UNIVERSITY OF
NEWCASTLE

CHARACTERISTICS OF STUDENTS TAKING ADVANCED GNVQs
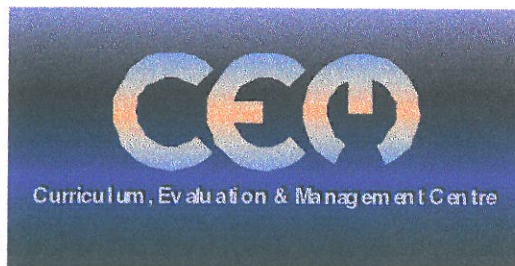
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March 1995

Alis⁺

A-Level Information System plus GNVQs

CEM

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EXECUTIVE SUMMARY

- These findings arose from a study using data from the ALIS (A-level Information System) database for 1994.. It contained 1,797 students who had started Advanced-GNVQ courses in 1992 and 39,207 A-level students.

- Of the 265 schools on the database 27% offered Advanced GNVQ courses. The proportion in colleges was twice as large (55% of the 117 colleges, most of which were VIth Form colleges).

- Four Advanced GNVQ courses had substantial enrolments: Art & Design, Business, Health & Social Care and Leisure & Tourism. The GNVQ Business course enrolled the largest proportion of students (45 percent of the GNVQ sample).

- There was a balanced intake between male and females on Business courses and Leisure & Tourism but more females than males in Art & Design and Health and Social Care.

- There were no substantial differences between students taking the four Advanced GNVQs in terms of their levels of prior achievement .

- Compared with A-level students, Advanced GNVQ students were, in general, at the low end of the achievement range in GCSEs, with about 70 percent having an average GCSE grade of less than a C. Advanced GNVQ students were particularly weak in mathematics and science at GCSE. However, in each of the four Advanced GNVQ courses on which there was data there were a few students from the top quarter, i.e. who were very able according to the GCSE scores.

- The equivalence of an Advanced GNVQ to two passes at A-level at grade E appeared justified. A sample of A-level students matched to the Advanced GNVQ sample by their GCSE performance, achieved two Es at A-level on average.

- Twelve percent of students taking an Advanced GNVQ also took an A-level and achieved an average grade between an E and a D.

- Students on Advanced GNVQ courses were considerably more likely than A-level students to have previously taken vocational courses. This may reflect career decisions being made earlier than age 16.

Characteristics of students taking Advanced GNVQs

A report for SCAA

April 1995

1. Introduction

1.1 There has been concern that traditional academic A-levels may not meet the needs and interests of the growing population of post-16 full time students. There is also some confusion among employers and admissions officers for higher education as to the interpretation to be put on Advanced General National Vocational Qualifications (Advanced-GNVQ) qualifications.

1.2 This short study of the characteristics of students on Advanced GNVQ courses was designed to obtain a clearer picture of those students who had taken Advanced GNVQs instead of, or in addition to, A-levels.

1.3 The A-level Information System (**ALIS+***) was used to investigate what kinds of students were opting for any one of four Advanced GNVQs: Art & Design, Business, Health & Social Care, Leisure & Tourism and how they might be expected to fare. The latter investigation had a bearing on the equivalence of A-levels and Advanced GNVQs.

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* ALIS+ refers to ALIS plus Advanced GNVQs. The project is briefly described in the Glossary. Words in **bold** are explained in the Glossary.

2. The ALIS sample

2.1   In 1994 the ALIS[+] project had data on 1,797 students who had started on Advanced GNVQs in 1992 and 1993, and 39,207 A-level students who were completing courses in 1994.

2.2   Of the 1,797 taking an Advanced GNVQ, 219 students, almost 12 percent of the GNVQ group, were taking an A-level in addition to their Advanced-GNVQ. The performance of these students on their A-level courses is summarised in Section 5.

2.3   It was important to compare Advanced GNVQ students *with A-level candidates who were similar.* Since the variable which is most highly correlated with A-level performance is the student's **average GCSE point score**[1], this variable was used to create a matched sample of A-level students (Table 1) ..

Table 1. Description of the three datasets used in the analyses.

Dataset name	Description	N	GCSE-average score
The Advanced GNVQ group	All students in the ALIS database who reported they were taking an Advanced GNVQ	1,797	4.5 D/C)
The Matched A-level sample	A random sample of A-level students whose GCSE -average scores matched those of students taking Advanced GNVQ	1,797	4.5 (D/C)
Full A-level Sample	All students in ALIS 1994 who took only A-levels	39,207	5.6 (C/B)

2.4   The 1,797 students found in the ALIS database starting Advanced GNVQs in 1992 and 1993 represented to 4.5 percent of the ALIS total. However, these students were unevenly spread between institutions with 73 percent of *schools* (194 out of 265) apparently enrolling no Advanced GNVQ students. However,

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[1] Glossary item. GCSE scores were computed by assigning 7 points for an A, 6 for a B, 5 for a C etc. A student who had four As and four Bs would have an average of 5.5 and a total score of 52.

among *colleges* the percent with no Advanced GNVQ students was only 45 percent. It should be borne in mind that the colleges in ALIS were predominantly Sixth Form Colleges.

Table 2. Percentages of institutions and students with Advanced GNVQ courses.

Type of institution	N	% of institutions offering at least one Advanced-GNVQ course	% of students taking Advanced GNVQ courses in 1994
Schools	265	27	2.9
Colleges	117	55	5.1
TOTAL	382	36	4.3

2.5   It might well be expected that those choosing Advanced GNVQs would be more likely to have already undertaken a vocational course. The percentages who had previously taken vocational qualifications are shown in Table 3.

Table 3. Percentages of students who had previously taken vocational qualifications.

	Schools And Colleges **with** Advanced-GNVQ Courses		Schools And Colleges **without** Advanced-GNVQ Courses
Previously taken Vocational qualifications	Advanced GNVQ students	A-level students	A-level students
City and Guilds	9.3	3.3	2.8
BTEC first	8.9	0.4	0.4
CPVE	5.8	0.9	0.9
RSA	15.7	11.8	10.8

2.6   More of the students who, in the sixth form, chose Advanced GNVQs had shown an interest in vocational qualifications earlier in their school careers. This finding fits well with the common perception that, for many students, attitudes affecting sixth form choices are determined earlier in the school than the GCSE year.

2.7   How relatively well subscribed were the four Advanced-GNVQs?   Figure 1 indicates the percentages taking each course.   Business was the most heavily subscribed course, accounting for 45 percent of the Advanced-GNVQ enrolment and Art & Design the least heavily subscribed.

Figure 1.   Percent of the sample of Advanced GNVQ students who were enrolled on four courses.
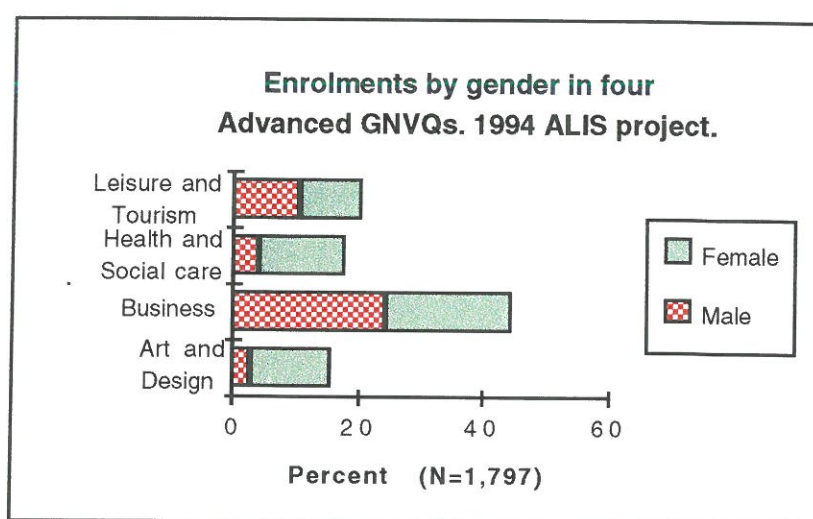
2.8   Two courses had enrolled considerably more females than males: Health & Social Care and Art & Design.

