera, PhD, is an assistant professor in special education at the University of Wisconsin–Oshkosh. His current academic interests involve lifelong transitions, cost efficiency, and attention-deficit/hyperactivity disorder. Address: Robert Evert Cimera, Department of Special Education, 800 Algoma Boulevard, Oshkosh, WI 54901; e-mail: cimera@uwosh.edu

NOTES

1. As defined by the Developmental Disabilities Act of 1984, supported employment is an employment option for individuals with disabilities possessing three characteristics: competitive work, intregrated work settings, and ongoing support (Rusch, 1990; Wehman, 1996).
2. The "job coach model" involves having an employment training specialist provide one-on-one support to supported employees placed within the community (Wehman, 1996).
3. Cost efficiency is an economic tool for assessing whether the monetary benefits of a decision outweigh the monetary costs.

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