Data Management

Sharing a Model of Practice

10th November 2010

Julian Mc Gale

Saint Patrick's College

Agenda

- Introduction
- The Theory
- The Analysis
- Value-Added Feedback Reports & Graphs
- Workshop
- Process in Saint Patrick's
- Other Issues

St Patrick's College
Maghera

Goal:

To provide data that helps staff and the SMT to confidently identify the root of educational challenges and to track progress. This will enable staff and departments to more readily develop action plans that will have a positive impact on the students

St Patrick's College
Maghera

Data is a key driver as identified in ESAGS;

- Assessment and other data is used to effectively inform teaching and learning across the school and in the classroom and to promote improvement.

ESAGS

- Rigorous self-evaluation is carried out by teachers and the whole school, using objective data and leading to sustained self-improvement.

ESAGS

St Patrick's College
Maghera

Across the school

For reporting to parents

Where the data is used

By departments

By individual teacher

St Patrick's College
Maghera

What the data is used for

- to inform student placement decisions
- to set targets and measure pupil progress in real time
- to identify pupils requiring support at subject level
- to identify pupils requiring support across a range of subjects
- to identify high achievers
- to identify areas for improvement in teaching and learning
- to identify and share areas of best practice

For this to happen

the data sets used must

1. Provide reliable and valid predictors of future student achievement

2. Provide reliable measures of change over time

3. The teacher data inputs must be authentic and based on sound judgement

The Theory

Types of data, variances and reporting formats

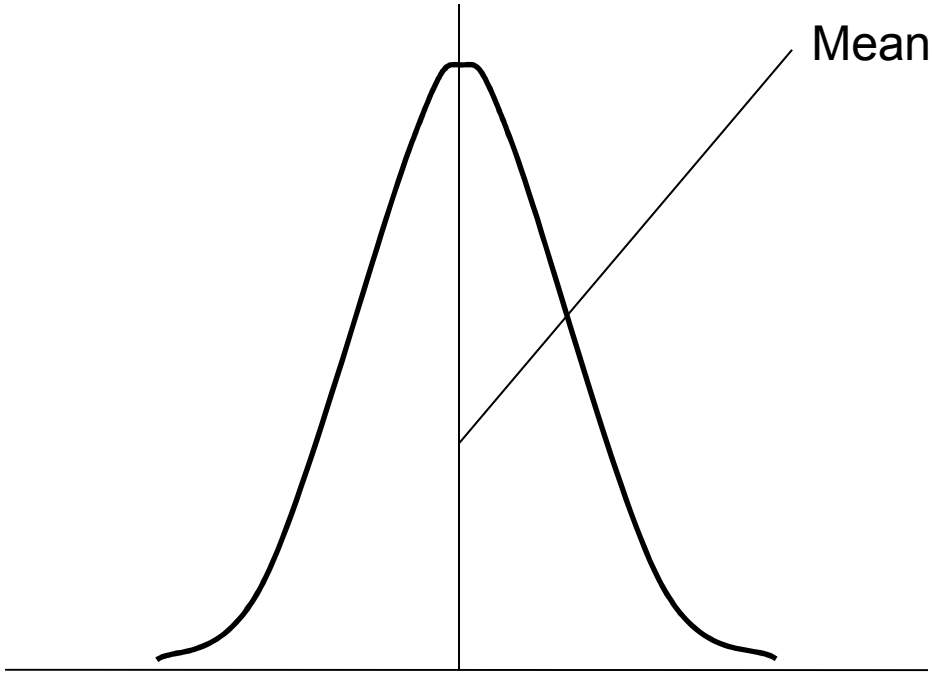
Standard deviation

Value added

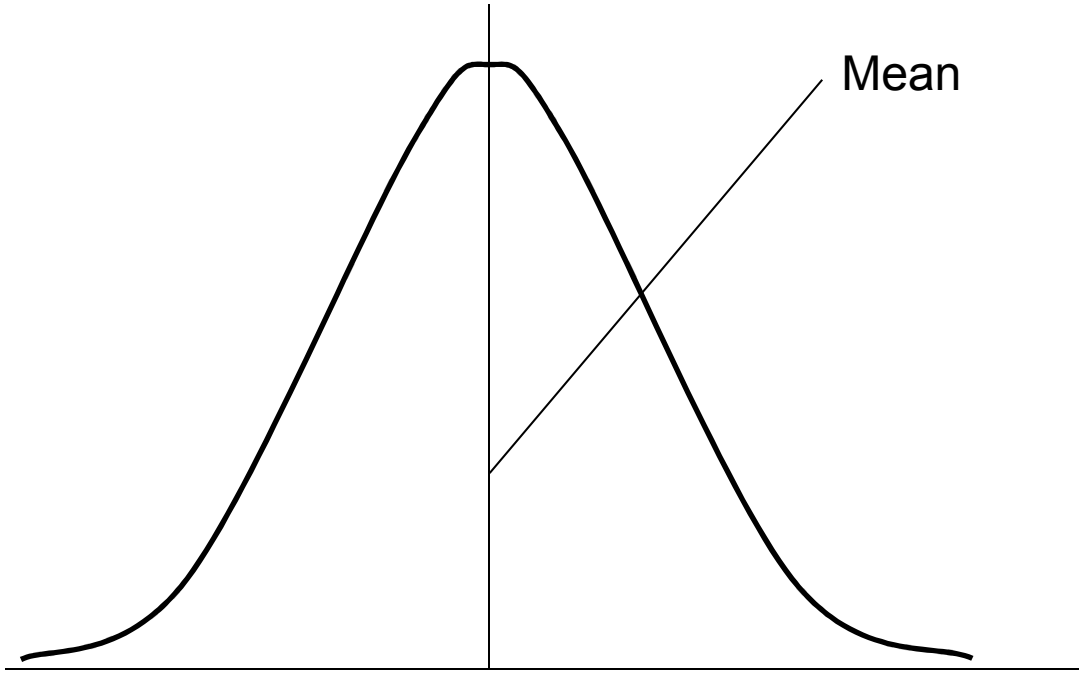
Target setting

- Standard deviation shows you how tightly all the results are clustered around the mean.
- A graph of the normal distribution shows how the standard deviation is spread
- For a small standard deviation the normal distribution graph will be narrow.
- For a large standard deviation the normal distribution graph will be spread out.

Now a short exert from the BBC's Bang Goes the Theory show



Smaller standard deviation the normal distribution graph will not be spread out.

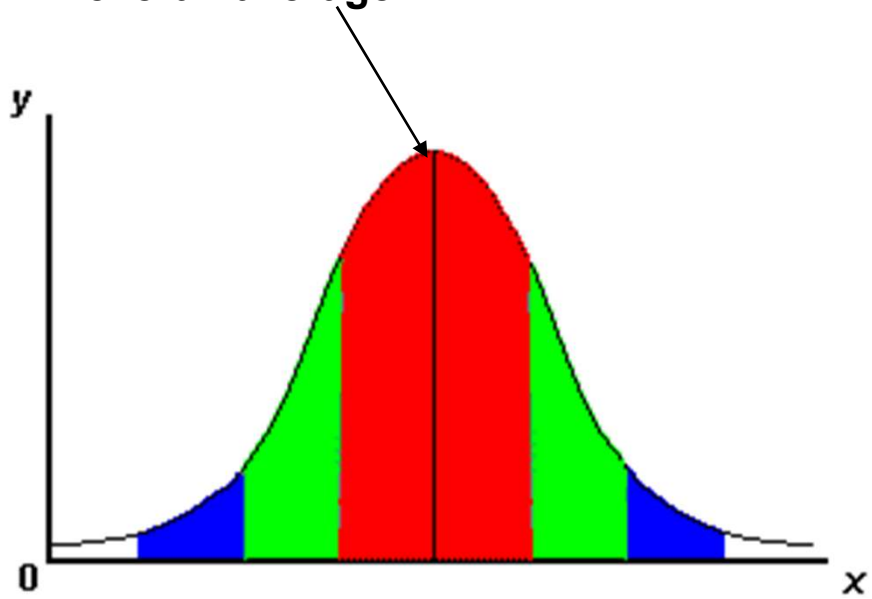


Larger standard deviation the normal distribution graph will be spread out.

