

EBCE Really Works

A meta-analysis on Experience Based Career Education

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Our meta-analysis of 80 evaluations of Experience Based Career Education (EBCE) programs shows that EBCE works. Students not only scored significant gains in career, life attitude, and academic skills during their EBCE experience, but they also showed significantly greater gains in all three of those outcome areas than comparison students who received the regular high school curriculum. The positive statistical significance of the findings was so large that we developed a new index, called the "Basic Index of Strength" or the BIS, in order to discuss and compare differences in the strength of the findings.

EBCE was designed to bridge the gap between study and experience and between the classroom and the community. It takes the subject matter students normally study, adds many new ingredients about people, jobs, self, and the way communities work, and lets high school and post-secondary students learn about them in the community through direct interaction with adults in

all walks of life. In the process students earn academic credit, explore the real dimensions of many careers, learn much about who they are and what they want to become, and master many of the skills they will need to succeed as adults in America.

A "meta-analysis" studies an innovation itself rather than only one or a few implementations of the innovation. It

attempts to answer the question: "Given all these findings, what has the overall experience been?" It is especially useful when as in this case the different implementations of the innovation being studied are in effect random variations of a known model in which the implementations attempt to measure the same outcome expectations with the same or similar instruments.



Highlights from Evaluation of EBCE

A meta-analysis of 80 third-party evaluations (all that were conducted) of Experience-Based Career Education programs shows that in the large majority of programs,

- EBCE students made large gains not only in career skills and life attitudes but also in academic skills
- EBCE students gained more than students in the typical high school curriculum
- Students made greater gains in programs with high fidelity to the developers' models, but findings were positive even in low-fidelity programs
- Contrary to some predictions, students at all socioeconomic levels from all types of residential areas profited from their EBCE experience.

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How Is Experience Based Career Education Different?

Unlike work-study and cooperative education programs operating in a vocational framework, EBCE does not emphasize vocational skills per se. Rather, it merges broad career, personal, and intellectual goals and focuses on the gathering and development of information on which to base knowledgeable decisions about future courses of study and training.

EBCE involves young people and volunteer adults in a different kind of learning process:

- Students move off campus for firsthand experience in everyday community places: offices, stores, hospitals, factories, churches, government agencies, and the like.

- Off-campus sites become the setting for the curriculum rather than a brief diversion from standard lesson plans. A student may earn credit for planning a speech before a civic organization.

- Policy direction for the program is provided by an advisory board that includes individuals from business, labor, and other community interests including parents and students.

- All learning activities lead directly into a regular high school diploma that is valid for typical post-secondary education and job entry opportunities.

In operation, EBCE is further distinguished from traditional work/education programs by the following characteristics:

- EBCE uses planned experience as a basis for learning academic subjects.

- EBCE includes career exploration and multiple employer/community site utilization as opposed to job experience at a single site.

- EBCE asks students to take a greater role in shaping their personalized educational plans and provides curriculum mechanisms for them to reach that goal.

- EBCE is designed to be successful with a mix of student populations and is not targeted to specific student populations.

- EBCE students are at community work sites for learning rather than for productive purposes, so they earn academic credit rather than pay.

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This meta-analysis used as its basic data the findings from all 80 of the third party evaluations that were completed in all of the Experience Based Career Education programs from January 1976 through January 1982. Evaluations conducted by EBCE program staff or by anyone connected with the local program implementation were excluded to avoid potential bias. As with all meta-analyses, not all of the third party evaluations reported findings for all the same tests nor for all the same outcomes, but as we anticipated, the measured outcomes fell into three areas: career related skills, life attitude skills, and academic skills. From each of the 80 third party evaluations (all that were done) of EBCE programs, each outcome measurement was noted both in terms of the finding itself—significantly positive (alpha greater than .05), positive but not significant, no difference, negative but not significant, and significantly negative (alpha less than .05)—and the type of test—reading comprehension, job vocabulary, attitude towards learning, and so on. The actual frequency distributions were then compared with what the frequency distributions would have been if there had not been EBCE programs.

