

# Education and Employers Taskforce Research Conference 2010

## The impact of practical and applied learning on 13-15 year olds of high ability in England and Wales

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*This short paper introduces a research project funded by Edge during 2009-10 and sets out the main findings from the quantitative data generated. The qualitative data is yet to be fully analysed but will be included in the project report due to be published later this autumn.*

### Overall project aim:

‘To explore whether practical and vocational learning at school has any positive or negative effect on students’

- motivation;
- levels of achievement;
- choice of post-16 learning routes;
- awareness of (and attitudes towards) a variety of career options.

### Design & method:

- Small-scale, mixed methods study.
- Literature component: historical assessment of the origins of the secondary school curriculum in England and Wales, the dynamic of aspects of that curriculum (e.g. ‘academic’ and ‘vocational’ forms) and of traditions surrounding the measurement of pupil intelligence; recent empirical studies of the effects of Information, Advice and Guidance offered to teenagers in schools in England and Wales; and recent evaluation studies of the impact of changes introduced into the secondary school curriculum since 2000.
- Empirical component. Six schools:
  - range of GCSE scores (5 A\*-Cs, incl. English and Maths in 2009): 42%-99%;
  - paired ‘types’: two Welsh 11-18 rural comprehensives following the Welsh Bac; two English 11-16 urban comprehensive specialist schools (specialism includes ‘Applied Learning’); two English 11-18 single-sex selective grammar schools (one boys-only, one girls-only).
- Pupil questionnaire (Key Stage 3  $n=57$ ; Key Stage 4  $n=113$ ). Target sample: 10 Key Stage 3 and 20 Key Stage 4 pupils at each of the six schools, selected as follows:
  - pupils groups are stratified samples of those identified, by measures used by the school concerned, as of above average ability (specifically: those scoring in the top two deciles of the school population (one third of each sample group) and those scoring in deciles 3-5 (two thirds of each group));
  - the 20 Key Stage pupils to be based on two groupings: those whose curricular ‘options choices’ comprise only traditional GCSE subject learning and those whose choices include ‘applied’/‘vocational’ elements (e.g. BTEC, Diplomas, ‘applied GCSEs’).
- Focus groups with pupils (half of those surveyed, selected randomly by each school) (KS3  $n=29$ ; KS 4  $n=61$ )
- Contextual interviews with teachers and other relevant professional staff in each school.

## Findings (as at mid-October 2010)

### Context

- We believe this to be the first study of its kind, either to:
  - focus on academically able young people; or to
  - seek responses from pupils in the same school at Key Stage 3 and Key Stage 4 to common questions about their learning preferences, their experience of receiving professional guidance and their plans for the future.
- The 'headline' quantitative results of the study, derived from pupils' questionnaire responses, are set out below. A more detailed version of these findings, along with the qualitative ones derived from the focus group discussions and contextual interviews with teachers, will follow in November in the full project report. That report will also provide a historical context against which to understand current debates about 'academic' and vocational' learning at school and how this history assists in drawing conclusions as to the meaning of data generated by the empirical part of the project.
- Our questionnaire design allowed us to report findings for pupils of five kinds:
  - age cohort*
    - by stage of learning (Key Stage 3,  $n=57$ ; Key Stage 4,  $n=113$ )
    - by gender
  - school-type*
    - by pairs of selective English grammar schools ( $n=60$ ), 11-16 urban English comprehensives ( $n=57$ ) and 11-18 rural Welsh comprehensives ( $n=55$ )
  - individual school*
    - across six schools (8-10 each in Key Stage 3; 17-20 each at Key Stage 4)
  - kind of programme followed in Key Stage 4*
    - by students whose curricular options comprise solely additional GCSE subjects learning ( $n=55$ ) and those whose choices include 'vocational elements' ( $n=58$ )and all combinations of these.
- The quantitative data are here reported under three headings:
  - 'Enjoyment of school and motivation in different kinds of learning'
  - 'Considerations and challenges when making 'options choices' within the curriculum'
  - 'Plans for after leaving school'