3. Differences in Prior Qualifications of students on the four GNVQs.

3.1   The majority of students on the four GNVQ courses had taken GCSE examinations.   Three indicators were derived from the grades on GCSE examinations: the **average points score**, **the total points score** and the number of subjects taken at GCSE.

3.2 Differences between the various Advanced-GNVQs were small in terms of GCSE-average points scores. The lowest average intake was in Health & Social Care in which students had a GCSE-average score between D and C (4.4). The highest intake was in Art and Design with a mean GCSE-average score of 4.6., also between a D and a C. The difference was trivial in size.

3.3 The GCSE-total scores and the numbers of GCSEs taken cast a slightly different light on the question of prior qualifications. Art and Design students were lowest on these measures due, apparently, to their tending to have taken 7 rather than 8 subjects. However, differences were again small in magnitude although statistically significant, with the GCSE-total score ranging from generally 33 (Art and Design) to 36 (Business), overall differences of less than 3 points.

3.4 Details and statistical tests are presented in the Appendix. (Table A1) The extensive degree of overlap between the intakes to the four Advanced-GNVQ courses is further illustrated by Figures A1 (a) to (c) in the Appendix.

## 4. Advanced GNVQ students compared with A-level students.

4.1 In Table 1 we saw a substantial difference between Advanced-GNVQ students, who had a mean GCSE-average score of 4.5 (D/C) and A-level students with an average of 5.6 (C/D).

4.2 The mean GCSE-*total* score for Advanced-GNVQ students was 34 points whilst A-level students averaged 47 points. The difference in the numbers of GCSEs taken was less than one so the large differences in total scores seemed to be attributable to low grades rather than lack of entries.

4.3 Advanced-GNVQ students were compared with students entering three A-levels: Art, Business Studies and Chemistry. Art and Business Studies were chosen for relevance to vocational courses. Chemistry was representative of the

more difficult A-levels (mathematics, sciences and foreign languages.) Figure 2 shows the proportion of students entering each course who were classified as being in the top, upper, lower or bottom quarter based on the entire distribution of GCSE scores.   Business Studies at A-level, for example, enrolled only 15 percent of top quarter students whereas Chemistry A-level enrolled about 3 times that proportion (45 percent) from the top quarter.

4.4   Advanced GNVQ courses in 1994 enrolled a group of students with only 2.4 percent in the top quarter. There were 71 percent in the lowest quarter, a larger proportion than for any A-level subject.

4.5   The pattern within particular institutions may, of course, be quite different.

**Figure 2.   The percentages of Advanced GNVQ and A-level students from four levels of prior achievement.
(lowest quarter to the left in each subject)**
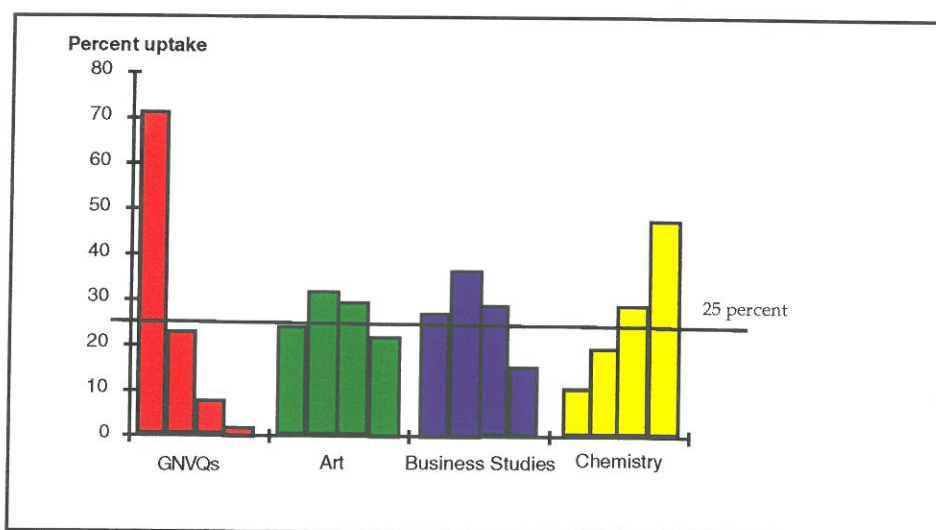
4.6   Although Advanced-GNVQ students had lower prior achievements than the average A-level student, in every Advanced GNVQ course there were some students with prior achievement levels in the top **quarter** for A-level students in general.   It will be important to see if these students tended to obtain distinctions and to what extent the grading of Advanced-GNVQ students is helpful in making fair selections for employment and higher education.

4.7   The uptake of GNVQs must have varied partly because of availability. Of those students taking A-levels in the matched sample, i.e.. from a starting level equivalent to those taking Advanced-GNVQs, 37 percent were in institutions which did not have any students reporting taking Advanced-GNVQs. Some of these students must have taken A-levels for want of any alternative. In order to study students who did have the choice of taking either Advanced-GNVQs or A-levels, a second matched sample was created from institutions which offered both A-levels and Advanced-GNVQs. A **discriminant analysis** showed the variables which best differentiated Advanced-GNVQ students from A-level students in these institutions in which there *was* a choice. (Table 4)

Table 4. Significant differences between Advanced-GNVQ students and A-level students in the same school or college.

Variable	Mean for Advanced-GNVQ group	Mean for A-level group	F ratio	Effect Size
Average GCSE score in the Sciences	4.21	4.48	43.51	0.24
Parental Occupation	3.81	3.99	13.70	0.14
Average GCSE score in Humanities	4.71	4.86	23.58	0.18

NOTE: the analysis was run separately for each Advanced-GNVQ but results were so similar that this single table is sufficient to represent the situation. All F ratios were highly statistically significant p<.001)

4.8   Those who had chosen GNVQs were most different from A-level students in the same institutions in

   •   having lower GCSE grades, particularly in the sciences
   •   having parents with lower status occupations

The average score on a measure of parental occupation was higher for A-level students but the Effect Size[2] was only 0.14.

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[2] Effect Size = standardised mean difference. In this case the distribution of parental occupations was 0.14 of a standard deviation higher for A-level students than for Advanced GNVQ students. This means that the average A-level student had parents in higher status jobs than 55   percent of Advanced GNVQ students. Had the two groups been equivalent the figure would have been 50 percent. A fuller explanation is in the Glossary.

5. Comparability of A-levels and Advanced GNVQs

5.1   It has been suggested that an Advanced GNVQ is equivalent to two A-levels. Certainly an Advanced GNVQ is a two year course and many students aim to use the qualification to obtain entry into higher education (Aarons, Hawes, & Gayton, 1979).

5.2   Since Advanced GNVQs appear to be substituting for A-levels, forming an alternative route to employment and to university places, to what extent is the Advanced-GNVQ equivalent to A-level qualifications? This is obviously a complex question since a full answer would require an in-depth exploration of what is learned, how well it is learned and whether this learning, along with the skills developed in Advanced GNVQ courses, will stand the student in good stead later, in employment or higher education.

