

## PERFORMANCE INDICATORS AND THE TVEI PILOT

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**Abstract.** The paper by Hazelwood, FitzGibbon and McCabe (this issue, pp. 61-68) established that TVEI pupils perceived their school experiences differently from non-TVEI pupils. The same questionnaires used in that study were also used to collect data on attitudes to TVEI. Additionally a cognitive test was administered and examination data for the public examinations of the summer of 1987 were collected for each pupil. This pupil-level data was analysed to examine the apparent effects of TVEI on pupils' qualifications and attitudes. The 'performance indicators' were not favourable to TVEI: pupils had slightly fewer qualifications and lower grades on the examinations they had taken, and attitudes were little affected. Reasons for these findings are considered.

### Overview

In the schools for which we had 'hard data', TVEI pupils obtained worse examination results than non-TVEI pupils in the summer of 1987, and this finding remained even after corrections were made for initial differences between the abilities of TVEI and non-TVEI pupils. If results on external examinations could be considered as outcome performance indicators for TVEI, then it must be said that the performance indicators were not favourable.

The purpose of this paper is to discuss this rather startling finding. Why did 'the largest intervention ever made by central government in the school curriculum' (Harland, 1987: 78) appear to have depressed examination performance? Why did 'lavish resources which seem to many like water in a desert' (Harland, 1987: 79) apparently leave those who did not benefit doing better than those who did?

A first question to ask is whether examinations were relevant at all to TVEI, for it was a complex project with many aims. The Operating Manual for TVEI, published by the Manpower Services Commission (MSC), contained a list of aims in Annex 2, dated January 1983. The first aim stated was:

*In conjunction with LEAs to explore and test ways of organising and managing the education of 14-18 year old young people across the ability range so that: (i) more of them are attracted to seek the qualifications/skills which will be of direct value to them at work, and more of them achieve these qualifications.*

Thus qualifications were central to the aims of TVEI but, since it was originally intended to be a programme for 14- to 18-year-olds, the examination results at age 16 must be considered to represent an intermediate result. This intermediate result, however, indicated that, at least for our sample, a cohort which took public examinations in the summer of 1987, the initiative was not on track with respect to its first stated aim. It is to the MSC's credit that the same operating manual called for 'careful monitoring and evaluation' and that a proportion of the funds was set aside for national and local evaluation activities. The findings reported here arose from our careful monitoring. A broad range of evaluation methods was used in the evaluations which we conducted for several LEAs but we report here the quantitative data, the kind of data which make up 'performance indicators'.

There are many caveats which have to be considered when attempting to interpret the TVEI/non-TVEI differences in examination performance. The principal difficulty was that the pupils in the TVEI pilot must have been different in many ways from pupils not in the TVEI pilot and, although we made allowance for some important differences, no one could make allowance for all possible differences. This topic will be further considered later in the paper. Suffice it to say, for now, that TVEI was not a *controlled* experiment. It was, at best, a 'quasi experiment' (Campbell & Stanley, 1966) with all the difficulties of interpretation such experiments involve.

Another important consideration was that the examination results for the summer of 1987 represented only the second cohort of pupils from the four-year TVEI pilot. Could an innovative programme be expected to be working as effectively as established programmes after only two years? It is clearly very important that similar data should be collected for subsequent cohorts. These subsequent analyses could be particularly interesting because there is a widespread expectation that the new examination (GCSE to replace GCE 'O' levels and CSEs) will be more appropriate for TVEI pupils because of its inclusion of such curriculum elements as projects and problem solving. However, since TVEI has been declared successful and extended widely, it may no longer be possible to obtain TVEI and non-TVEI groups. Consequently the data from 1987 examinations may be the only source of indicators of the effect of the TVEI experience on the acquisition of qualifications and on the standards reached on external examinations.

In addition to the problems of quasi-experiments and the newness of the initiative, and the possible mis-match between TVEI and the kind of examinations available in 1987, there were other possible explanations of the apparently slightly negative effect of TVEI on examination performance. The first two years of the programme were hampered by the national disputes which resulted in widespread teachers' 'actions'. Whilst the 'actions' would have affected non-TVEI pupils as well as TVEI pupils, the damage was probably more severe for TVEI pupils. Their teachers were attempting new syllabuses, new teaching methods and even new subjects and they therefore *needed* the in-service courses which could not be provided because of the actions. In short, the needs of TVEI teachers were greater than those of non-TVEI teachers and it was therefore likely that the actions were particularly damaging to the TVEI programme.