### Enjoyment of school and motivation in different kinds of learning

- **Headlines:**
  - Across both age groups in our study (Key Stage 3 and Key Stage 4):
    - most academically-able teenagers were highly positive about and motivated by their learning at school.
    - high ability pupils of all kinds valued strongly physical, expressive and experiment-based learning and placed these well above more analytical forms of learning.
    - a very large majority of these pupils preferred types of learning that were strongly influenced by perceptions of where their abilities lay, reinforced by high prior attainment in these same areas.
    - a very large majority considered that learning with practical elements was more, or just as important as mandatory subjects such as English and maths.
  - Overall, older girls were more positive about their learning, regretted more the types of learning that they found difficult and were more risk averse in their choices.
  - In this part of the survey, neither 'school-type' (e.g. selective/non selective entry, high/low overall attainment) nor type of options chosen at Key Stage 4 ('academic' as opposed to 'applied'/'vocational') had a discernable influence over the patterns of pupils' responses.
- **In more detail:**
  - Enjoyment. Pupils across our schools enjoyed most or all their timetabled school activities (at Key Stage 3 boys (79%) more than girls (61%) and, at Key Stage 4, girls (67%) more than boys (63%)). As with almost all of the other findings presented in this report, patterns of enjoyment of timetabled school activities were not correlated to 'school-type' (i.e. the pairings in our sample of the English grammar schools, 11-16 urban English comprehensives or 11-18 rural Welsh comprehensives). In

contrast, responses to this question varied among the schools individually, as they did in relation to almost all of the other findings.

- Preferred kinds of learning. Active and physical learning ('acting in a physical way e.g. sport, drama, performance') and experiment-based learning ('try something out and see how it works or what happens') were the most valued of various 'kinds of learning' enjoyed by those in both age groups, rather than more analytical kinds of learning usually identified with 'academically able' pupils. This finding was very clear across age groups (albeit stronger, overall, at Key Stage 3), between both genders, across types of Key Stage 4 programme being followed ('academic' or 'applied'/'vocational') and, in the main, across individual schools. One striking result here was that the students at Key Stage 4 studying only traditional GCSEs (the 'academic' group) rated highly (second preference) – and higher than their counterparts who had chosen 'applied'/'vocational' elements of study – the kind of learning described as 'tackling real world or everyday life problems or situations'.
- Motivation to pursue a type of learning. This was very strongly influenced by pupils' sense of their ability in particular areas of learning and the reinforcement given to this by high prior attainment. This was true for boys and girls, and across and within: age groups, types of Key Stage 4 programme being pursued and five of the six schools. Among the remaining minority of respondents overall, there was some evidence that older girls had more regrets about struggling in areas of learning they preferred and that they were more likely to be risk averse than the younger age group.
- The value of practical learning. There was strong support among both age groups (and on the part of younger boys especially) for the general notion that practical learning is just as important as more traditional forms of study. As might be expected, of all respondent groups, it was those at Key Stage 4 who had chosen solely further traditional GCSE subjects who were slightly less supportive of the value of practical learning. Similarly, a large majority of respondents across almost all groups (the exception was one Key Stage 4 group in one school) reported that they considered that most or all of their friends also enjoyed very much learning that contained practical elements.