5.3   Such information requires longitudinal, follow-up studies and is beyond the scope of this short investigation. However, tentative equivalencies between A-levels and Advanced-GNVQs can be considered *if GCSE performance is taken as indicative of aptitudes for vocational courses.* Many studies have indeed shown that prior academic performance is a good guide to performance in the work place. It is therefore certainly arguable that students' GCSE-averages are highly relevant to considerations of the standards and comparability of vocational qualifications   [Schmidt, 1992; Hunter,1984]

5.4   Since Advanced-GNVQ students had lower GCSE-average scores than A-level students in general, then they would have been expected to obtain lower grades at A-level, had they taken A-levels..

5.5   Given the known relationship between A-levels and GCSE-average scores in the ALIS 1994 database, estimates could be made of the grades Advanced-GNVQ students might have obtained had they taken A-levels. This estimate can be provided by considering the scores obtained by the 1,797 A-level

students *who started from the same GCSE base as the Advanced-GNVQ candidates.* i.e. the A-level students in the matched sample.

5.6   To investigate how Advanced GNVQs might have fared had they taken A-levels **regression** was used to predict UCAS points from GCSE-average scores. Using the matched sample, the following equations were developed:

For students taking 3 A-levels
         UCAS_points_score = 4.11*(GCSE-average_score) - 10.53
For students taking 2 A-levels
         UCAS_points_score = 2.35*(GCSE-average_score) - 5.72

NOTE: These equations apply only to students with the restricted range of GCSE scores which obtained in the sample of Advanced GNVQ students

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5.7   These equations, graphed in Figure 3   showed that the claim of an equivalence of an Advanced GNVQ to two A-levels was reasonable. Two A-levels at grade E would represent an UCAS score of 4 and this was obtained by roughly three quarters of the matched sample i.e. by students taking 2 A-levels and starting from a similar achievement level at GCSE to those taking Advanced GNVQs. Three quarters of those taking three A-levels from the same base obtained about 6 UCAS points, again equivalent to E grades. (This is another example of the observation that the number of subjects taken, within the ranges normally observed, appears to have little effect on the grades achieved.)
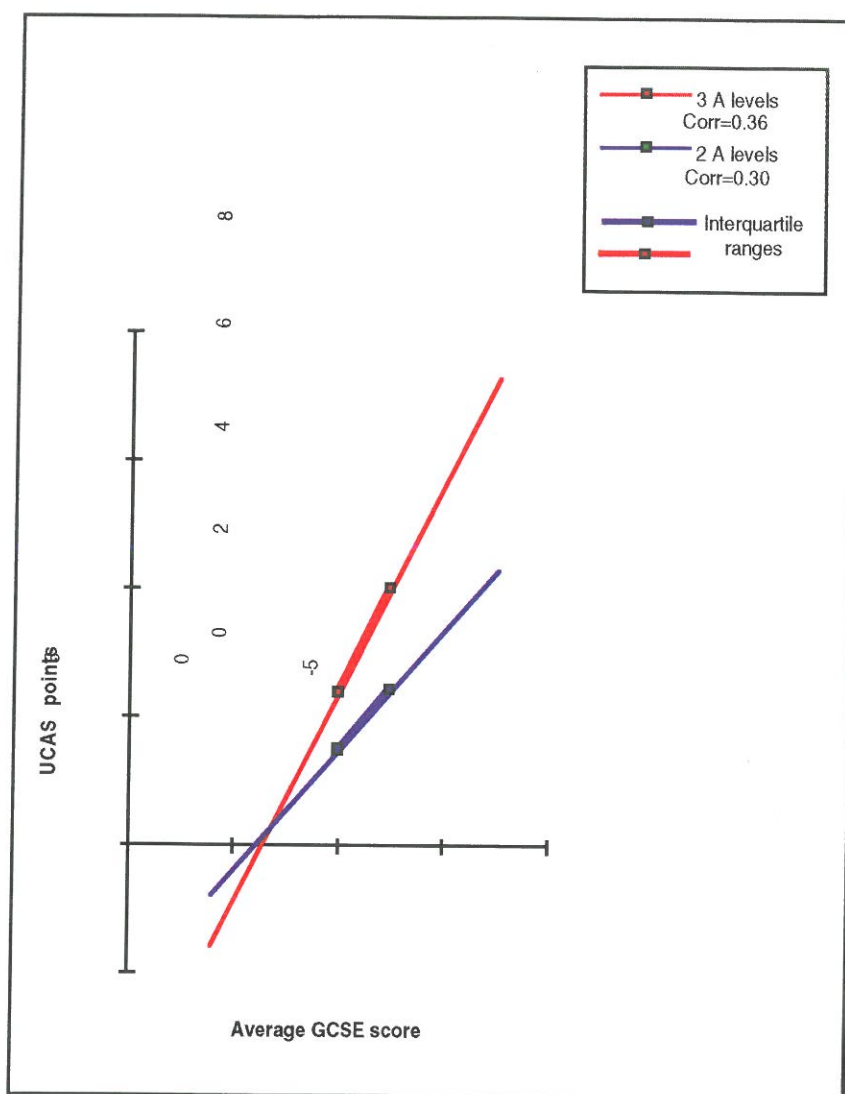
Figure 3.   Regression Graphs for the Matched GNVQ sample (n=1797)

5.8   The average UCAS points achieved by the matched sample was 8.59 for candidates taking three A-levels and 5.14 for candidates taking 2 A-levels, both representing an A-level performance of grade E.

5.9   Not all A-levels are equally difficult, however (Fitz-Gibbon & Vincent, 1994). It could have been the case that the matched sample of A-level students had taken exclusively easy A-levels. To consider the subjects chosen by the matched sample students, the percentages taking each of 23 subjects were compared with the percentages taking these subjects in the full sample (Figure

A5 in the Appendix). There was only one difference of more than 1 percent: five percent fewer Advanced GNVQ students than A-level students took General Studies. (Perhaps this absence arose from the practice in some institutions of putting able students in for General Studies - - a difficult A-level - - - without actually providing any teaching.) For some reason the matched-sample A-level students were slightly more likely than others to have taken Psychology, Geography 16-19 Project and French.

5.10 Another approach to the issue of comparability was to examine the A-level grades obtained by that 12 percent of Advanced GNVQ students who were also taking an A-level subject. Grades of E would be expected. The distribution of grades obtained is shown in Figure 4. The average score was 3.2 on the **UCAS** scale, i.e. between an E and a D.
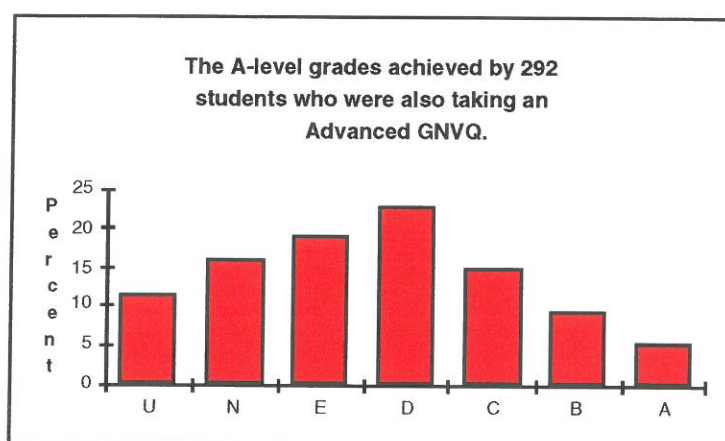

Figure 4. Achievement on A-level courses of Advanced GNVQ students.