Overall Student Achievement

The first question asked of any new curriculum is, "All in all, was the program successful in increasing student achievement?"

As shown in Figure 1, in 558 test administrations to students in the 80 programs, 376 had positive results, 112 of them significantly positive. Without EBCE program treatment, one could expect no more than about 173 positive

Development of Experience Based Career Education Models

Too often in education promising ideas flourish awhile only to be forgotten after the trial period is over. EBCE was conceived at a time of awareness of the problems associated with instant solutions, so its introduction and development marked a significant break with the tradition of federally directed development of the 1960s.

The development of successful models was put into the hands of special developer groups (regional education laboratories) rather than being laid on busy local school district personnel. Resources were made available in sufficient quantity to allow the proper development of successful models, and con-

ceptual clarity was stressed through frequent joint meetings of the developers. The models, developed in conjunction with local school personnel and volunteer students, were designed to be adaptable to the various local situations found in school districts and operable at little or no additional cost.

In other words time, resources, and careful thought were given for development of useable models that would meet the program goals of (1) better high school education and (2) better transition, either from high school to higher education to work, or directly from high school to work. □

results, only 28 of them significantly positive. Comparing actual distribution with expected distribution in this way, we found the differences to be 6.28 times larger than needed for significance at the .05 level! None of the tables published have enough zeros in them to indicate a level of significance 6.28 times higher than the .05 level, but to give an idea, the difference needs to be only 1.19 times higher to be significant at the .01 level.

What this means, of course, is that the positive results found were extremely unlikely to have happened by chance, and extremely likely to be due to the effects of the EBCE programs.

The second question asked is, "OK, so students increased their achievement while in the EBCE program. How can you be sure it was not just because they matured a year or had an additional year to work in the community? And aren't all students supposed to increase their academic achievement over the school year?" There were 420 separate test administrations in the 80 programs that compared the progress of EBCE students with other students in their schools. In these administrations, there were about three times as many significantly positive findings (104) as significantly negative findings (35) and close to three times as many positive but not significant findings (144) as negative but not significant findings (35). Given that distribution of findings, it is not unexpected to see that the differences were highly statistically significant, 4.26 times larger than necessary for significance at the .05 level!

What these figures show is that EBCE students increased their achievement at much higher rates than the comparison students.

These meta-findings show conclusively that the EBCE curriculum is highly successful and is more successful

Figure 1. Pre-Post Changes in EBCE Students (Within Group).

	Actual Frequency Found	Expected Frequency If No Treatment
Significantly Positive	112	28
Positive	264	145
No Difference	91	212
Negative	83	145
Significantly Negative	8	28
Total	558	558

than the typical high school curriculum.

Findings in the Three Outcome Areas
With such impressive results, the third question asked is, "These overall findings are fine, but are you sure that large success in one outcome area does not mask failure in another?" The designers of EBCE programs anticipated that EBCE students would score much higher than other students in career related skills and life attitudes, but they did not necessarily expect higher achievement in academic skills. The assumption was that significant gains in the first two areas would be valuable provided that

students neither gained nor lost too much in academic skills because they were not attending regular classes.

Our analysis shows that EBCE students consistently outscored regular students, even in academic skills (Figure 2). While the largest difference was in life attitudes, the difference in academic skills was large enough to be significant at the .05 level. In other words, not only did EBCE students gain significantly more in career related skills and life attitude skills when compared with students in the regular high school curriculum, which was expected from the program design, but they also showed significantly more gain in *academic*

skills than students who had experienced the regular high school curriculum.

The Impact of Program Fidelity

Another question that plagues both program developers and program implementers, albeit for different reasons, is fidelity to the program model. Developers often argue that, because much effort goes into program development, power may be lost if the models are not followed. The counter argument, generally made by the program implementers, is that models are too restrictive and local flexibility is what makes the program successful.

Figure 2. Findings from the Comparison of EBCE Students with Comparison (Other) Students on Three Outcome Measures.