68, 95, 99.7 Rule

Narrower band is normally more desirable

Move average to right shows an improvement in the overall average



68% of the results will be near the Average. (Red)

95% of the results will be in the main body of the curve. (Red & green)

99.7% of the results will be in the curve, edge to edge. (Red, green & blue)

- Why this shape?
  - If a process is in control you will always get this shape.
- Why is this important to us?
  - It allows us to use standardised tests like MidYIS, Yellis and ALIS to benchmark our pupils.

- Standard deviation is important as any process in control will give you this shape of graph.

- There are numerous reasons for having values far from the mean value and these can be school specific. For example;

  a grammar school should have a narrower graph then an all ability school

  there could be errors and bias leading to inaccuracies in the results (e.g. small classes, large classes)

- Using a large data set, like YELLIS, reduces errors and bias and allows you to confidently predict future grades and measure value added.

The Analysis

Baselines

A / AS / Btec / IB etc

Year 14

Year 13

GCSE
ALIS Paper test (TDA) or
Computer Adaptive Baseline Test

GCSE

Year 12

Year 11

Yellis Paper test or
Computer Adaptive Baseline Test

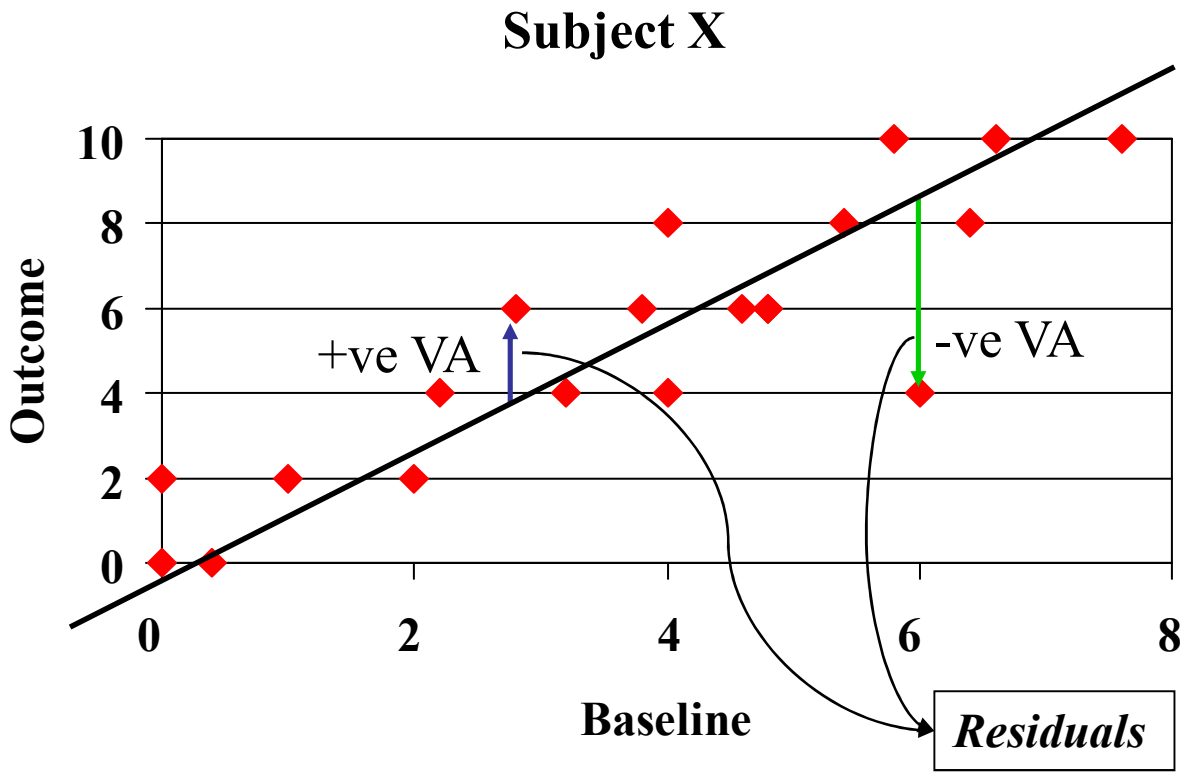
Year 10

Year 9
(+ additional)