5.11 In short, Advanced GNVQs are taking their place among A-level courses. As far as their intakes are concerned, they look like easier A-levels in that they are attracting students with a range of prior achievement levels tending to the lower end of the distribution. However, in each of the four GNVQ courses there were some students whose prior achievements in GCSE placed them in the top quarter for A-level students and some Advanced GNVQ students who took A-levels achieved high grades. The purported equivalence of Advanced

GNVQs to two E grades at A-level was not unreasonable in terms of standards measured against prior achievement.

6. Discussion

6.1　Since many A-level courses already have a vocational orientation (e.g. Art, Business Studies) the feasibility of simplifying post-16 qualifications by avoiding the possibly artificial distinction between the 'academic' and 'vocational', does not seem unreasonable so long as achievement in Advanced GNVQs can indeed be considered to be translatable to levels of achievement in A-levels.

6.2　The data presented in this report suggest that although the increasing numbers of students taking Advanced GNVQs are, in general, at the low end of the achievement range in GCSEs, a few highly able students have also been attracted to Advanced GNVQ courses. The worth of Advanced GNVQ courses in gaining students entry to, and success in, Higher Education and employment can only be assessed by long term follow-up studies.

6.3　A brief study of an existing database could not be expected to provide insights into the content of courses or deal with the concerns which have been voiced about the nature of the courses and their assessment (e.gSmithers, 1993). However, there is now a situation in which, perhaps with some within-institution counselling or perhaps more or less unaided, students have been choosing to take Advanced GNVQs in increasing numbers. Wolf (1995) found that existing vocational courses were being transformed into Advanced GNVQs because of the perception of government commitment to this post-16 curriculum framework. Given that the framework is increasingly in place, the way forward would seem to be to make it work by careful monitoring and evaluation of every course structure and delivery.

6.4   That the greatest difference in prior achievement between Advanced GNVQ students and A-level students was in the sciences gives a warning that the more scientific Advanced GNVQs will need special attention.

6.5   The equivalence of an Advanced GNVQ to two passes at A-level at grade E was justified by the data and would seem to indicate that modularisation of post-16 courses could proceed with Advanced GNVQs taking their place among the easier A-levels.

APPENDIX .

Additional tables and figures.

Table A1 presents basic descriptive statistics and **confidence intervals**[3] on the means for the GCSE scores of students taking the four Advanced-GNVQs.

Table A1.   Prior Qualifications of students on Advanced GNVQ courses finishing in 1994.

Average GCSE Score $(F = 2.97, p = 0.02)$				
Course	N	Mean	SD	Means and confidence intervals
Art and Design	282	4.57	0.75	(-----*-----)
Business	812	4.49	0.80	(---*--)
Health & Social Care	330	4.38	0.95	(-----*-----)
Leisure and Tourism	373	4.44	0.75	(-----*----)
				----+---------+---------+---------+--
				3.4 4.50 4.65 4.80

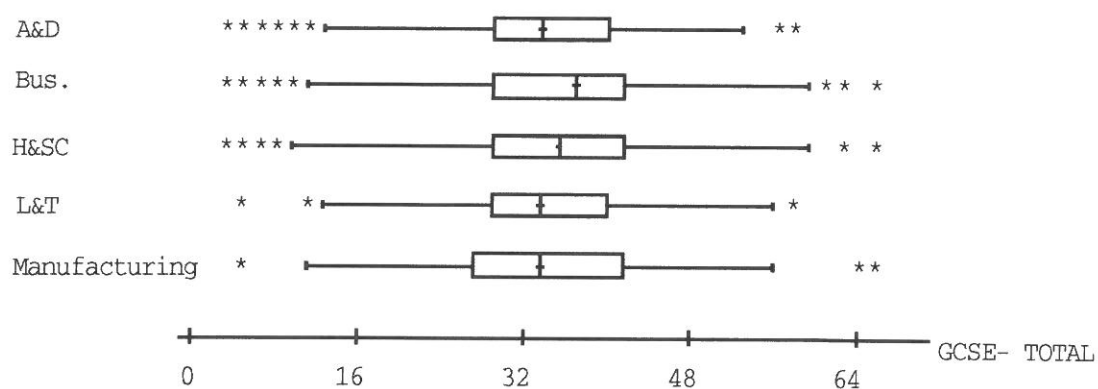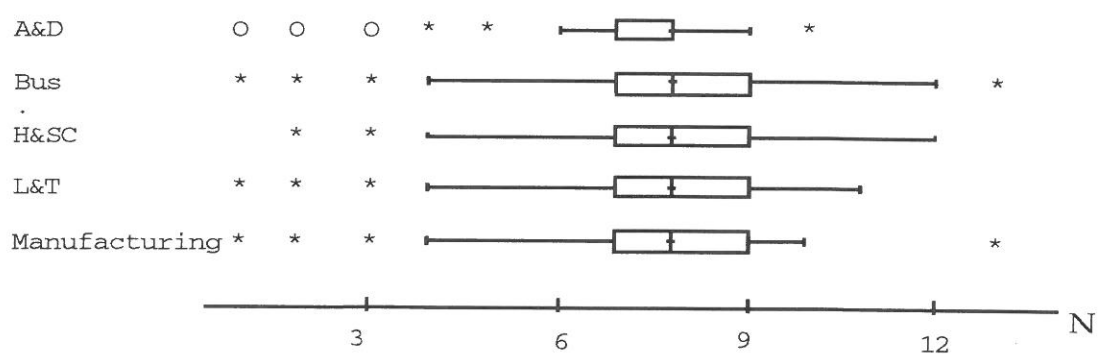| Total GCSE Score $(F = 3.79, p = 0.01)$				
Course	N	Mean	SD	Means and confidence intervals
Art and Design	282	33.36	9.85	(------*-------)
Business	812	35.89	9.95	(---*----)
Health & Social Care	330	34.44	10.75	(-------*------)
Leisure and Tourism	373	35.04	9.07	(------*-----)
				-------+---------+---------+---------
				3.5 34.5 36.0

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[3]Confidence interval Please see glossary.