	Career Related Skills		Life Attitude		Academic Skills	
	EBCE vs Other	Expected	EBCE vs Other	Expected	EBCE vs Other	Expected
Significantly Positive	30	6	52	7	22	8
Positive	41	30	54	39	49	40
No Difference	23	41	26	58	36	59
Negative	15	30	12	39	23	40
Significantly Negative	4	6	6	7	25	8
	113	113	150	150	155	155

Figure 3. Distribution of Findings Comparing EBCE and Comparison (Other) Students in High Fidelity and Low Fidelity Programs.

	High Fidelity Programs		Low Fidelity Programs	
	EBCE vs Other	Expected	EBCE vs Other	Expected
Significantly Positive	84	15	20	6
Positive	104	80	40	29
No Difference	64	119	21	41
Negative	37	80	15	29
Significantly Negative	20	15	15	6
	309	309	111	111

Figure 3 shows the distribution of findings for the Between Group Comparative Differences separated into high and low fidelity of the EBCE program to the model chosen. These stratifications were derived from interview data from local implementers fortified by independent analyses of fidelity by the model developers. All initial disagreements were resolved and each program was categorized as either high fidelity (replication or slight modification) or low fidelity (significant modifications) before the meta-analysis was undertaken.

The meta-analysis shows that for both the Within Group Changes and the Between Group Comparative differences the EBCE programs had significantly positive findings. Again, these findings are much larger than necessary for significance at the .05 level. The high fidelity programs showed much stronger positive outcomes than the low fidelity programs. The analysis also shows that the EBCE basic concepts are so powerful that even low fidelity adaptations of the proven models show much better results than the regular high school curriculum on career, life, and academic skill outcomes. The answer to the question seems to be that fidelity to the model provides greater effects, but with a good program design even a highly modified program can be successful.

"the most significantly positive results were found in rural and urban areas."

The Effects of Residence and Socioeconomic Status

Some writers have claimed that EBCE may be successful and useful for middle class suburban students but they question its usefulness for poor urban and rural students. To check this possibility, we compared both Within Group changes and Between Group differences by classifying programs according to both residence of students and their socioeconomic status. The data for these stratifications were taken from interviews with the program directors at each of the local sites. Local EBCE directors were asked to characterize their programs as serving low, middle, or upper socioeconomic students and rural, suburban, or urban populations. An additional category, "very mixed," was added to the socioeconomic status (SES) classification as a result of the interviews.

We found that all residential areas showed significantly positive outcomes, but that the most highly significantly positive results were found in rural and urban areas. The least positive results were from the sites classified as suburban.

We also found that all socioeconomic levels on which there were data showed significantly positive outcomes. There were too few high SES sites for analysis, but we could find no evidence that EBCE programs were not positive for middle and low SES students. In fact, both of these classifications show greater strength than the "mixed" SES group, which included higher SES students.

It appears that EBCE programs are quite appropriate and are actually more successful with urban, rural, and poor students than suburban and middle, and probably high, SES students.

In summary, our meta-analysis of the 80 third party evaluations showed highly significant positive findings for the EBCE programs. It showed that students benefited from participation in EBCE significantly more in career, life, and academic skills than they would have benefited from participation in the regular curriculum in their regular high school. It showed that better programmatic results were associated with greater fidelity to the EBCE program model in the local implementation, and it

showed that local school district personnel could implement the EBCE program and its curriculum with successful results.

As Keith Goldhammer said of his evaluation of the EBCE program development in 1974, "I have seen the future . . . and it works!" □

The Kolmogorov-Smirnov one sample test was used to determine the significance of the differences in the frequency distributions. The statistic "D" equals the cumulative frequency proportional difference needed for significance. In Figure 1, for example, the greatest difference between actual and expected cumulative frequency proportions was between Actual Positive (264 = .674) and Expected Positive (145 = .310). $.674 - .310 = +.364$ D @ .05 = $1.36/\sqrt{558} = .058$

Basic Index of Strength @ .05 = $+.364/.058 = +6.28$

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