As evaluators we must also call attention to the general disruption caused by a new programme. One aspect which concerned us was the provision of cover for teachers receiving in-service training. In interviews, TVEI pupils had remarked that their teachers were 'always away on courses'. With teachers away during

working hours (the actions often prevented use of other hours) supply teachers had to be brought in. Supply teaching is almost always a holding operation; for pupils it often represents time lost from instruction. Were TVEI teachers out of the classroom on courses considerably more than non-TVEI teachers? Could the problem of supply teaching, this 'great undiscussed, unplanned and inefficient part of education' (Marland, 1979; Earley, 1986) have been a contributing factor to the examination discrepancy?

In addition to teacher absences there were pupil absences related to TVEI. TVEI pupils were involved in a greater range of activities within school time than were non-TVEI pupils. We recall that some TVEI pupils themselves expressed concern that the residential weeks, the work placements and the 'Enterprise' projects set them back with respect to their academic work. Were TVEI pupils spending too much time on other activities to compete successfully with non-TVEI pupils in examinations?

We must also, in all honesty, raise the question as to whether the teaching methods being promoted in TVEI were in any way related to the poorer examination performance. Were pupils learning as much in group work as in more formal classrooms? Did a problem-solving approach and the emphasis on relevance to everyday life fail to teach some pupils effectively or slow down the pace to the point where parts of the examination syllabus were not covered?

Readers who have been closely involved with TVEI, and have been aware of the enthusiasm and effort which has gone into this well-funded innovation, will be dissatisfied with the brief discussion presented thus far, even though the points raised provide some hypotheses as to why examination results were depressed among TVEI pupils. A number of very proper queries and objections can be anticipated and we now discuss some of these in more detail.

### **Were Examination Results Really Worse?**

By normal standards of evidence they were. Clearly comparisons between TVEI and non-TVEI examination results would not be fair if less academically able pupils had been enrolled in the TVEI programmes. The types of pupil in TVEI varied from school to school but the general pattern in our data was the same as that found nationally: TVEI had a reasonably representative cross-section of pupils from across the ability range but with some over-representation in the middle ranges of ability and under-representation of the most able *and* of the least able. This is illustrated in Table 1 in which the means and standard deviations of the ability measure (Raven's Standard Progressive Matrices) are reported school by school. Some schools, those in the TVEI pilot, contained both TVEI and non-TVEI pupils. Other schools were not in the pilot but had agreed to participate in the testing programme in order to assist the evaluation. From the beginning of the evaluation we had argued that, in TVEI schools, TVEI changes would filter from TVEI classes into other classes and it was therefore desirable to include in our database schools which had no TVEI pupils. We were particularly grateful that some schools not in the TVEI 'pilot' were willing to enhance the evaluation in this way (schools L and M in Table 1).

As can be seen in Table 1, TVEI pupils were more able, on average, than non-TVEI pupils in five schools and less able, on average, in six schools. Overall the TVEI mean was 45.0 and the non-TVEI mean was 45.2. With standard deviations

Table 1 Ability score (Standard Progressive Matrices)

School	TVEI		Non-TVEI		Effect size <sup>a</sup>
	Mean	SD	Mean	SD	
A	43.4	6.7	45.7	7.3	-0.32
B	48.0	5.5	40.9**	6.3	1.03
C	46.8	3.7	46.0	4.8	0.18
D	46.8	5.6	46.5	6.3	0.05
E	46.2	5.2	46.1	6.4	0.02
F	45.7	5.5	48.3**	6.5	-0.41
G	46.6	5.6	47.2	7.1	-0.09
H	44.0	7.7	44.5	7.8	-0.06
I	42.6	5.9	44.2	7.6	-0.22
J	43.1	7.0	44.5	7.2	-0.19
K	44.3	6.5	41.9	7.1	0.34
L			43.5	5.6	
M			45.5	6.9	
Overall	45.0	6.3	45.2	7.1**	-0.03

Notes: \*  $p < 0.05$ ; \*\*  $p < 0.01$

(a) Effect size = (mean TVEI - mean non-TVEI) divided by pooled SD.

of about 7 the two distributions clearly overlapped to a considerable extent and the difference between TVEI and non-TVEI means was not statistically significant. The difference in standard deviations was statistically significant ( $p < 0.05$ ) with TVEI pupils more homogeneous than non-TVEI pupils.