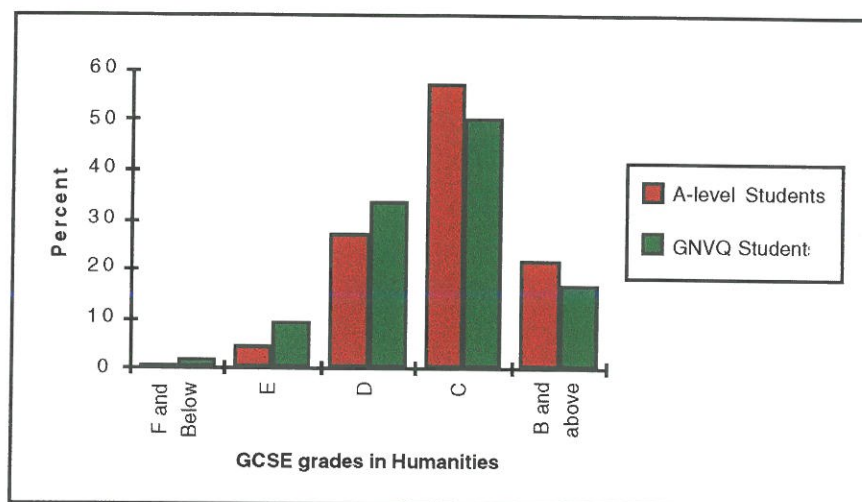## (a) Average GCSE Scores
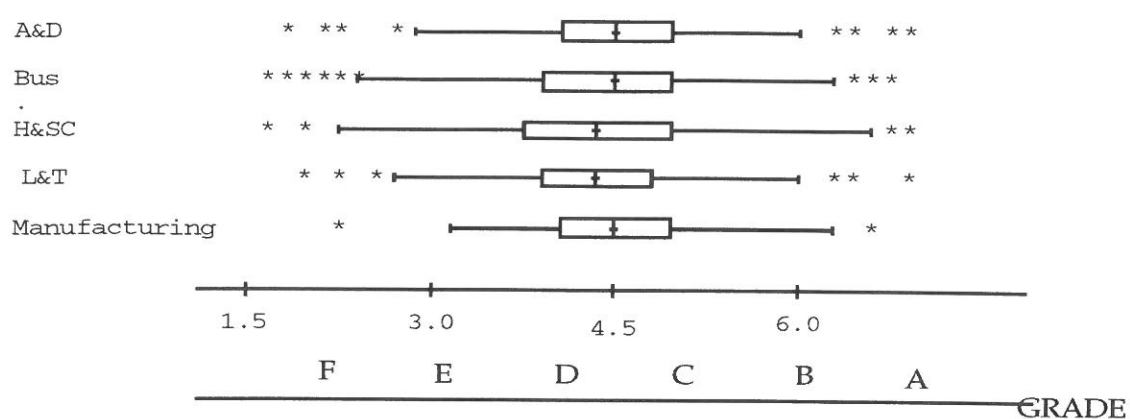
(b) Total GCSE Scores
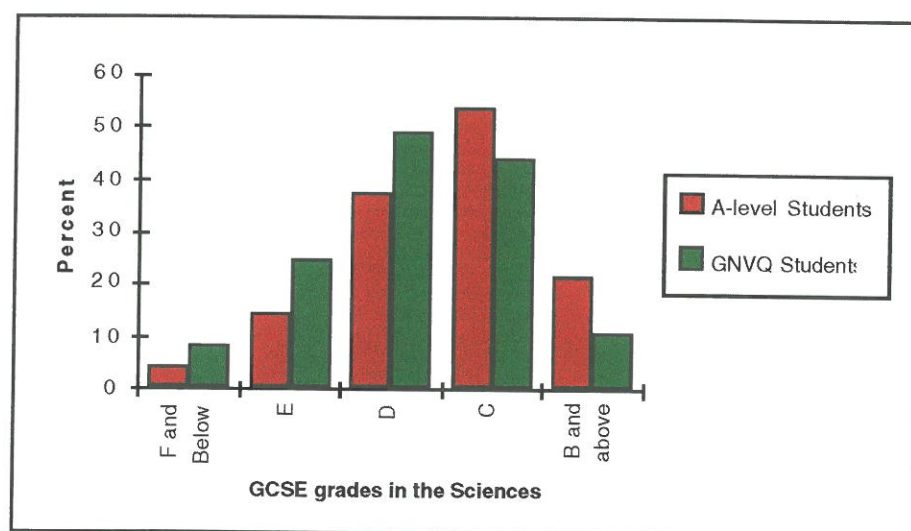

(c) Number of GCSEs

Figure A1.   GCSE achievements of students enrolled on Advanced GNVQ courses: Box and Whisker[4] plots
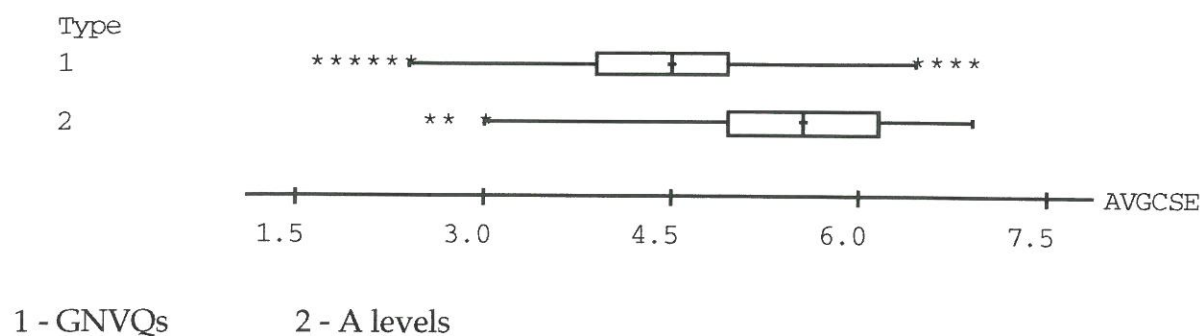
(a) Humanities.   EFFECT SIZE = 0.18

(c) The Sciences EFFECT SIZE =0.24

Figure A2 Differences in Prior Achievement

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[4]Box and Whisker plots (Boxplots) are described in the glossary.

Type

1

2

1 - GNVQs   2 - A levels

Figure A3   Boxplots comparing prior achievement of Advanced GNVQ students with A-level students.

Age in Years
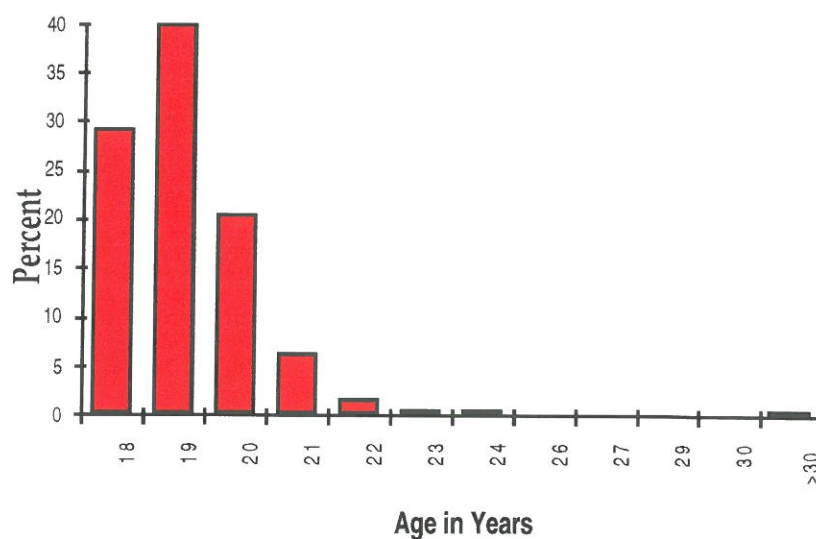
Figure A4   Age distribution of the Advanced GNVQ students.