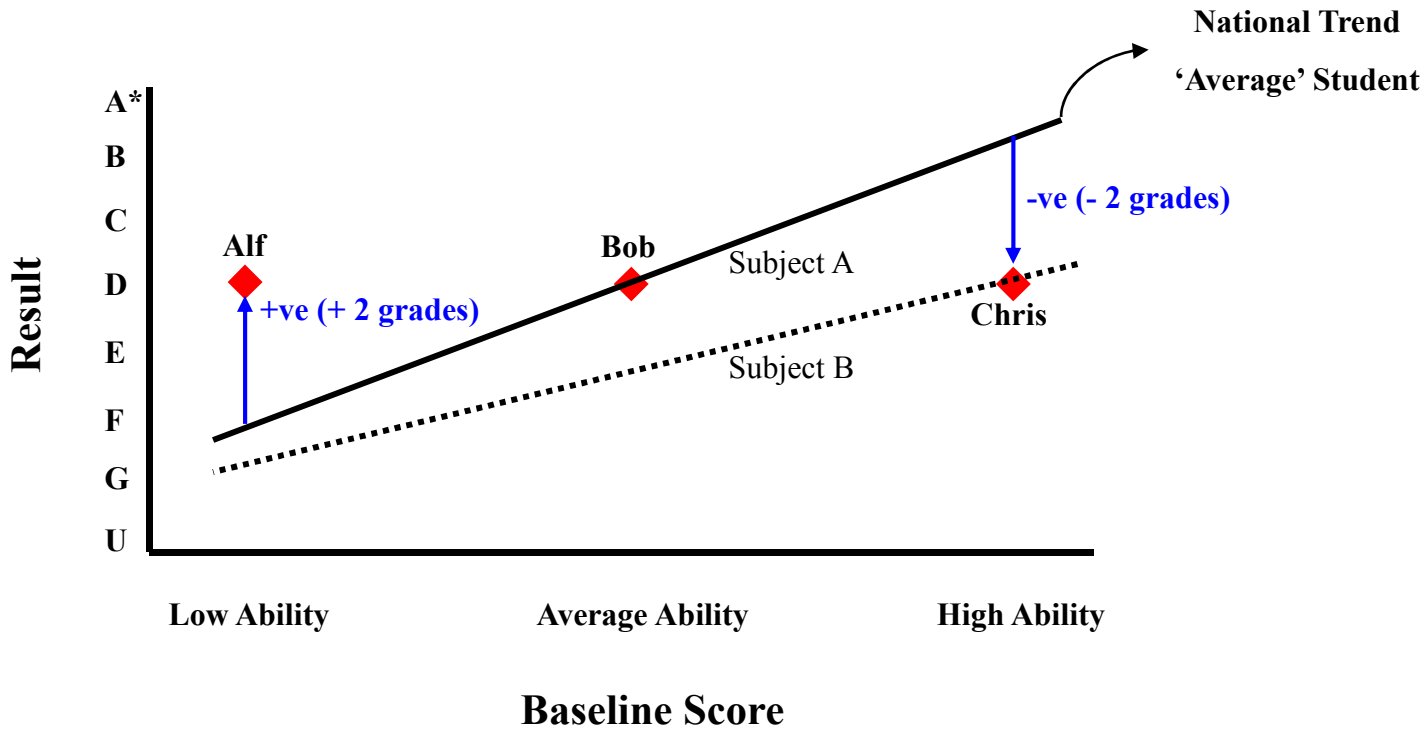
Year 8

MidYIS Paper test or
Computer Adaptive Baseline Test

Linear Least Squares Regression



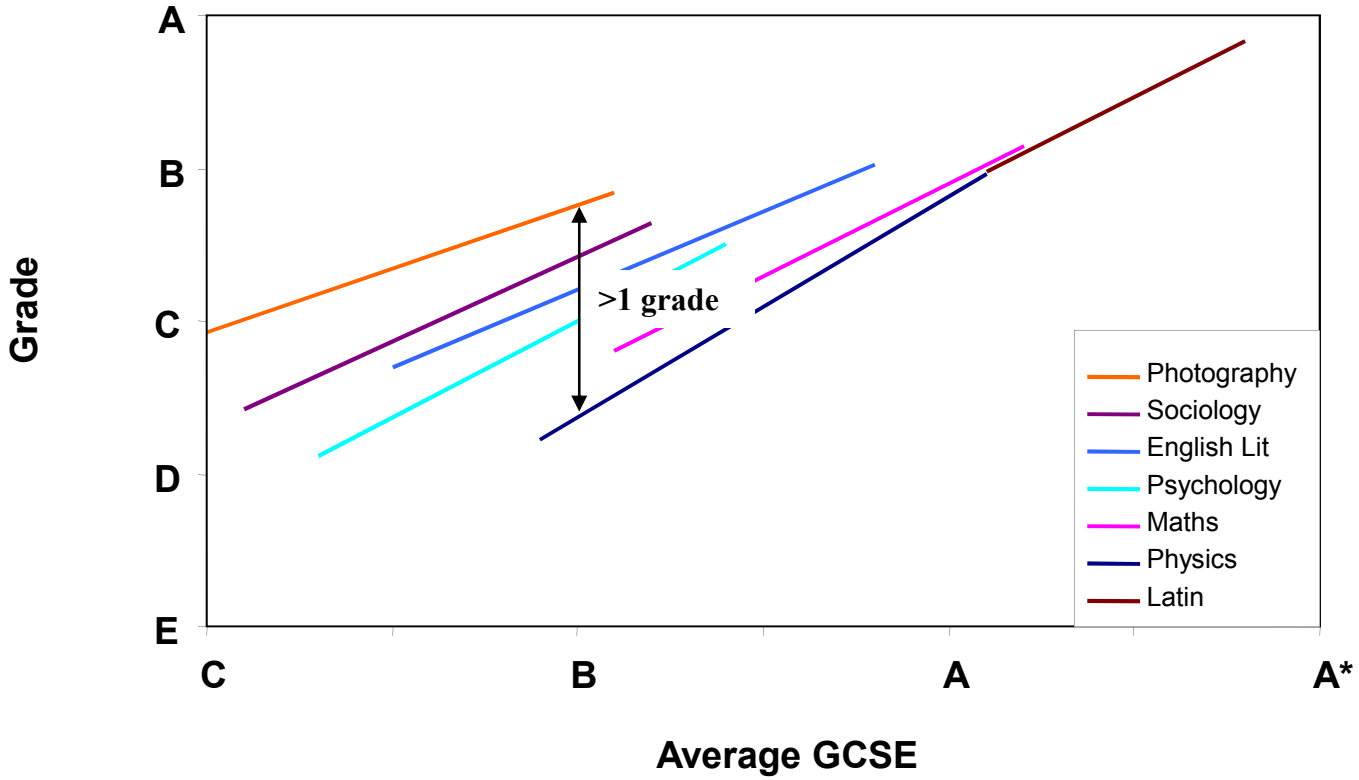
Measuring Value-Added – An Example



The position of the national trend line is of critical importance

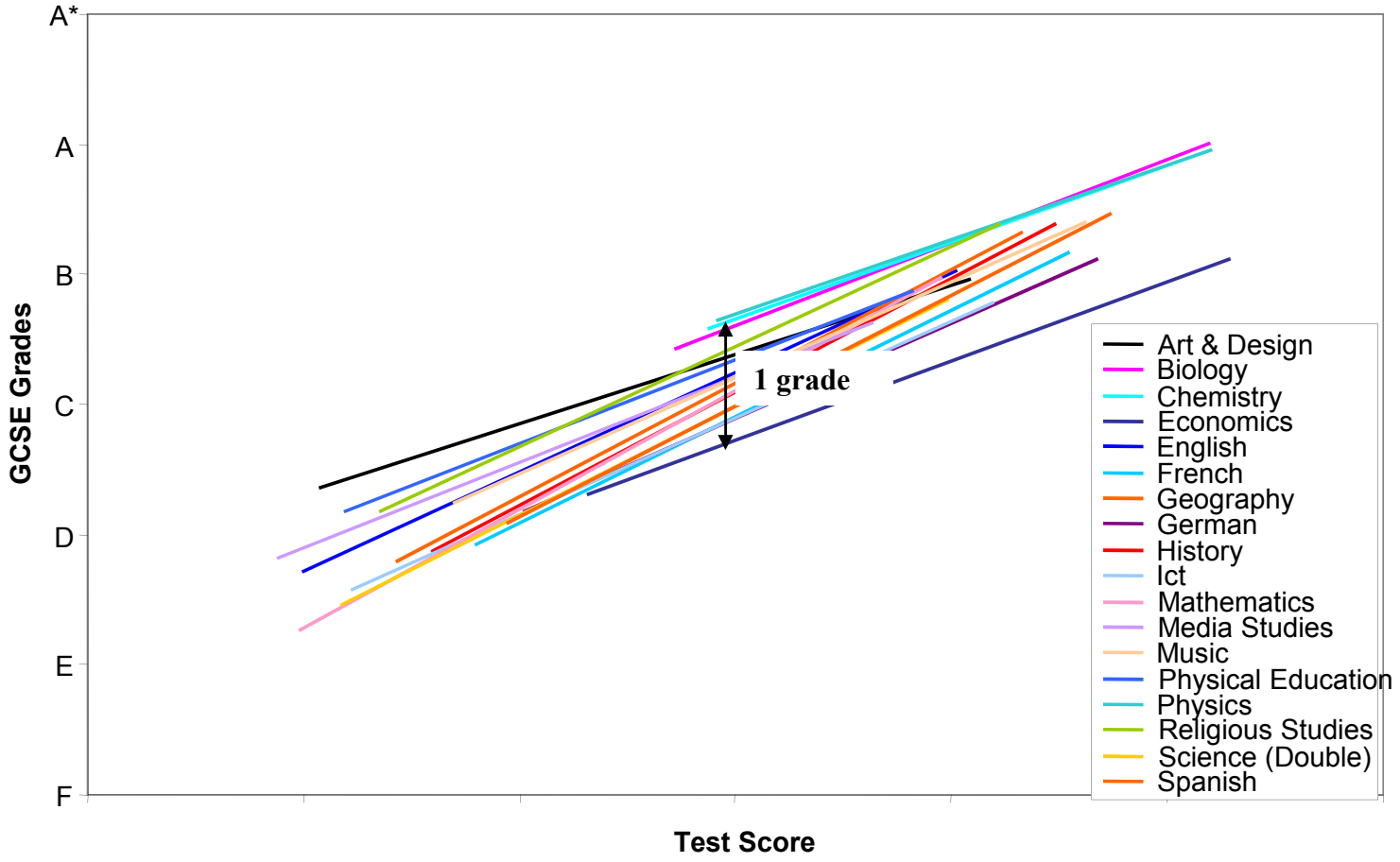
Some Subjects are More Equal than Others….