Table 2 presents some of the examination data for the same schools. Column 1 indicates the schools, as in Table 1. Columns 2 and 3 present the average number of examination passes obtained by TVEI and non-TVEI pupils. In three schools which had both TVEI and non-TVEI pupils, it was the TVEI pupils who obtained the larger number of qualifications and in eight schools it was the non-

Table 2 Examination performance: number of qualifications gained

School	TVEI	Non-TVEI
A	3.5	6.2
B	5.0	4.3
C	5.0	5.6
D	6.6	6.7
E	6.5	6.7
F	5.8	5.7
G	5.7	6.3
H	5.7	6.8
I	4.7	6.3
J	4.5	5.4
K	5.9	5.4
L		7.0
M		4.7
Overall	5.4	5.9



TVEI pupils. Overall, TVEI pupils had an average of 5.4 examination passes and non-TVEI pupils had an average of 5.9 passes. This is raw unadjusted data provided so that schools can draw up similar tables of their own by simply adding up the number of examination passes obtained by TVEI pupils (counting any grade other than unclassified or fail as a pass), and dividing by the number of TVEI pupils. The resulting statistic should then be compared with the same statistic for non-TVEI pupils. (We invite schools not in our sample to let us know if their 1987 results showed a similar pattern.)

It might have been the case that TVEI pupils were entered for fewer examinations, and this might have been at least part of the reason for the lower number of passes obtained. The data in Table 3 were derived from the average grade obtained on whatever examinations were entered: the pupil's 'Grade Point Average' (GPA). In other words, in Table 3 the same examination results are presented in another way which takes account of the grades received (the standards reached).

Furthermore, Table 3 presents a fairer TVEI/non-TVEI comparison because *allowance has been made for the ability of the pupils*. The GPA was based on a summary of each pupil's examination results on what is known as the ILEA scale: 7 points for an A, 6 points for a B, 5 points for a C at O-level or a grade 1 at CSE, and so on. These points were summed for each pupil to yield an 'examination score'. This sum was divided by the number of examinations taken to give the average grade obtained on whatever examinations were taken. These GPAs were matched up with the ability measure we had collected for each pupil. Given the general pattern of results, we could predict the GPA each pupil was expected to attain given that pupil's ability measure. The means indicate whether, on average, the pupils in each group obtained scores better than predicted (positive mean values) or worse than predicted (negative mean values). These positive and negative scores (standardised residuals), representing better or worse than expected performance, could be said to be *fair performance indicators*: they showed performance adjusted for differences in intake characteristics.

Table 3 Examination mean (GPA) regression analysis<sup>a</sup>

School	Exam mean residuals					Effect size <sup>b</sup>
	Mean	SD	Mean	SD		
A	-0.85	0.91	-0.17	0.99	-0.62	
B	-0.09	0.87	-0.35	0.77	0.24	
C	-0.46	1.15	-0.21	0.93	-0.23	
D	0.25	0.96	0.12	1.05	0.12	
E	-0.03	0.93	0.09	1.13	-0.11	
F	-0.25	0.99	0.18	1.12	-0.39	
G	0.07	0.99	0.69	1.19	-0.56	
H	-0.23	1.01	0.17	1.13	-0.37	
I	-0.74	1.01	-0.09	1.01	-0.59	
J	-0.24	1.33	-0.19	1.02	-0.05	
K	-0.21	1.16	-0.19	1.06	-0.03	
L			-0.46	1.04		
M			0.63	0.97		
Overall	-0.23	1.07	0.06	1.10	-0.26	

Notes: (a) Regression analysis using Standard Progressive Matrices to control for ability.

(b) Effect size = (mean TVEI residual - mean non-TVEI residual) divided by pooled SD.

The TVEI residuals were positive (better than expected) in two of the schools and negative (worse than expected) in nine schools. The non-TVEI residuals were positive (better than expected) in five of these schools and negative (worse than expected) in six. On average, for all pupils, the TVEI mean residual was  $-0.23$  and the non-TVEI residual was  $0.06$ . An Effect Size as defined in Table 3 had a mean value of  $-0.26$ , about a quarter of the standard deviation.

In short, TVEI pupils not only obtained fewer passes but also had lower average grades on examinations which they did pass, even after adjusting for ability differences.