Figure A5   Type Of Subjects Taken By A-Level Students In The Matched Sample And A-Level Students In The Whole Sample
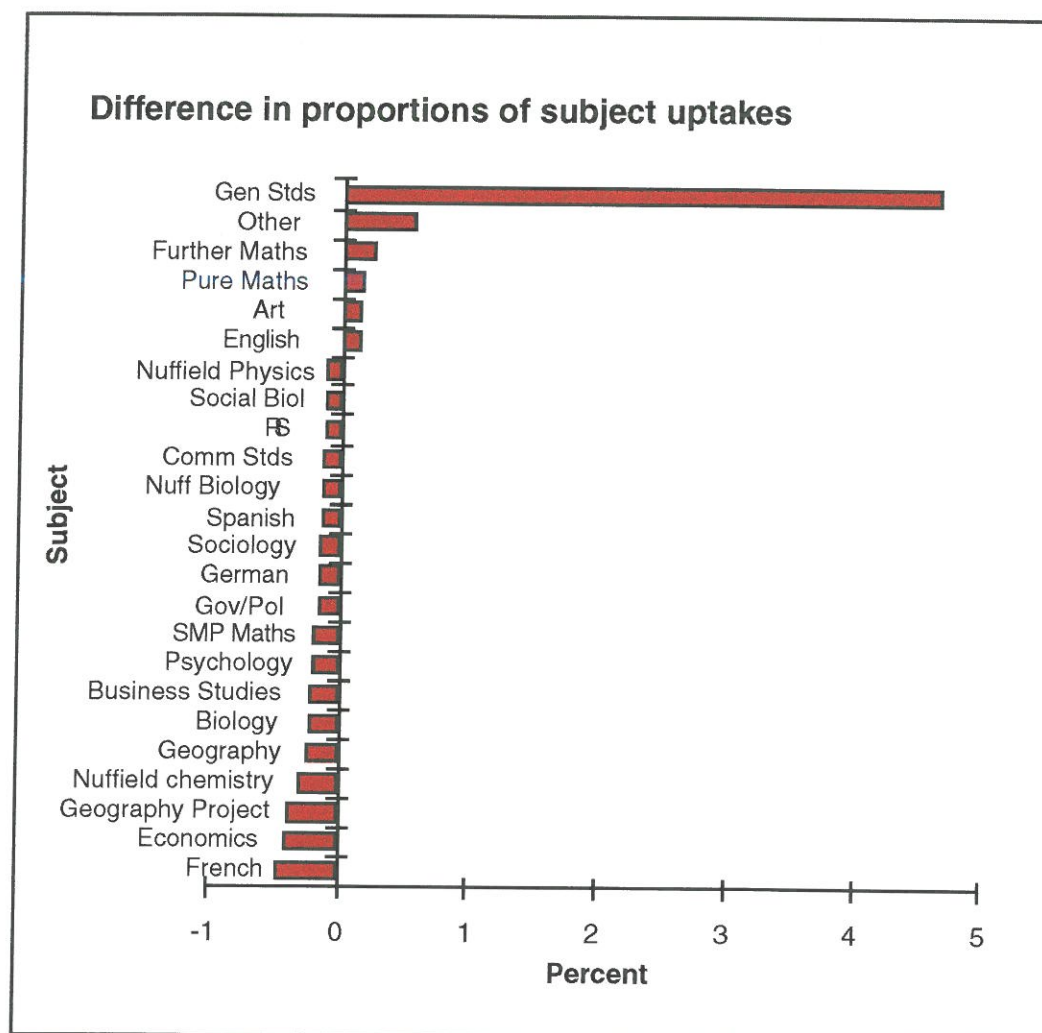
There was under-representation, in the matched sample, of the following subjects:

- General Studies
- "other" subjects not classified in this list
- Further Maths
- Pure Maths
- Art and English

N O T E S

Note 1. On the use of GCSE-average score in the prediction of Advanced GNVQs.

Since the inception of ALIS in 1983 the GCSE-average score (rather than GCSE-total score) has been used as the best single predictor of A-level performance. This was finally officially recognised as correct when the **DFE** changed from using GCSE-total (in 1994) to using GCSE-average in 1995 A check was needed here, however, on whether the GCSE-*average*-score was again the better predictor *over the range for Advanced GNVQ students*. Using the matched A-level sample it was clear that this was the case. Any **restriction in range** - - - such as that introduced by creating the matched sample in order to compare like with like - - - causes a decrease in the correlation coefficient so, not surprisingly, rather than correlations in the range 0.5 to 0.7 that pertains in the full A-level sample, the correlations obtained in the matched sample were lower. Between UCAS points and **GCSE-average scores** the correlation was 0.36 for students taking three A-levels and 0.30 for students taking two A-levels. Between UCAS points and **GCSE-total scores** the correlations were lower: 0.29 and 0.20 for three and two A-levels respectively. The use of GCSE-average scores was therefore advisable.

NOTE 2. Representativeness of the ALIS sample.

Although the results in the ALIS sample have been found to conform closely to national results ((Fitz-Gibbon & Vincent, 1994; Tymms & Vincent, 1994), it is not randomly representative. The major feature of the ALIS sample relevant to this study is the over-representation of Sixth Form Colleges. However, the impact of type of institution on A-level results has been shown to be extremely small (Tymms, 1992) so this is not seen as a problem in much of the investigation.

REFERENCES

Fitz-Gibbon, C. T. (1985). A-level results in comprehensive schools: The Combse project, year 1. Oxford Review of Education., 11(1), 43-58.

Fitz-Gibbon, C. T. (1989). Performance Indicators: educational considerations. In Levacic, R. (Ed) Financial Management in Education. Milton Keynes:Open University Press.

Fitz-Gibbon, C. T., & Vincent, L. S. (1994). Candidates' performance in Science and mathematics at A-level. London: School Curriculum and Assessment Authority.

Hunter, J. E., & R.F.Hunter. (1984). Validity and Utility of Alternative Predictors of Job Performance Psychological Bulletin 96 1 . , 72-98 .

Schmidt, F. L., Ones, D.S. & Hunter, J. E. (1992). Personnel Selection. Annual Review of Psychology, 43, 627-670.

Smithers, A. (1993). All our futures. Britain's education revolution. A Dispatches Report on Education. Manchester: Centre for Education and Employment Research, Manchester University.

Tymms, P. B. (1992). The Relative Success of Post 16 Institutions in England (Including 'Assisted Places Schools'). British Educational Research Journal., 18(2), 175-192.

Tymms, P. B., & Vincent, L. S. (1994). The Comparability of Examination Boards at A-level: a report for the GCE Boards CEM Centre, University of Newcastle Upon Tyne

Wolf, A. (1994). GNVQs1993-1994 A national survey report. London: Further Education Unit.

GLOSSARY

NOTE S:

Statisticians often speak of "observations" and "cases". Here we will use the terms "scores" and "students". We recognise that these are less generally applicable terms, but they convey the meaning more readily in an educational context, for the purposes of this glossary.

Indented comments contain examples from this particular study.

ALIS, the Advanced Level Information System. The project started in 1982-83 to help a dozen schools to analyse their examination results. Along with a mini-version developed at the request of the Secondary Heads' Association, the ALIS system has grown nation-wide and is now analysing about a third of A-level entries. All types of institututions are represented, with a particularly high proportion of the Sixth Form Colleges. In addition to Value Added measures the ALIS project reports confidentially to schools and colleges on students' attitudes and aspirations and also on teaching and learning processes.
The name was changed to "ALIS plus" when vocational qualifications were included.
References include Fitz-Gibbon, 1985 and 1989.

Box and Whisker plot
(BOXPLOTS)

The Boxplot is a way of displaying a distribution to make its general shape clear in a way which can allow several distributions to be compared at once. There are a variety of forms of boxplot depending upon the statistical package which generates them. Essentially they all have a BOX which shows, against a SCALE the scores between which half the cases lie. In other words the box contains the middle 50 percent of cases.