### ***Considerations and challenges when making 'options choices' within the curriculum***

#### **• Headlines:**

- Most of these 'academically-able' students planned to choose traditional subject courses in the year ahead but, as more choice opened up post-16, more 'applied'/'vocational' options were being chosen, regardless of respondents' school-type.
- Choosing courses was seen as difficult by both age groups although the challenge appeared slightly easier for those in grammar schools at Key Stage 3 and, among the older age group, slightly easier for boys and girls in equal measure and across all schools.
- By far the most influential factor over course choices at Key Stage 3 across all schools was the 'type of learning that is most enjoyable. (e.g. "ideas subjects" or "practical subjects")'.
- At Key Stage 4 two influences were equally strong and were dominant, regardless of school-type or kind of programme ('academic' or 'applied'/'vocational') currently being followed: kinds of learning that are enjoyable and those that related to the pupil's future plans.
- The more specific considerations that weighed with pupils when making choices are complex.
  - o All pupil groups reported strongly that they had the self-confidence to make their own choices and that they had received entirely sufficient guidance in how to make choices.
  - o Older pupils reported being more inclined to choose options based on clearer post-school plans and in a way less influenced by the advice of particular teachers.
  - o At Key Stage 3 boys were more concerned to choose options likely to strengthen subsequent exam success, a gender-based result that was strongly reversed among Key Stage 4 respondents. Among the female respondents, clarity about future plans by Key Stage 4 had developed more strongly than for boys.
  - o At Key Stage 4 two influences were equally strong and were dominant, regardless of school-type: kinds of learning that are enjoyable and related to the pupil's future plans.
  - o At Key Stage 4, those following programmes comprising solely traditional GCSE subjects (as opposed to 'applied'/'vocational' elements) were more influenced in their choices by the kind of learning they considered would be easiest/most enjoyable at the next stage.

- Responses to the items in this question served to highlight the individuality of each school culture rather than any 'school-type' effect.
- **In more detail:**
  - Likely overall course choices for the year ahead. A majority of pupils in both age groups were planning to choose courses that would comprise solely GCSEs (excluding 'applied' GCSEs) (70% of those currently in Key Stage 3) or A levels (56% of those currently in Key Stage 4). Of the main groups studied, girls at Key Stage 3 were least likely yet to have made a decision when the survey was undertaken (timed immediately to precede the point at which, in most of the schools, decisions were to be made). Among the 12% likely to choose an 'applied'/'vocational' course (e.g. a Diploma, BTEC or 'applied' subject course) in Key Stage 4 and the 22% expecting to do the same post-16, patterns of choice based on school-type were not apparent but patterns among the schools individually were quite varied. One clear trend emerged among Key Stage 4 respondents. Those whose programme was currently made up solely of traditional GCSE subjects were much more likely to anticipate continuing with this form of study (by choosing A levels solely or the International Baccalaureate).
  - How difficult is it to make course choices? Pupils reported that the choices in prospect were either very or quite difficult to make: 79% at KS3 and 66% at KS4. At Key Stage 3 grammar school respondents reported slightly less difficulty in making their choices while, at Key Stage 4, the easing of the perceived difficulty was similar overall for both boys and girls. This latter finding could imply either that older students feel more confident in their decisions or that they are less challenged when making them compared to their peers at Key Stage 3 – or it may mean that, with age, pupils feel they know themselves better. However, there was considerable variety in the responses of the older age group when compared on a school-by-school basis and this cut across school-type.
  - The rationale for pupils' course choices. By far the most influential factor over course choices at Key Stage 3 was the 'type of learning that is most enjoyable (e.g. "ideas subjects" or "practical subjects")'. This consideration was placed far ahead (in descending order) of: choices related to future plans (which girls considered more important than boys), choosing the forms of learning that individuals found easiest (a stronger influence over boys than girls), choices relating to an out of school interest or the need to secure parental support. The rankings given to these considerations were not clearly correlated to school-type. At Key Stage 4 two influences were equally strong and were dominant, regardless of school-type: kinds of learning that are enjoyable and which related to the pupil's future plans. Between these two considerations, girls and those who were following courses comprised solely of traditional GCSE subjects valued more highly the link between course choice post-16 and future plans.
  - Specific considerations that influence pupils' course choices. The relative strength of these various considerations was complex to unravel but clear.
    - *Among both age groups.* Pupils reported very strongly that they had the self-confidence to make their own choices, that they had received entirely sufficient guidance in how to make choices and that enjoyment of learning was a high priority (especially at Key Stage 3). Conversely, parental approval was of low and decreasing importance and, by a large margin, choosing the options being followed by close friends was least important of all.
    - *Between the two age groups.* Older pupils, as might be expected, reported being more inclined to choose options based on clearer post-school plans ('I already know what I want to do...') while the roles of teachers appeared more nuanced for the older age group. Liking the teacher responsible for the options to be chosen was less important for the Key Stage 4 respondents. Moreover, compared to those in Key Stage 3, this group also considered that their teachers knew them better, with the result that their advice was more reliable.
    - *Gender.* Variances were generally weak but at Key Stage 3 boys were more concerned to choose options likely to strengthen subsequent exam success, a gender-based result that was strongly reversed among Key Stage 4 respondents. This may be explained by the Key Stage 4 boys reporting more often than girls that they felt better known by their teachers and thus in receipt of the best possible advice; boys were also much less influenced in making future choices in Key Stage 4 because they liked the teachers concerned. Among the female respondents, clarity about future plans had developed more strongly. However, girls at Key Stage 4 were much more likely to feel poorly understood by their teachers and, by this age,