A-Level (ALIS)



Some Subjects are More Equal than Others….

GCSE (MidYIS or Yellis)



- Good news:

  When using MidYIS,Yellis, ALIS and FFT all the statistical work is completed for the school.

- Once the marksheets are set up in assessment manager the data is uploaded in the school a few days after the pupils have completed the tests

- Once the GCSE results are in, these are sent to CEM who manage MidYIS,Yellis and ALIS and they return a residual – value added score

  - **<u>Actual score – predicted score = value added</u>**

NB: this is given as a raw score as well as a standardised score. The standardised score is the one to use.

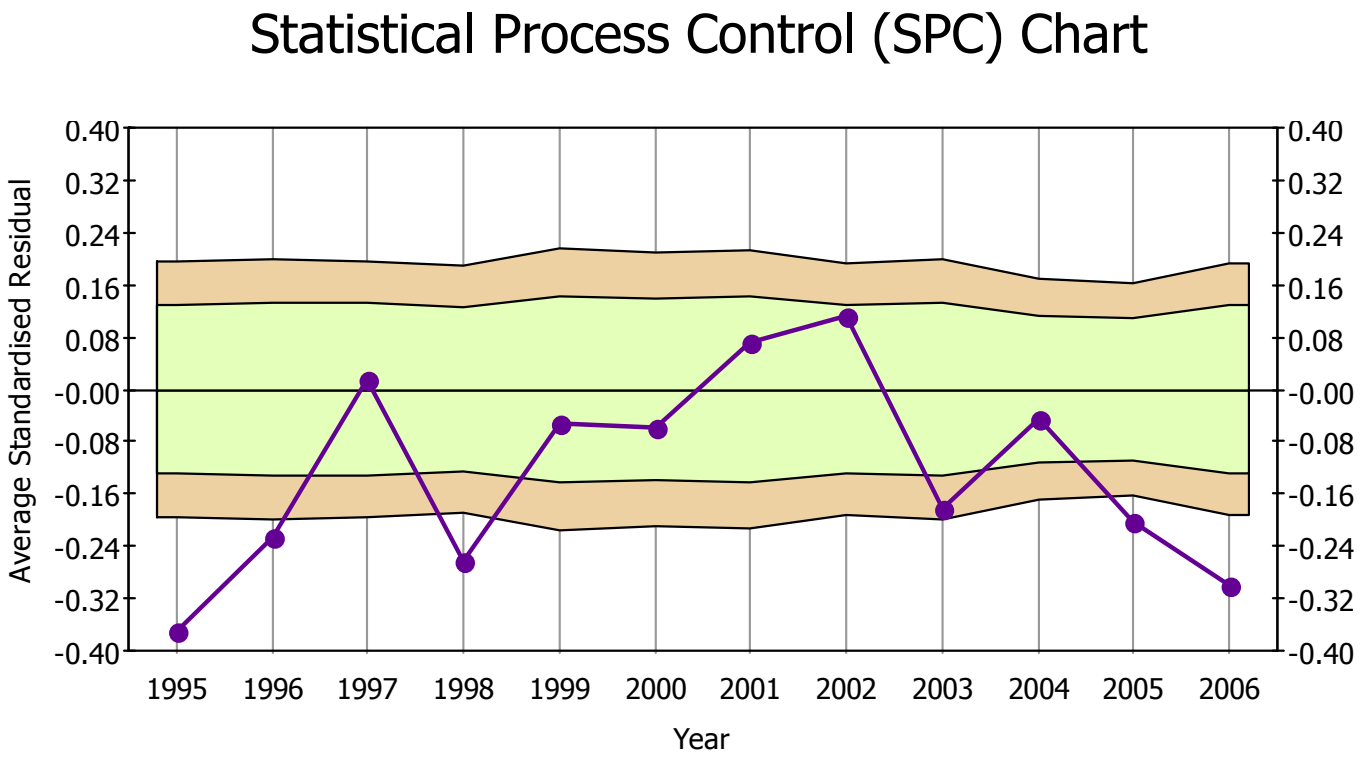
St Patrick's College
Maghera

Value-Added Feedback

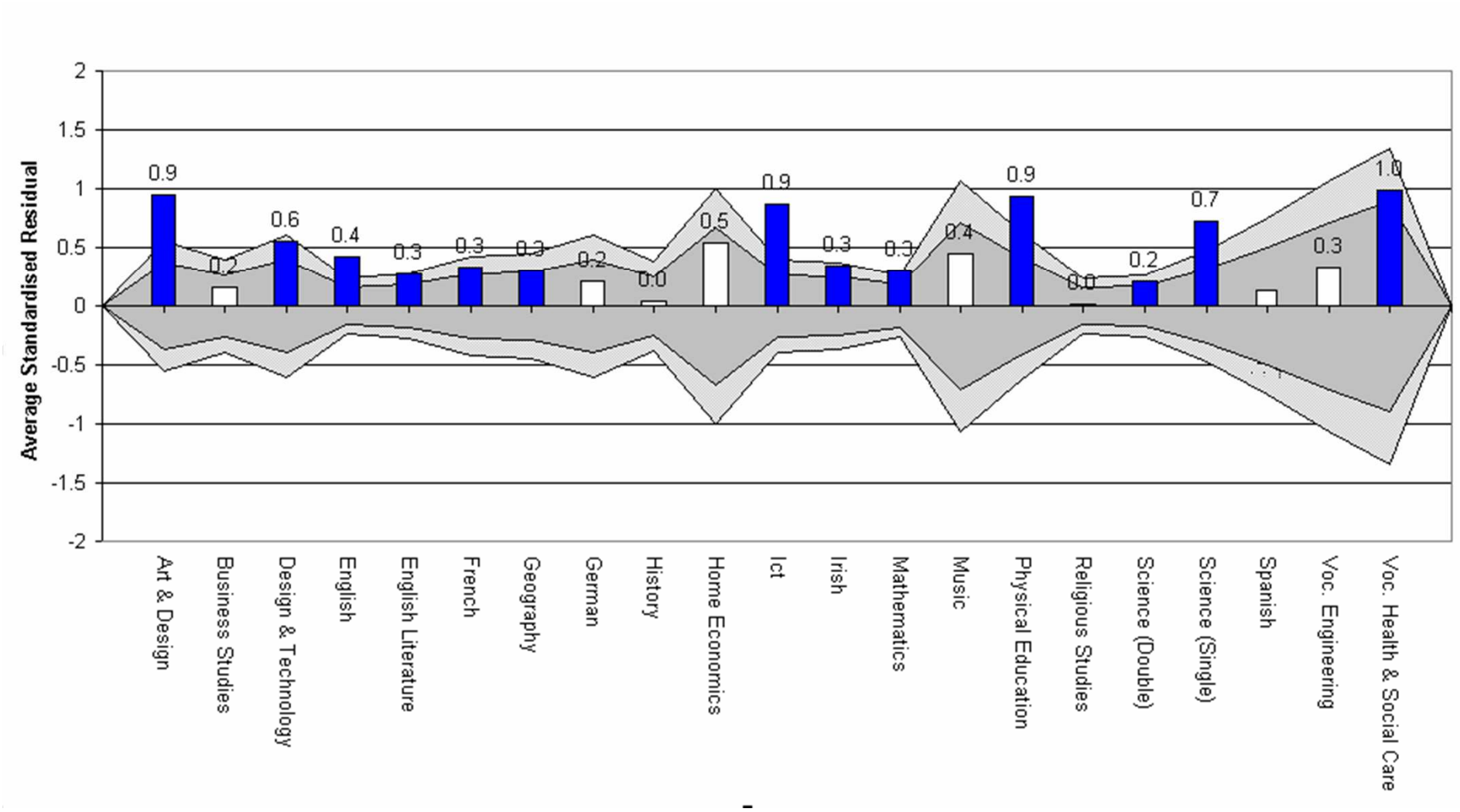
Reports & Graphs

Value Added Feedback…

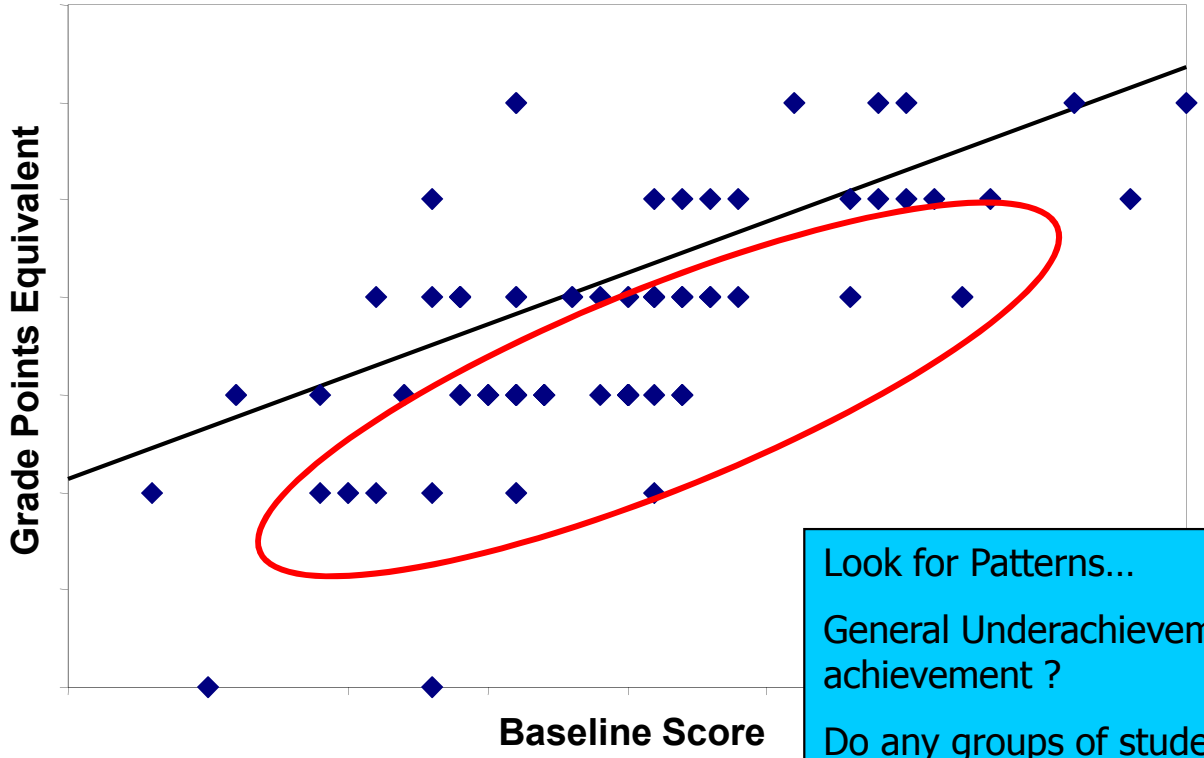
What is my score ? ⟶ does it matter ?



Subject Summary: Standardised Residual Graph



The Scatter Plot



Look for Patterns…

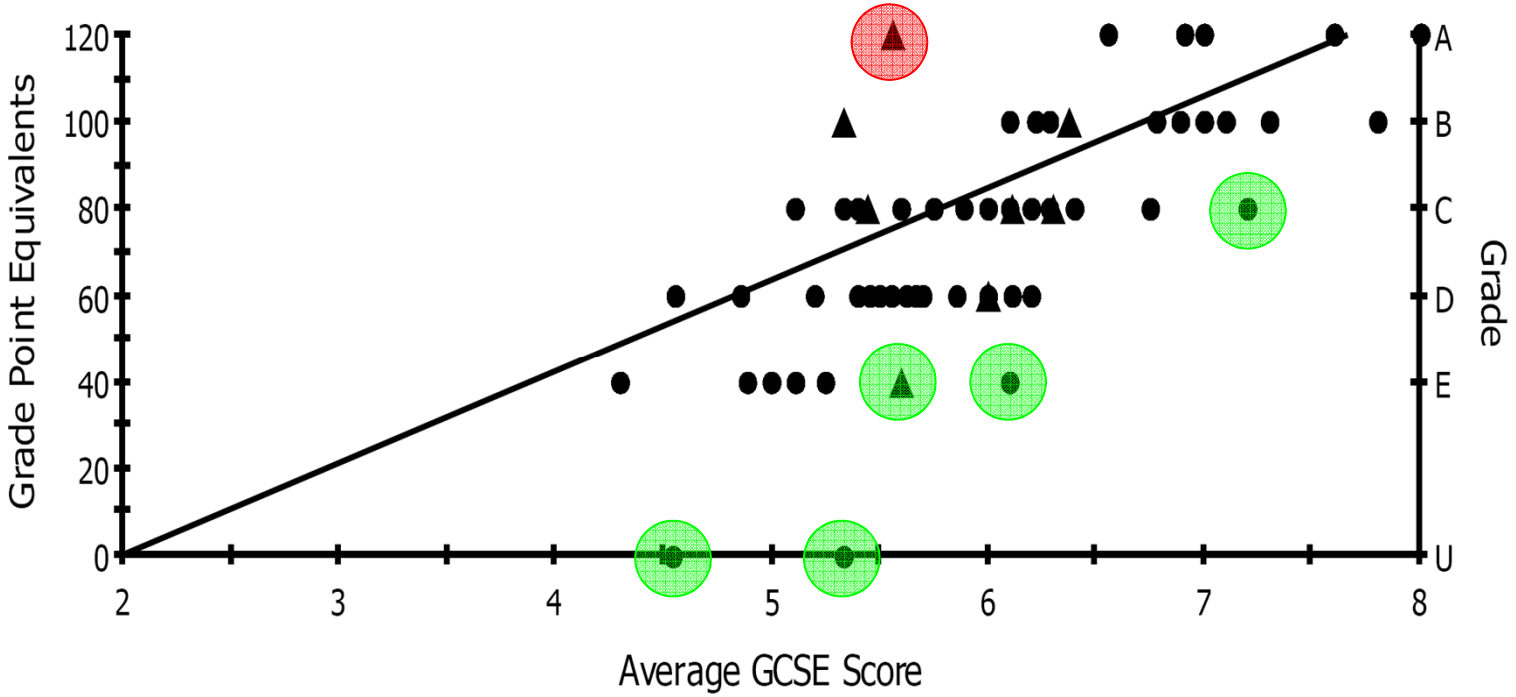
General Underachievement / over achievement ?