As already emphasised, although these adjusted residual scores can be called 'fair performance indicators' they are, like all performance indicators, only indicators: their interpretation is not easy. The adjustment for intake differences is never perfect and it would be incorrect to state that we have proof that TVEI caused pupils to obtain worse examination results than they would otherwise have done. Such a firm conclusion could, strictly, only be drawn from a properly controlled experiment, which TVEI was not. A major problem was that, although the pupils taking TVEI and non-TVEI were similar in average ability, they might have been different in some important ways which affected their response to examinations. Because we collected a wide range of data (many 'indicators') we were able to search the data for ways in which TVEI and non-TVEI pupils differed. One kind of difference which might have affected examination results was that TVEI pupils were less keen to stay at school after the age of 16 than were non-TVEI pupils (Table 4).

Five questions were asked in which the pupils indicated how likely they were to: remain at school, go to college, take up a job, be looking for work or be on a Youth Training Scheme. From these a scale was formed indexing the pupil's 'Likelihood of Staying in Education' (LSE).

The questions were asked towards the end of the first term of the fourth year and they provided a reasonable predictor of examination performance (see

**Table 4** Attitude score (Likelihood of Staying in Education)

School	TVEI		Non-TVEI		Effect size
	Mean	SD	Mean	SD	
A	2.49	0.85	2.75	0.84	-0.03
B	2.36	0.59	2.10*	0.59	0.43
C	2.11	0.40	2.36	0.77**	-0.36
D	3.36	0.59	2.83**	0.74	0.71
E	3.04	0.74	2.85	0.82	0.74
F	2.80	0.66	3.16**	0.83	-0.44
G	2.69	0.67	2.85	0.82	-0.20
H	2.43	0.82	2.79*	0.87	-0.41
I	2.25	0.63	2.55*	0.77	-0.40
J	2.16	0.46	2.45**	0.74**	-0.42
K	2.36	0.66	2.28	0.66	0.12
L			2.39	0.80	
M			3.12	0.82	
Overall	2.54	0.74	2.70**	0.84**	-0.19

Notes: \*  $p < 0.05$ ; \*\*  $p < 0.01$

Effect size = (mean TVEI - mean non-TVEI) divided by pooled SD.

Table 5). The success of the attitude scale as a predictor may be due in part to the fact that it not only measured the pupils' self-assessments of their academic abilities, but it also took in the pupils' attitudes to the world of education and to employment. These attitudes in turn may have reflected the views of parents, peers and neighbourhood.

To some extent, then, the attitude scale measured something different from the ability test. To take account of this difference in attitudes between TVEI and non-TVEI pupils a multiple regression, controlling for both ability (using Raven's SPM) and attitude (using the LSE scale), was run. Since the pupils came from a wide variety of catchment areas (urban and rural, for example) the regression analyses were also run separately for each school. Some results from these within-school regression analyses appear in Table 6. However, the pattern found in Table 3 was little changed.

In nine out of 11 schools TVEI pupils had obtained worse results than non-TVEI pupils on the GPA scale. Results were somewhat worse if one looked at total examination points ('Exam total' in Table 6) by totalling the ILEA scale points rather than averaging them.

**Table 5** Correlation coefficients

	<i>Ability</i>	<i>Attitude</i>	<i>Exam total</i>	<i>GPA</i>
Ability	1.00			
Attitude	0.37	1.00		
Exam Total	0.57	0.60	1.00	
GPA	0.51	0.54	0.82	1.00

Ability: Standard Progressive Matrices

Attitude: Likelihood of Staying in Education

Exam Total: Total examination score on the ILEA scale

GPA: Mean examination score on the ILEA scale

**Table 6** Within-school multiple regressions controlling for ability (Standard Progressive Matrices) and attitude (Likelihood of Staying in Education)

<i>School</i>	<i>GPA</i>		<i>Exam total</i>	
	<i>Multiple R</i>	<i>Effect size</i>	<i>Multiple R</i>	<i>Effect size</i>
A	0.76	-0.65**	0.66	-0.90
B	0.68	0.35	0.55	0.02
C	0.64	-0.21	0.55	-0.35
D	0.69	-0.12	0.62	-0.62
E	0.75	-0.28	0.75	-0.12
F	0.77	-0.20	0.73	-0.30
G	0.77	-0.40*	0.73	-0.54
H	0.72	-0.24	0.72	-0.24
I	0.46	-0.57**	0.69	-0.77
J	0.43	-0.02	0.59	-0.39
K	0.36	0.07	0.67	-0.01
Overall	0.64	-0.20**	0.71	-0.36

Notes: \*  $p < 0.05$ ; \*\*  $p < 0.01$  for differences between mean residuals

Effect Size = (mean TVEI - mean non-TVEI) divided by pooled SD.

Based on the within-school regression equation.



