

Meeting of the South Bank Engineering UTC Learning & Teaching Committee

3.30 - 5.00 pm on Wednesday, 16 November 2016 in South Bank Engineering UTC, 56 Brixton Hill SW2 1QS

Agenda

No.	Item	Pages	Presenter
1.	Welcome & Apologies		IB
2.	 Declarations of Interest Governors are requested to declare any interest in any item of business 		IB
	Items to discuss		
3.	Measures of Attainment and Learning	(Pages 3 - 14)	DC
4.	Prior Attainment - Year 10 - Year 12	(Pages 15 - 18)	DC
5.	Learning Leaders Performance of students Staff performance New teaching facilities External assistance 	(Pages 19 - 24)	DC
6.	Employer Partner Inputs	(Pages 25 - 26)	DC
	Items to note		
7.	Learning & Teaching Terms of Reference	(Pages 27 - 28)	PS
8.	Any Other Business		IB

Date of next meeting 3.30 pm on Wednesday, 1 March 2017

Members:	Ian Brixey (Chair), Dan Cundy, Richard Parrish, Tony Roberts and Joanne Young
In attendance	Rao Bhamidimarri (CEO), Pervena Singh (Clerk)

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South Bank Engineering UTC Measures of attainment and learning



design. engineer. innovate





Key Stage 4 attainment

- Students are completing GCSEs and BTECs, all at Level 2
- GCSEs are graded from 9-1
- BTECs are graded Pass, Merit, Distinction, Distinction*
- Attainment will be published for a number of measures:
- ✓ English and maths GCSEs
- ✓ English Baccalaureate
- We need to consider entry requirements for Year 12, giving us internal attainment targets too.



9-1 grades

- 9-1 replace A*-G, with 9 being the highest
- Grades do not map to previous model, but there are approximations:
 9=A**



5=C (except that grade 5 corresponds to the top 1/3 of current grade C and bottom 1/3 of grade B)

4=D

3=E

- 2=F
- 1=G

Note backdrop = 'dumbed down' GCSEs? Focus on C grades.



Attainment 8

- All schools are judged on Attainment 8 scores. Students do not receive a score they receive separate grades.
- School score = points in up to 8 qualifications, but must fit in certain 'buckets'
- English and maths double-weighted
- Scores are added per student: 10 x grade 5 = 50 points. Then averaged across student population.



qualifications)

double-weighted if a student has taken both qualifications



Our curriculum

- **English language and literature**
- Maths •
- Science and additional science
- **Computer science**
- **English literature**
- Page 8 **BTEC engineering**
 - **TLM Design Engineer Construct**





*Higher score of English Language or English Literature double-weighted if a student has taken both auglifications

qualifications)



English and maths / English Baccalaureate

- Previous measure was the proportion passing with A*-C grades
- Will become proportion obtaining grade 5 or above
- Grade 5 becomes the new 'good pass'
- Page
- Schools measured on proportion being entered and achieving at least grade 5 in English Baccalaureate subjects:
- English and maths
- Sciences
- A humanities subject
- A modern foreign language

Students receive no formal recognition of achieving EBacc.



Key Stage 4 progress

- Progress 8 is a more important performance measure now. Avoids narrow focus on reaching C grade threshold.
- Based on progress from Key Stage 2-4: from the end of Year 6 to the end of
- Page Pased or
- $\hat{\sigma}$ Based on individual students each student has an 'expected' points score at
- the end of Key Stage 4 based on their Key Stage 2 performance. A student reaching their expected score is given a Progress 8 score of zero.
- This is derived from Attainment 8 score divided by 10 (8 subjects, of which English and maths are double-weighted) eg 6.3.
- A student's Progress 8 score of +0.5 means the student has performed half a grade better than expected.
- A school score is derived by averaging the cohort's scores.
- Floor target = -0.5. Schools with scores below this face likely inspection and likely Requires Improvement judgement*



- Small cohort sizes mean a wide confidence interval: a UTC with a score of -0.51 may not fall below floor in real terms.
- UTCs are held to account for all progress from Key Stage 2-4 BUT only have influence over two of the five years AND Key Stage 2 data can be inflated.