The lower end of the box marks the point on the scale below which lie the lowest 25 percent of cases. This is called the **25th percentile point**
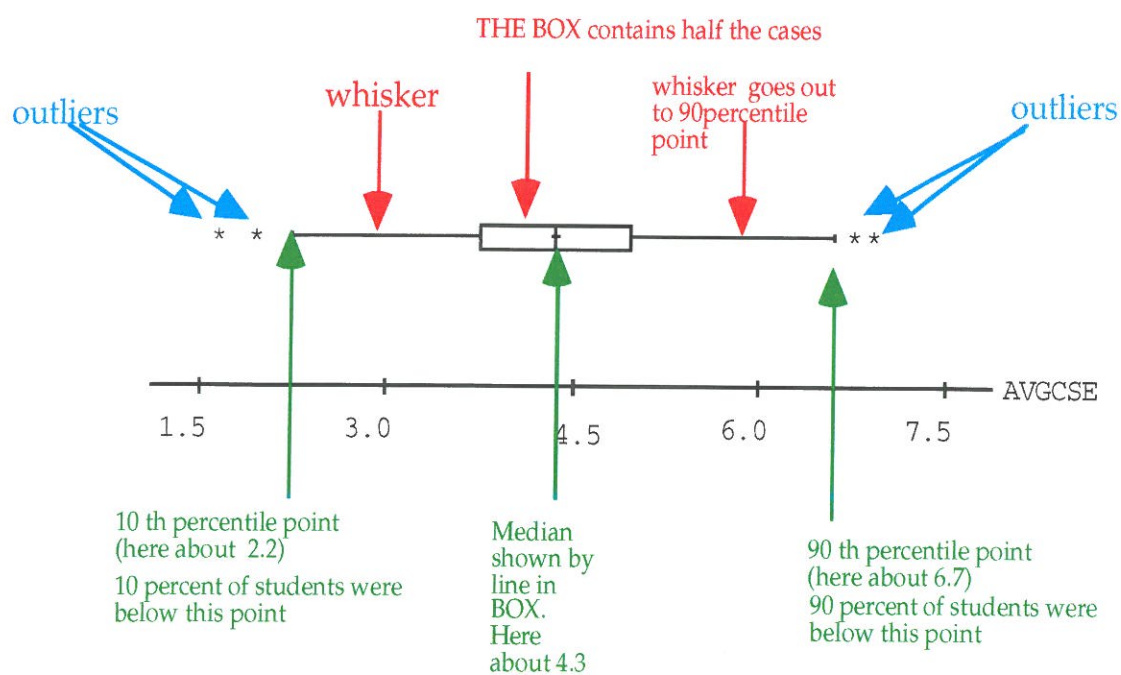
The upper end of the box marks the point on the scale above which lie the highest 25 percent of cases. This is called the **75th percentile point** (75 percent of cases lie *below* this point).
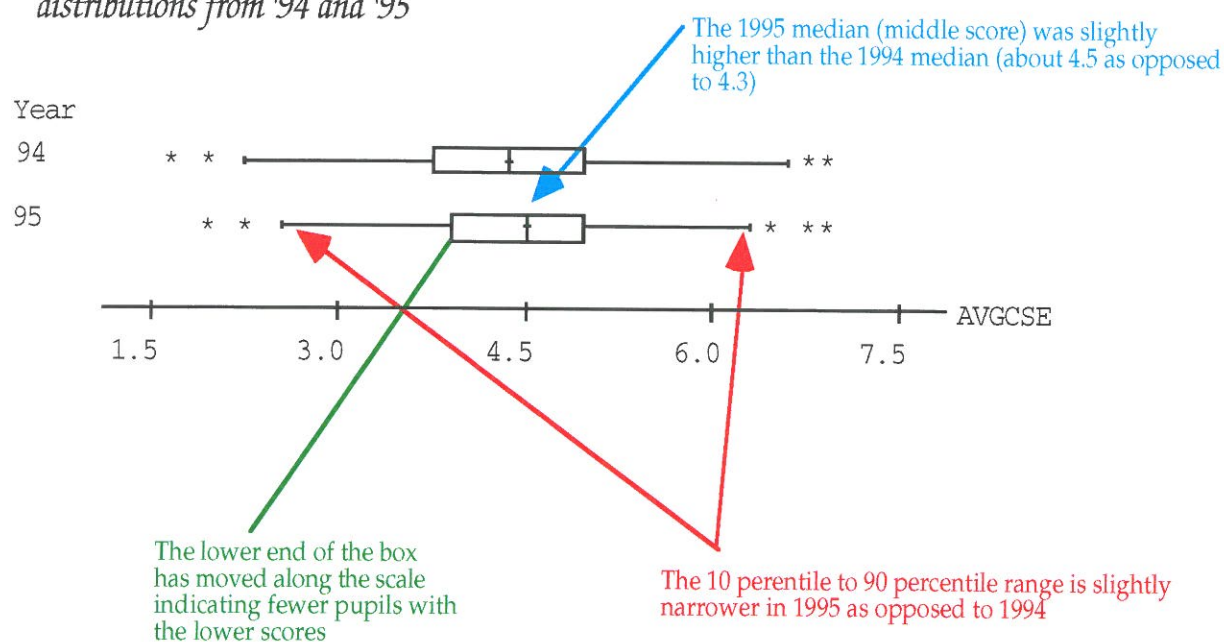
The range from one end of the box to the other is the **inter-quartile range.**

The illustrations on the next page can be studied as a further guide to boxplots.

THE BOX contains half the cases

whisker

whisker goes out
to 90percentile
point

outliers

outliers

* *

* *

AVGCSE

1.5   3.0   4.5   6.0   7.5

10 th percentile point
(here about 2.2)

10 percent of students were
below this point

Median
shown by
line in
BOX.
Here
about 4.3

90 th percentile point
(here about 6.7)

90 percent of students were
below this point

*Example: comparing
distributions from '94 and '95*

The 1995 median (middle score) was slightly
higher than the 1994 median (about 4.5 as opposed
to 4.3)

Year

94   * *

* *

95   * *

* * *

AVGCSE

1.5   3.0   4.5   6.0   7.5

The lower end of the box
has moved along the scale
indicating fewer pupils with
the lower scores

The 10 perentile to 90 percentile range is slightly
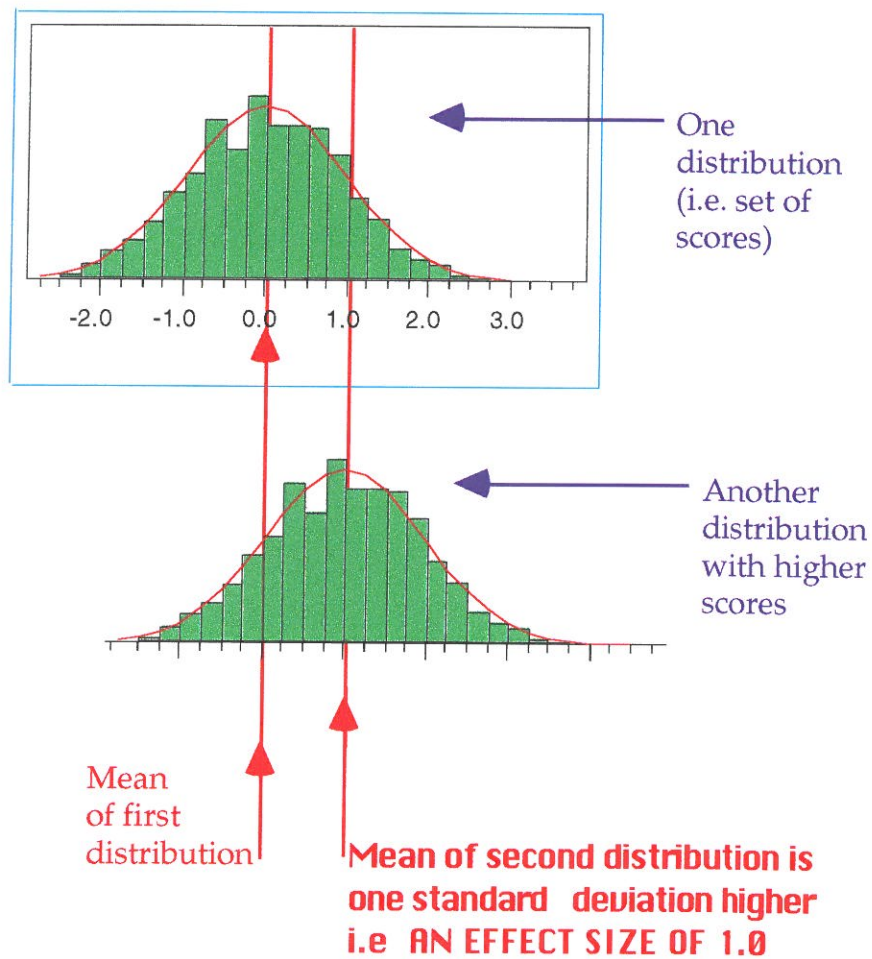narrower in 1995 as opposed to 1994