Do any groups of students stand out ?

– high ability vs low ability ?

– male vs female ?

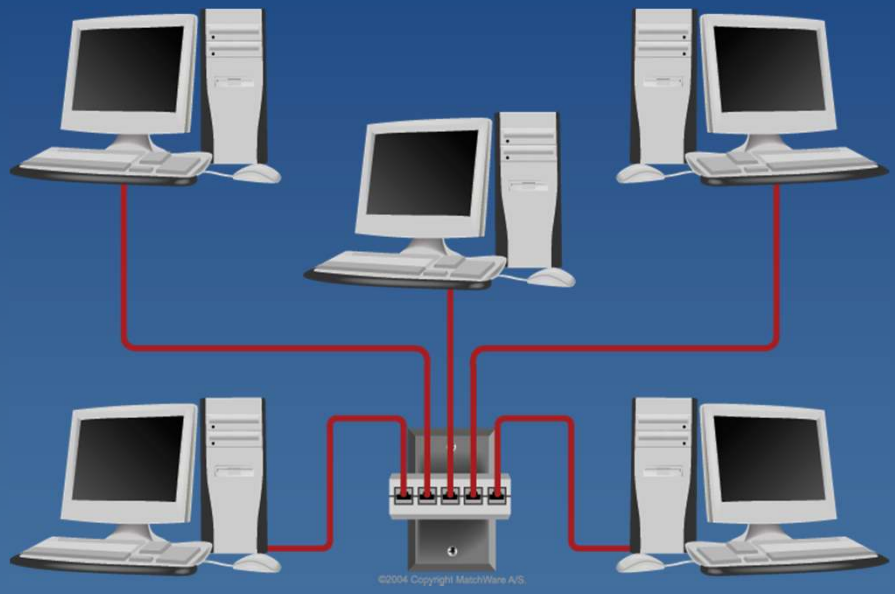
Other things to look for…



- Why did these students do so badly ?
- Why did this student do so well ?
- How did they do in their other subjects ?

St Patrick's College
Maghera

Workshop



Workshop : Ranking

Criterion based marking

verses

Ranking

Ranking can be carried out using different methods.

For example,

- Top 10% get a grade A irrespective of marks, next 20% get a B and so on.
- By percentiles, top 25% in class, bottom 25% in class and so on.
- By position in class, 1st, 2nd, 3rd …

Before looking at the reasons for using 'ranking', in groups look at the sample marksheets provided on the desks.

KS4 Marksheet: Using Midyis and Yellis Data

Workshop 2: Sheet 1

Surname Forename	MiPr Gr Biology	Ye Gr Biology	TG Science TA Biology	Biology SEPT PG Year 12	Biology Sept TL	Biology OCT PG Year 12	Biology Oct TL	Biology NOV PG Year 12	Biology Nov TL	Biology DEC PG Year 12	Biology Dec TL	Biology JAN PG Year 12	Biology Jan TL	Biology FEB PG Year 12	Biology Feb TL	Biology MARCH PG Year 12	Biology March TL	Biology APRIL PG Year 12	Biology April TL	Biology MAY PG Year 12	Biology May TL	Biology JUNE PG Year 12	Biology June TL
Student 1	B	A	A	A	A	B	B	B	B	A	A	A	A	B	B	B	C	A	A			A	A
Student 2	A/B	A	A	A	A	A	A	A	A	A*	A*	A*	A*	A	A	B	C	A	A			A	A
Student 3	B	A	A	B	B	D	D	D	D	C	C	C	C	C	C	C	C	C	C			A	A
Student 4	B/C	B	A	A	A	D	D	B	B	B	B	B	B	C	C	C	C	B	B			A	A
Student 5	A	A	A*	C	C	C	C	D	D	C	C	C	C	D	D	D	D	C	C			A	A
Student 6	B	B	B	B	B	U	U	B	B	C	C	C	C	D	D	D	D	C	C			B	B
Student 7	B	B	A	A	A	C	C	B	B	B	B	B	B	C	C	C	D	A	A			A	A
Student 8	B	A	A	A	A	D	D	B	B	B	B	B	B	B	B	B	D	A	A			A	A
Student 9	B/C	B	A	B	B	C	C	B	B	C	C	B	B	C	C	C	C	B	B			B	A
Student 10	B	B	B	B	B	C	C	B	B	A	A	B	B	C	C	C	D	B	B			B	B

- Indicates the pupil is above or equal to their target grade
- Indicates the pupil is below their target grade

Look at this marksheet

Can you identify trends in relation to over or under achievement for individual students?

Can you think of reasons for the results in Oct, Feb and March?

Can you think of reasons for the results in June?

Can you think of any ways to improve the usefulness of data from the marksheet?

A Level Marksheet: Using Fisher Family Trust Data

Workshop 2: Sheet 2

Surname Forename	Reg Group	NICCEA G76 H ResGF	NICCEA G84 H ResG2F	NICCEA G84 H ResGF	NICCEA G03 ResGF	NICCEA G2268 ResGF	Chance A for Ph	Chance B for Ph	Chance C for Ph	Chance D for Ph	Chance E for Ph	TG Physics AS	AS Physics SEPT % Year 13	AS Physics SEPT CW Year 13	TL AS Physics SEPT Year 13	AS Physics OCT % Year 13	AS Physics OCT CW Year 13	TL AS Physics OCT Year 13	AS Physics NOV % Year 13	AS Physics NOV CW Year 13	TL AS Physics NOV Year 13	AS Physics DEC % Year 13	AS Physics DEC PG Year 13	TL AS Physics DEC Year 13	AS Physics JAN CW Year 13	AS Physics JAN PG Year 13	TL AS Physics JAN Year 13
Pupil 1	13A	A			A	A	14	28	29	19	8	B	84	A	A	83	A	A	84	A	A	78	B	B	69	C	C
Pupil 2	13B	B			C	A	14	28	29	19	8	B	77	B	B	75	B	B	86	A*	A	79	B	B	66	C	C
Pupil 3	13B	A			A	A	14	28	29	19	8	B	76	B	B	68	C	C	62	C	C	77	B	B	68	C	C
Pupil 4	13D		B	B			1	10	23	22	30	C	79	B	B	64	C	C	58	D	D	63	C	C	60	C	C
Pupil 5	13D	B			C	A	1	10	23	22	30	C	64	C	C	73	B	B	65	C	C	77	B	B	58	D	D
Pupil 6	13D	A			B	A	62	24	11	3	1	A	83	A	A	84	A	A	83	A	A	83	A	A	79	B	B
Pupil 7	13E		B	B			14	28	29	19	8	B	62	C	C	62	C	C	68	C	C	65	C	C	61	C	C
Pupil 8	13F		A*	A*	B	A	62	24	11	3	1	A	74	B	B	72	B	B	81	A	A	83	A	A	96	A*	A
Pupil 9	13G		B	B		B	1	10	23	22	30	C	68	C	C	76	B	B	63	C	C	66	C	C			
Pupil 10	13H		A	A	B	A	14	28	29	19	8	B	73	B	B	78	B	B	77	B	B	64	C	C	74	B	B

- Indicates the pupil is above or equal to their target grade
- Indicates the pupil is below their target grade

Look at this marksheet

Can you identify trends in relation to over or under achievement for individual students?