As might be expected with the small sample sizes for the within-school regressions, the differences were significant at the 0.05 level in only a few schools. A combination of the probabilities (Winer, 1971: 49), however, proved to be highly significant ( $p < 0.001$  for the total score and the GPA) since there was considerable consistency in the direction of the results.

As these results emerged we examined them very carefully to see if the TVEI/non-TVEI difference could be removed by taking more factors into account. For example, we noted that there were many more boys in TVEI and boys generally obtain lower exam scores at 16. However, analysing separately by gender, and again controlling for abilities and attitudes, yielded the same pattern of scores: TVEI pupils did worse in nearly every school, regardless of gender.

We had also developed an index of deprivation, a summated scale consisting of items reflecting one parent families, large families and unemployment. This index showed a weak correlation with examination results and using it as a control did not affect the general pattern of results. Deprivation is a more distal indicator than ability or attitude. One may hypothesise that if deprivation has had effects, these will be manifest in the ability and attitude data, the more proximal variables for examination performance.

### **What about Vocational Qualifications?**

TVEI, it could well be argued, was concerned not with the traditional academic subjects such as English and Mathematics but with vocational subjects such as Information Technology, Craft, Design and Technology and Business Studies. If the examination results were re-analysed using only vocational subjects, would TVEI results then show up as better? Table 7 presents these data and provided no comfort. TVEI examination results were worse than non-TVEI results even on vocational qualifications.

### **Should TVEI be Judged by Examination Results?**

It can certainly be argued that TVEI should not be judged by examination results. Indeed we find much to agree with in a line of argument suggesting that if enjoyable, educationally sound teaching methods produce poorer examination results than 'cramming', it should be the examinations which should change, not the teaching methods. However, we would need to be clear in communicating such values and choices to parents and others. And we would need to be pretty sure of the soundness and desirability of the teaching methods before saying they were 'worth' lower examination performance. Furthermore, 'performance indicators' would need to be treated with caution and talk of educational 'standards' would need to be clear about differences in educational goals. Moreover, as evaluators, none of us can recall any such arguments being put forward; in fact quite the contrary. TVEI was supposed to increase qualifications.

Nevertheless it would be quite feasible to argue that it was more important for TVEI to produce changes in pupils' attitudes than to improve their examination results. (It would be more difficult to argue that improved attitudes were worth poorer examination results but let us assume for the moment that the examination results were 'teething problems' and that results may improve in the next year or two.)



**Table 7** Exam mean (GPA) on 'vocational' subjects<sup>a</sup>: regression analysis<sup>b</sup> mean residuals

School	TVEI		Non-TVEI		Effect size <sup>(c)</sup>
	Mean	SD	Mean	SD	
A	-0.90	1.40	-0.52	1.25	-0.30
B	-0.51	1.05	-0.32	1.04	-0.15
C	0.10	1.37	0.14	1.23	-0.03
D	0.33	1.30	0.10	1.10	0.19
E	-0.25	1.20	-0.05	1.38	-0.16
F	0.36	1.08	0.29	1.17	0.12
G	-0.03	1.09	0.41	1.24	-0.36
H	-0.21	1.12	0.75	1.18	-0.78
I	-0.90	1.04	-0.26	1.20	-0.52
J	-0.24	1.47	0.02	1.07	-0.21
K	-0.59	1.13	-0.01	1.25	-0.47
L			-0.35	1.21	
M			0.65	1.12	
Overall	-0.25	1.23	0.08	1.23	-0.27

*Notes:*

- (a) Subjects such as Computer Studies, Engineering, CDT, Technology, Typing, Commerce, Cookery etc.  
 (b) Regression analysis using Standard Progressive Matrices to control for ability.  
 (c) Effect size = (mean TVEI residual - mean non-TVEI residual) divided by pooled SD.

**Were TVEI Pupils' Attitudes to School and to Work Improved?**

Perhaps TVEI pupils would report that they found their lessons more interesting, made greater effort at school or liked school more than would non-TVEI pupils? Table 8 presents differences between TVEI and non-TVEI attitudes as measured by Likert scale items on the questionnaire. Whether or not these were adjusted for sex or attitude (LSE), they provided no support for the hope that at least school would have been more motivating for TVEI pupils.

Table 8 shows that TVEI pupils tended to report slightly less effort and enjoyment in school than non-TVEI pupils. The difference in enjoyment was significant at the 0.07 level whereas differences in the other two measures did not reach the 0.2 level of significance. When the three measures were controlled for sex and LSE separately using these variables as covariates there was still little difference between TVEI and non-TVEI pupils, although the rating for enjoyment was always less favourable for TVEI pupils.