- were also much less likely than boys of the same age or girls in Key Stage 3 to link their future plans to types of learning that they found enjoyable.
- *Key Stage 4 course type.* Those who were following programmes comprising solely traditional GCSE subjects were more influenced in their choices by the kind of learning they considered would be easiest/most enjoyable at the next stage, whereas those whose programme included 'applied'/'vocational' elements were much more likely to have made choices based on clearly formed plans for when they were aged 18+ (with the result that this group was less likely than 'traditional subject only' students to prioritise learning that they expected to be easiest/most enjoyable).
  - *By individual school.* At one of the grammar schools, pupils were being introduced to areas of study that challenged gender patterns in occupational uptake. These pupils reported the lowest levels of appreciation of the help received in making choices, and were least likely to consider it important to choose options that would be easy, already most enjoyable or were designed to secure them the highest marks in subsequent exams. These pupils were also the least likely to have fixed ideas about what they would be doing having left school, and, by a large margin, the least likely to believe that their teachers knew them very well. No doubt connected to this last point, they were also the most likely to seek advice from parents and to feel the need to like the teachers who would be teaching the options they chose to study at the next stage. Taken together these findings suggest that the curriculum innovation being championed by the school was accompanied by the greatest level of uncertainty about the future of any pupil group. It may be a mark of excellent guidance practice that pupils are shaken from their assumptions and challenged to link their curriculum choices to a thoroughgoing exploration of their potential interests and breadth of options.
  - *School-type.* The data for this question probed perhaps most thoroughly in our questionnaire the relation of school culture to aspects of guidance process. There were no clear patterns based on school type (i.e. data aggregated to the pairs of: grammar schools; Welsh comprehensives; and English comprehensives). Rather, responses to the items in this question served to highlight the individuality of each school culture and how this was reflected in responses pupils made to questions probing those considerations most weighing with them in reaching decisions about future choices in learning and potential adult occupations.

### ***Plans for after leaving school***

- **Headlines:**
  - Three-quarters of pupils expected to be in full-time learning post-16 or post-18.
  - Uncertainty about this was higher in schools with lower average pupil attainment, among boys and among older respondents whose programme included 'vocational' elements.
  - Regardless of school-type, older respondents were more likely than their younger peers to have a clear job / career in mind. However, this was accounted for by a very strong increase in this response among boys, accompanied by a small decrease among girls.
  - Older respondents whose programmes included 'applied'/'vocational' elements were much more likely to have a job in mind.
  - Most pupils valued strongly a link between the kinds of learning they enjoyed at school and the content of the future job they would have.
  - Regardless of school-type, this desire was equally strong for younger and older girls but very much diminished for older boys. Meanwhile, there was a clear link between those at Key Stage 4 whose programme comprised solely traditional GCSE subjects and those who hoped strongly to continue a similar form of learning once at work.
- **In more detail:**
  - Immediate plans on leaving school. A large proportion of pupils in both age groups expected to continue in full-time education after the next stage of learning (i.e. post-16 or post-18) and at Key Stage 4 only 4% had already decided not to pursue full-time higher education. Among the individual schools, the extent of remaining uncertainly about such personal plans ranged from 10% to 29% of the respondents, a profile broadly in line with the record of exam success in each school (where average attainment was highest more students already had clear post-18 plans). Girls of both ages reported being more likely already to have decided to continue in full-time learning