Can you think of reasons for the results in Jan?

Can you think of any ways to improve the usefulness of data from the marksheet?

KS3 Summary Marksheet: Using Midyis Data

Workshop 2: Sheet 3

Surname Forename	Reg Group	MidYIS Score	MidYIS Band	Position Midyis TL Year 10	Art % Year 10	Position Art TL Year 10	English % Year 10	Position English TL Year 10	French % Year 10	Position French TL Year 10	Geography % Year 10	Position Geography TL Year 10	German % Year 10	Position German TL Year 10	History % Year 10	Position History TL Year 10	HE % Year 10	Position HE TL Year 10	Irish % Year 10	Position Irish TL Year 10	Maths Mock Level Year 10	Position Maths TL Year 10	Music % Year 10	Position Music TL Year 10	RE % Year 10	Position RE TL Year 10	Science Level Year 10	Position Science TL Year 10
Student 1	10Pt	112	A	16	64	13	76	4	62	22	72	24	78	7	62	18	78	11	76	11	6	7	78	10	76	6	6	2
Student 2	10Pt	102	B	25	60	19	63	12	60	24	66	25	59	23	66	16	57	19	57	22	W	25	73	14	53	21	5	3
Student 3	10Pt	102	B	25	65	11	74	5	66	17	76	19	67	19	58	21	73	13	74	12	5	20	88	2	68	14	5	3
Student 4	10Pt	115	A	13	67	7	50	24	64	19	74	20	76	9	48	25	87	5	53	24	6	10	73	14	52	22	7	1
Student 5	10Pt	118	A	9	62	17	70	10	63	21	51	26	50	25	33	26	72	15	66	16	5	15	86	3	67	16	6	2
Student 6	10Pt	118	A	9	56	21	58	19	80	5	82	13	79	6	51	24	68	16	68	15	6	12	85	5	69	12	5	3
Student 7	10Pt	111	A	18	71	5	74	5	78	9	80	14	74	14	74	10	80	10	81	6	5	16	90	1	76	6	5	3
Student 8	10Pt	108	B	20	66	10	46	25	72	14	84	10	66	20	77	5	67	17	77	10	5	19	78	10	66	17	5	3
Student 9	10Pt	129	A	3	54	25	62	14	79	8	90	3	78	7	77	5	78	11	65	17	7	3	73	14	68	14	6	2
Student 10	10Pt	105	B	23	63	15	59	17	72	14	83	12	75	13	68	14	38	26	83	5	W	24	75	12	63	19	6	2
Student 11	10Pt	106	B	21	63	15	79	2	77	10	85	8	66	20	66	16	87	5	70	14	5	22	71	17	76	6	6	2
Student 12	10Pt	134	A	1	64	13	79	2	80	5	89	4	87	2	77	5	90	4	81	6	8	1	71	17	76	6	6	2
Student 13	10Pt	109	B	19	67	7	72	7	84	2	78	17	81	4	78	3	92	3	88	2	7	5	83	7	90	2	6	2
Student 14	10Pt	114	A	14	73	4	68	11	80	5	88	5	76	9	77	5	87	5	79	8	6	9	85	5	73	10	6	2
Student 15	10Pt	121	A	7	76	2	83	1	96	1	98	1	89	1	100	1	98	1	94	1	7	2	79	9	98	1	8	3
Student 16	10Pt	114	A	14	60	19	58	19	53	26	88	5	73	15	69	13	67	17	62	20	W	23	71	17	64	18	5	3
Student 17	10Pt	121	A	7	82	1	71	8	81	4	98	1	76	9	92	2	98	1	79	8	7	3	75	12	73	10	7	1
Student 18	10Pt	123	A	5	74	3	51	23	73	13	78	17	73	15	62	18	57	19	64	18	5	17	60	24	43	25	5	3
Student 19	10Pt	106	B	21	62	17	71	8	84	2	87	7	76	9	72	12	87	5	88	2	6	8	86	3	89	3	6	2
Student 20	10Pt	125	A	4	55	24	57	21	75	12	85	8	84	3	77	5	73	13	74	12	W	26	56	25	81	5	6	2
Student 21	10Pt	122	A	6	56	21	62	14	62	22	80	14	45	26	55	22	57	19	55	23	5	14	56	25	47	23	5	3
Student 22	10Pt	116	A	11	65	11	59	17	65	18	74	20	80	5	60	20	55	23	64	18	6	6	80	8	60	20	5	3
Student 23	10Pt	116	A	11	70	6	62	14	72	14	73	22	66	20	68	14	49	24	60	21	5	13	62	22	69	12	5	3
Student 24	10Pt	133	A	2	50	26	54	22	64	19	84	10	71	17	74	10	57	19	53	24	6	11	62	22	32	26	6	2
Student 25	10Pt	104	B	24	67	7	63	12	77	10	80	14	71	17	78	3	81	9	85	4	5	18	64	21	86	4	5	3
Student 26	10Pt	112	A	16	56	21	42	26	54	25	73	22	52	24	54	23	47	25	48	26	5	21	65	20	44	24	5	3

Class position 1
Class position 2
Class position 3

Look at this marksheet

Can you identify trends in relation to over or under achievement for individual students?

What can you say about student 24?

What is the problem with the science levels, second last column?

Can you think of any ways to improve the usefulness of data from the marksheet?

Criterion based marking is needed to assess the knowledge learnt

There are problems with criterion based marking. Even though it gives a percentage and/or grade there is no measure of:

- How hard the test was
- How standardised the marking was
- How a pupil performed relative to others

Using Rank order give two additional advantages -

A student's performance is a function of ability and effort. When a student achieves their desired grade they can 'relax'.

- It can be linked directly back to the pupil's standardised score (e.g. MidYIS or Yellis). Pupils underachieving can be highlighted easily using ranking.

- It allows you to assess how a pupil is performing across a range of subjects and a range of classes.

Conclusion to workshop

Data must be robust and wide ranging to allow the analysis of different groups of pupils to identify strengths or areas for development/intervention

Percentages, grades and position are all important in providing real time performance data and objective value added data

A teachers professional knowledge is vital in setting targets which should be aspirational.