Discriminant analysis A statistical tests to ask the question: on which variables were the groups most different from each other?

**Effect Size**.   A measure of the difference between two distributions.

Effect Size   =   (the Mean of one distribution) minus (the Mean of another)
                       the standard deviation

Thus an Effect Size of 1.0 implies that one distribution is 1 standard deviation removed from another.

One distribution (i.e. set of scores)

Another distribution with higher scores

Mean of first distribution

Mean of second distribution is one standard deviation higher i.e AN EFFECT SIZE OF 1.0

Below is a smaller effect size, of about 0.5. The distributions overlap a great deal.
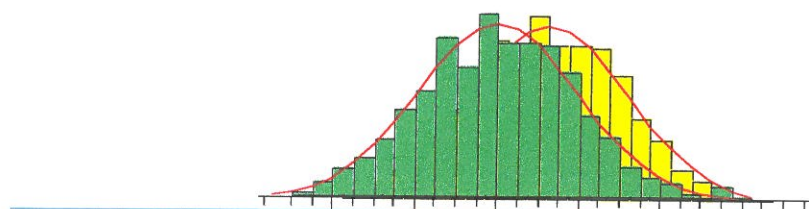
F-ratio The larger the F-ratio the more the means (averages for the groups) differ from each other. A large F-value indicates strong differences between the groups.

(The F-value is actually the ratio of two estimates of the variance, one based on the variance within each group and the other based on the spread of the means and using the assumption they were randomly selected groups. If the ratio is close to 1, then this implies that the groups appeared to be no more different than random groups. A large F-value, on the other hand, indicates that the means were much more spread out than would be expected if they were just randomly equivalent groups.)

GCSE- average points score Counting each grade "A" as 7 points, each grade "B" as 6 points and so on, the average score is the total points divided by the number of subjects counted.   Thus if a student obtained B, A, C, E ,E and D the GCSE-average would be $\frac{6+7+5+3+3+4}{6} = \frac{28}{6} = 4.66$

GCSE SCORES

A	counts as	7
B	counts as	6
C	counts as	5
D	counts as	4
E	counts as	3
F	counts as	2
G	counts as	1

GCSE-total points score. See GCSE average points score. The total is the simple sum of the points. It increases the more subjects are taken whereas GCSE average reflects the level of performance, not the number of subjects taken.

GNVQ General National Vocational Qualification.
GCSE General Certificate of Secondary Education

Inter-quartile range : the range of scores between which lie the middle half of the students' scores. The bottom of the range is the 25 th percentile - - -the score below which 25 percent of students scored. The top of the range is the 75th percentile (the score below which 75 percent of students scored)

Matched sample: for each student others with the same score are identified and then one is randomly chosen as the "match" for that student.
    In this study matching was accomplished by randomly ordering the A-level dataset, then sorting both the GNVQ dataset and the A-level dataset by Average GCSE and matching to the GNVQ file on the basis of that variable.

    Had matching been done on the basis of the school or college attended, as well as the GCSE-average the achieved matched sample would only have been 524 as opposed to 1.

Mean = average = sum of the scores divided by the number of scores.

Means and confidence intervals.
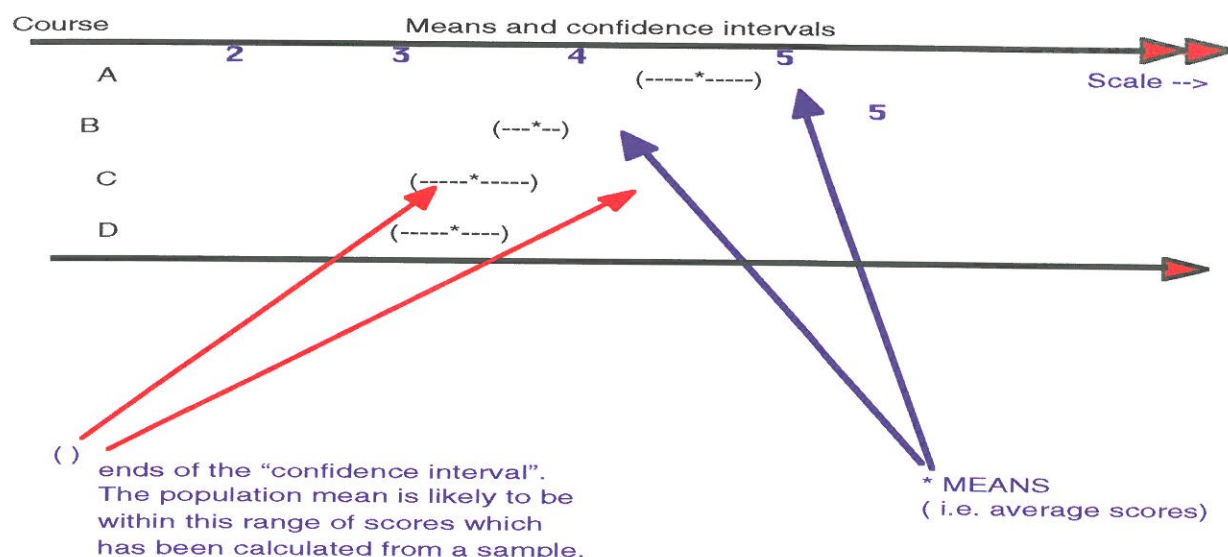
Random sample: a sample selected as if by pulling from a hat. Each student in a random sample has an equal chance of being chosen. This generally ensures that the **sample** is very like the **population** from which it was drawn. The sample is "representative" of the population.

    In this study the A-level group was a random sample of students with the same **GCSE-average** scores as the whole ALIS population.

Range A span on a scale. If scores on a test out of 20 were from 5 to 15, the range of scores would be 10, from 5 to 15.

Regression. A procedure for showing the association between two measures from the same students, such as GCSE-Average and an A-level score. An example is provided in Figure 3. Students with an average GCSE-score of 4 who took 3 A-levels (the top line) obtained about 6 UCAS points on average. The lines show the expected scores on the Y-axis measurement for each X-axis score. They are called regression lines.

Restriction in range. Scores are restricted in range when there is not as great a spread of scores as is usual in an un-restricted sample.

UCAS = Universities' Combined Admissions Service (combines admissions previously managed by separate organisations for polytechnics and universities.