Perhaps the questionnaires could not pick up the subtle changes in attitudes. That is quite possible, but the case needs evidence and it can be noted that the same self-report questionnaires *had* detected changes in the experience of lessons (Hazelwood *et al.*, in this issue, pp. 61-68).

At the very least, TVEI should have improved pupils' attitudes to the world of work. Poor attitudes to industry, to enterprise, to business were diagnosed as one of the major reasons for the need for a massive effort to intervene in education and change schools. (We, the evaluators, agreed with this diagnosis. Respect for technology, production, design, craftsmanship, and 'wealth creating activities' should be as high as respect for 'professions'.) We had asked pupils in 1985 a series of questions about their interest in working in various situations. The same

**Table 8** Attitudes to school

Measure	Deviation from mean			Deviation adjusted for sex			Deviation adjusted for LSE		
	TVEI	non-TVEI	p	TVEI	non-TVEI	p	TVEI	non-TVEI	p
Interest	-0.04	0.01	0.26	0.00	0.00	0.90	-0.03	0.01	0.43
Effort	-0.03	0.01	0.44	0.03	-0.01	0.47	-0.04	0.01	0.37
Enjoyment	-0.07	0.02	0.07	-0.02	0.01	0.56	-0.06	0.02	0.15

**Table 9** Differences in changes in interest levels for various occupational groups

Occupation group	Deviation from mean			Deviation adjusted for sex			Deviation adjusted for LSE		
	TVEI	non-TVEI	p	TVEI	non-TVEI	p	TVEI	non-TVEI	p
Service	-0.06	0.02	0.11	-0.01	0.00	0.82	-0.06	0.02	0.13
Factory	0.05	-0.02	0.10	0.06	-0.02	0.06	0.04	-0.01	0.26
Office	-0.02	0.01	0.65	0.00	0.00	0.94	-0.01	0.00	0.82
Laboratory	0.00	0.00	0.87	-0.04	0.01	0.27	0.03	-0.01	0.52
Uniform	0.05	-0.02	0.20	0.04	-0.01	0.33	0.05	-0.01	0.23
All	0.02	0.00	0.81	0.06	-0.02	0.59	0.03	-0.01	0.80

questions were repeated in 1987 before they took their examinations. Most pupils showed, on average, a decline in expressed interest in almost all kinds of occupations and TVEI pupils registered declines as large as the others.

If we examined changes in interest (Table 9) for TVEI and non-TVEI pupils, these were not significantly different and the picture remained essentially the same when each measure was controlled for sex and LSE, although controlling for sex did indicate that TVEI pupils were a little more interested in factory work than non-TVEI pupils ( $p=0.06$ ).

Once again we must emphasise that failure to find the changed attitudes could be due to: no changes having occurred; no changes having been reported by pupils; or inadequacies in the methods used to look for changes. We hope that others have made similar quantitative efforts. We must point out that these data represent 'performance indicators' of as high, if not higher, quality than any others around.

### Conclusions

TVEI was not run on a shoestring. It represented an unprecedented earmarking of educational resources, unprecedented categorical funding from the centre. TVEI is being extended to all schools and something like TVEI is now being extended to universities. We offer the present data as raising some important cautions. Why was achievement apparently depressed? Did other data than our own show the same effects in 1987? Can the additions which TVEI requires in the curriculum be introduced without damage to the kind of achievement measured by examinations? If not, which do we value?

We have suggested some possible explanations for the depression of examination results: initial differences, the start-up problems of a new initiative, the damage of the teacher 'actions', the lack of match between TVEI and the examination syllabuses, the time lost from normal instruction by both teachers and pupils being away from the classroom for TVEI activities such as 'enterprise' and work experience, the teaching methods used in the classrooms. Other explanations will doubtless be advanced.

Turning to attitudinal outcomes did *not* enable us to argue that these, at least, could be seen to have been positively affected but it must also be noted that TVEI implementations were different in different schools and some stronger effects may yet be found as we analyse the data further.

We recognise the limits of quantitative performance indicators, although it must be noted that the same methodology was able to produce evidence of process changes which we report elsewhere (Hazelwood, FitzGibbon and McCabe, this issue, pp. 61-68).

Finally, it must be emphasised that quasi-experiments are, as has long been recognised, very difficult to interpret. We can only conclude that more research is needed and some of it, at least, should consist of true experiments.

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