beyond compulsory schooling, a resolution that, compared to boys, had become stronger among the older age group. It was also the case that pupils of both genders who had chosen a Key Stage 4 programme comprising solely traditional GCSE subjects were more likely to expect to stay in full-time learning post-16/18.

- Possible adult occupation. Overall, older respondents at each school were more likely than their younger peers to have a clear job / career in mind. However, this was accounted for by a very strong increase in this response among boys, accompanied by a small decrease among girls. In addition, those at Key Stage 4 whose programmes included 'applied' / 'vocational' elements were much more likely to have a job in mind, suggesting that such curricula had served to focus such participants on specific career options. There was no clear correlation between the number of pupils in each school who had already settled on an adult job/career and the type of school they attended.
- Link between learning enjoyed at school and that sought in adult work. Most pupils valued strongly a link between the kinds of learning they enjoyed at school and the content of the future job they would have. This desire was stronger at Key Stage 3 (70%) than at Key Stage 4 (54%), the change being strongly influenced by a swing in the responses of boys within the two age groups. Male respondents at Key Stage 3 wished very strongly that the link might be preserved whereas, by comparison, those at Key Stage 4 had significantly relegated its importance and likelihood. Meanwhile, for girls, such a link remained the desire of a stable majority of both age groups (60%). This pattern of response was not correlated to type of school attended but there was a clear link between those at Key Stage 4 whose programme comprised solely traditional GCSE subjects and those who hoped strongly to continue a similar form of learning at work.

## Discussion

Perhaps the most clear-cut and significant finding emerging from the quantitative data in the study is that, regardless of the type of school they attended or the type of Key Stage 4 programme they followed, academically-able younger teenagers enjoyed their school learning, valued practical learning just as much as more abstract forms and yet mainly expected to follow traditional subject learning post-16.

One reason for the value they placed on practical learning was their very strong enjoyment of physical, expressive and experiment-based learning, compared to more analytical forms. For some pupils, a second reason probably related to the link they made between the types of learning they enjoyed, the perception they had of the areas in which they excel and the way this link had been reinforced through formal attainment. In our sample, some highly-able pupils were making 'vocational' choices, regardless of the type of school they attended. However, the connections just listed cut both ways and, for a greater number of students, their pattern of existing and projected attainment (reinforced by the ability measurement tools that schools use) was probably pushing them away from practical learning after completion of Key Stage 4.

These complexities help to explain why academically-able pupils consider it difficult to make course choices even though they reported very strongly the self-confidence needed to make them, reinforced by their sense of having received entirely sufficient guidance.

At Key Stage 3 pupils considered that by far the most important of the general considerations influencing their choices was the 'type of learning' they found most enjoyable, for example whether these were 'ideas subjects' or 'practical subjects' (the choices open to them at this stage included: additional GCSE subjects of a traditional kind; 'applied' GCSE subjects; or courses conventionally regarded as 'vocational' such as a Diploma or BTEC). At Key Stage 4 two general influences were equally strong and were dominant when planning for the next stage: kinds of learning that were enjoyable and seen as related to the individual's future plans (the choices available at this stage were now much broader).