Data provides the questions, not the answers and should be used for planning, carrying out, checking and improving to create a culture of continuous improvement

St Patrick's College
Maghera

Process in Saint Patrick's

ALIS & Fisher Family Trust: Y13/14

Yellis : yr 11/12

MidYIS : yr 8/9/10

Secondary Age Range Projects

Typical Timeline

June/Sept — **Measure Baseline**

Prediction Reports

August — **Collect Results**

September — **Value-Added Feedback**

Target grades Set — September

sims.net supporting schools

- The marksheet available to the teacher has target grades statistically generated.
- the teacher reviews these and using their judgement they add a target grade for that pupil

Save | Undo | Print | Export | Calculate

1 Basic Details 2 Marksheet

2 Marksheet

Result Date 27/10/2010 Group Membership Date 27/10/2010 Refresh Summary Narrow Zoom

Group Filter

Students	Yellis Math Score % Year 11	Yellis Pattern Score % Year 11	Yellis Vocab Score % Year 11	Yellis Band Year 11	Ye SG Maths Year 11	Ye TG Maths Year 11	Ye TG Maths TL Year 11	CA Ma Class SG Position Year 11	CA Ma Sept FT% Year 11	CA Ma Sept HT% Year 11	CA Ma Sept FT Gd Year 11	CA Ma Sept HT Gd Year 11	CA Ma Sep FT Position TL Year 11	CA Ma Sep HT Position TL Year 11	CA Ma Oct FT% Year 11	CA Ma Oct HT% Year 11	CA Ma Oct FT Gd Year 11	CA Ma Oct HT Gd Year 11	CA Ma Oct FT Position TL Year 11	CA Ma Oct HT Position TL Year 11	CA Ma Nov FT% Year 11	CA Ma Nov HT% Year 11	CA Ma Nov FT Gd Year 11	CA Ma Nov HT Gd Year 11
Pupil 1	54.24	58.82	56.14	B	B	B	B	24		67		B		13		66		B		13				
Pupil 2	54.12	67.65	78.46	A	A	A	A	10		88		A*		1		84		A		1				
Pupil 3	56.14	61.76	68.20	B	B	B	B	16		87		A*		2		78		A		5				
Pupil 4	85.09	97.06	59.40	A	A	A	A	2		78		A		6		76		A		9				
Pupil 5	64.86	82.35	54.02	B	B	B	B	19		76		A		8		77		A		7				
Pupil 6	47.67	70.59	66.08	B	B	B	B	22		75		A		10		79		A		4				
Pupil 7	75.10	58.82	63.63	A	A	A	A	6		87		A*		2		78		A		5				
Pupil 8	48.93	58.82	66.24	B	B	B	B	21		83		A		4		84		A		1				
Pupil 9	76.62	61.76	51.09	B	B	B	B	18		76		A		8		75		A		11				
Pupil 10	73.33	76.47	64.29	A	A	A	A	11		75		A		10		82		A		3				
Pupil 11	55.51	61.76	66.40	B	B	C	C	17		66		B		14		63		C		14				
Pupil 12	55.63	50.00	52.39	B	B	B	B	25		74		B		12		75		A		11				
	71.69	67.65	71.78	A	A	A	A	4		78		A		6		76		A		9				

Marksheet Entry : CA TA Physics : 113/Ph1 10/11, Mc Gale, Julian

Save | Undo | Print | Export | Calculate

1 Basic Details 2 Marksheet

Result Date 27/10/2010 Group Membership Date 27/10/2010 Refresh Summary Narrow Zoom

Group Filter

Students	Yellis Math Score % Year 11	Yellis Pattern Score % Year 11	Yellis Vocab Score % Year 11	Yellis Band Year 11	Band	Ye SG Physics Year 11	Ye TG Physics TA Year 11	Ye TG Physics TL Year 11	CA Phy Class SG Position Year 11	CA Phy Sept HT% Year 11	CA Phy Sept HT Gd Year 11	CA Phy Sept Position TL Year 11	CA Phy Oct HT % Year 11	CA Phy Oct HT Gd Year 11	CA Phy Oct Position TL Year 11	CA Phy Nov HT % Year 11
Pupil 1	99.00	67.65	66.57	A	1	A*	A*	A*	1	79	A	9	78	A	9	
Pupil 2	73.33	76.47	64.29	A	1	A	A	A	8	69	B	18	76	A	13	
Pupil 3	71.69	67.65	71.78	A	1	A	A	A	4	90	A*	1	97	A*	1	
Pupil 4	52.73	64.71	51.74	C	1	B	B	B	22	69	B	18	72	B	15	
Pupil 5	59.17	73.53	61.03	B	1	B	B	B	17	77	A	10	79	A	8	
Pupil 6	55.89	76.47	73.09	A	1	A	A	A	12	88	A*	3	90	A*	4	
Pupil 7	93.30	88.24	52.88	A	1	A	A	A	2	88	A*	3	92	A*	3	
Pupil 8	55.89	52.94	74.39	A	1	A	A	A	11	69	B	18	74	B	14	
Pupil 9	71.56	79.41	55.65	B	1	A	A	A	13	85	A*	5	80	A	7	
Pupil 10	63.47	70.59	69.34	A	1	A	A	A	9	71	B	14	84	A	5	
Pupil 11	62.33	50.00	68.85	A	1	A	A	A	10	83	A	6	78	A	9	
Pupil 12	76.11	47.06	63.15	A	1	A	A	A	6	77	A	10	77	A	11	
Pupil 13	79.65	76.47	64.29	A	1	A	A	A	3	81	A	7	84	A	5	
Pupil 14	72.83	82.35	62.66	A	1	A	A	A	7	90	A*	1	94	A*	2	

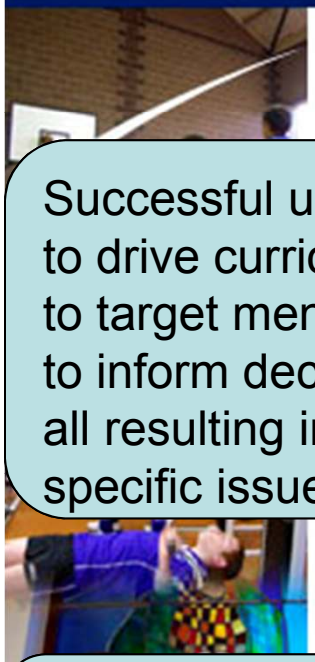
Other Issues

- Saint Patrick's future development
  - Learning styles
  - Staff training in access and interpretation of data
  - Ranking across mark sheets
  - Standardised mark sheets in and across curriculum areas
  - Exam analysis – automated on SIMS
  - Parental access - C2K Gateway

- Parents will be able to go on and view selected data made available by the school: As well as assessment data parents will be able to view other data in real time;
    - Attendance stats
    - Coursework deadlines
    - Controlled assessment dates
- Teachers will be able to enter data, complete reports, review progress at a time that suits them.

SIMS LEARNING GATEWAY

St Patrick's College
Maghera



Conclusion

The use of data in Saint Patrick's is a driver for educational decision making that results in the **continuous improvement** in teaching and learning across the school

Planned use of data is a common characteristic of high-performing

Ensure all staff are involved and results are entered in a timely fashion.

Ensure standardised reports are generated monthly.

Translate data into priorities, goals and strategies that are clearly linked to school-planning and decision-making processes.

Successful use of data:
to drive curriculum changes
to target mentoring
to inform decision making
all resulting in a strategic focus on specific issues.

Teachers need a clear process time to acquire skills and guidance to translate data into useful information.

must be used to

Do

Check

St Patrick's College
Maghera

Thank you