Relating these findings to those reported earlier, it would seem that, by choosing either solely additional GCSEs in traditional subjects, or mostly GCSEs leavened with an 'applied subject', a large majority of the younger age group found a balance between their enjoyment of practical learning and a consolidation of their specific abilities in the light of attainment to date. Within this dynamic, more boys than girls at Key

Stage 3 were concerned to choose options for the specific purpose of increasing likely subsequent exam success.

Meanwhile, the older group responded to the greater choices on offer by prioritising more highly options linked to post-school plans (now clearer to them – especially among girls – than when they made their choices in Key Stage 3) and in a manner less influenced by the advice of particular teachers. By this stage of schooling these pupils were also able to draw on the experience created by the choices they had made at the previous stage (i.e. whether or not to include ‘applied’/‘vocational’ elements in their Key Stage 4 programme). The additional effect of this was three-fold. Those following programmes comprising solely traditional GCSE subjects were more influenced in their choices by the kind of learning they considered would be easiest/most enjoyable at the next stage; they were less likely, as yet, to have a career in mind; and they valued more highly than their ‘applied/vocational’ counterparts the link between course choice post-16 and the plans they had for when they were 18 (i.e. higher education courses for the large majority). Finally, these dynamics at Key Stage 4 were also influenced by gender. Girls in the older group were more positive about their learning, regretted more the types of learning they found difficult, found making choices slightly more difficult than boys, were more likely to be influenced in their choices by future plans (i.e. attending university rather than, as yet, having a clear career goal) and were more risk averse when making these choices. Girls were also much more consistent in their strong desire across age groups (and compared to older boys) to see the kinds of school learning they enjoyed replicated in the jobs they would do eventually.

From this we can conclude that, while difficult, choice-making in Key Stage 3 allows these academically-able pupils to strike a balance between their enjoyment of practical learning and the more abstract studies in which they do well. By the time they face choices in Key Stage 4 determining the shape of the post-16 phase, their options have broadened, they have matured in self-understanding and this, in turn, has been influenced by the choices that have already made. For those who either ‘played safe’ (more girls than boys) or who had never been tempted to broaden beyond an established pattern of high attainment in traditional subjects, there was, as yet, no pressure to step off the ‘academic’ ladder and such pupils felt more strongly than their counterparts pursuing courses with an ‘applied’/‘vocational’ element that the logic of their choices to date had a longer-term rationale (effective preparation for the university courses that three-quarters expected to access). They also hoped that their learning preferences at school would be components of their subsequent careers.

These cohort-level patterns disguise significant variation in the responses generated by the pupils at each school – a ‘school culture’ effect which will have been influenced in part by the specific characteristics of each school. For example, uncertainty as to post-18 plans was correlated in our data with the average attainment at GCSE achieved by each school in 2009 (the highest levels of uncertainty being linked to the schools with lowest average attainment). We also found some evidence that Key Stage 3 pupils in the two selective schools found making choices less difficult than their peers. However, it was striking that in nearly all of the data there were large fluctuations in response patterns between schools that could *not* be clearly attributed to ‘school-type’ in terms of our three pairs (English high-attaining grammar schools, Welsh mid-attaining rural 11-18 comprehensives following the Welsh Bac and lower-attaining English urban 11-16 comprehensives).

From this we conclude that, within the range of ability represented in our sample as a whole (the top half of pupils in schools where average GCSE attainment in 2009 ranged from 99% to 42%), it is the similarity of outlook and disposition of students – and the way this is influenced by the culture of the particular school they attend – that is most significant. In particular, despite the influence of specific school culture, the great majority of pupils valued practical and expressive learning highly but, in the main, gravitated to more abstract learning as they progressed through the teenage years.

It is expected that the qualitative data will cast further light on these findings once they have been analysed fully. It is also anticipated that all of the data generated can be tied convincingly to overall explanations suggested by the contextual literature that has already been reviewed – in particular, the relationship over centuries between the secondary school curriculum and that found in higher education, how pupil attainment maintains this relationship in the present and how, in turn, both have been influenced by ideas about pupil intelligence and the instruments used to measure it.