آغo:

- Narrow curriculum
- Long day
- Enhanced curriculum time for core subjects
- Cross-curricular approach (literacy, numeracy, SMSC)
- Support staff
- Accurate baselining
- Surgical analysis of rigorous data to set appropriate targets
- Well-judged and impactful interventions



Target setting

- It is vital that we set targets which ensure students
- a) Reach the expected standards to join Level 3 courses in Year 12
- -b) Make at least expected progress

steps:

- 1. Gain Key Stage 2 data and translate to 9-1 scale
- 2. Use challenging progress model to set Key Stage 4 targets, with minimum expected and 'stretch' levels of progress
- 3. Backwards-map to each term of Key Stage 4, including an assumed grade on entry
- 4. Triangulate with our own baseline and CATs data to indicate intervention or assessment need, or to revise targets upwards.





Key Stage 5

- Accountability measures include attainment, progress, course completion ۲ and destinations measures.
- We have GCSE grades = reliable, recent, empirical data.
- Page We use ALPS to generate target grades at minimum expected (in line with
- **4** national expectations) and 'stretch' (in line with the top 25% of students nationally)
- A levels all two year courses no AS levels •
- BTECs all Level 3 A level equivalent ۲
- A levels graded A*-E ۲
- BTECs graded Distinction* to Pass ۲



	CONFIDENTIAL
Paper title:	Prior Attainment
Board/Committee:	South Bank Engineering UTC Learning & Teaching Committee
Date of meeting:	16 November 2016
Author:	Principal
Purpose:	To discuss
Recommendation:	The committee is requested to note and discuss the report.

Year 10

Intake into Year 10 is non-selective, generally based on engagement with the UTC's specialisms and ethos. As such, there is a considerable range of ability as evidenced by prior attainment. For example, average Key Stage 2 points score (at the end of Year 6) ranges from 19 to 33. To understand this, consider this DfE table:

Level	Fine points range
6	36-41.99
5A	34-35.99
5B	32-33.99
5C	30-31.99
4A	28-29.99
4B	26-27.99
4C	24-25.99
3A	22-23.99
3B	20-21.99
3C	18-19.99

Key Stage 2 average points score is based on scores in a variety of areas, tested at Year 6 SATs: Reading, writing and mathematics. The average KS2 score nationally for 2013 was 28.3 points. The 2016 Year 10 intake at the UTC is 28.1, meaning the cohort is marginally less able than the national average according to this data. (Note that where we have missing data we assume a student was in line with national average: level 4b or 27 points) Given that averages are often not particularly helpful, it is useful to group students according to their points score, conventionally into three prior attainment bands:

- Below level 4 low prior attainers (LAP)
- At level 4 middle prior attainers (MAP)
- Above level 4 high prior attainers (HAP)

Overall, the UTC has

- LAP: 14% (17.1% nationally)
- MAP: 64% (48.4% nationally)
- HAP: 22% (34.5% nationally)

The table below outlines differential by gender

Fine points range	(Below level 4) 18-23.99	(At level 4) 24-29.99	(Above level 4) 30-41.99
% of girls whose prior attainment was in this range nationally	15.0	48.9	36.0
% of boys whose prior attainment was in this range nationally	19.2	47.8	33.0

In relation to national, the UTC's girls are 33% LAP, 33% MAP and 33% HAP, giving a bias towards the lower end of the ability scale by prior attainment – for example with over twice the proportion of low prior attainers. Boys at the UTC are 10% LAP, 70% MAP and 20% HAP, revealing a skew towards the middle of the ability range in relation to the national picture.

Individual scores for Reading, Writing, Grammar, Punctuation and Spelling (GPS) and Mathematics are available separately for all Year 10 students, and gives the UTC the ability to use prior data to inform target-setting.

Prior attainment in past years would be available on entry to Year 10 as the results of Year 9 SATs taken at the end of Key Stage 3. This data is no longer available, so the only hard prior attainment data available to the UTC is significantly out of date, with three academic years already elapsed. Thus it is critical that the UTC has robust and detailed arrangements in place to establish a baseline when students start Year 10.

APS by group indicates some variation

All students	28.10
Boys	30.45
Girls	27.62
Disadvantaged	28.84
Non-disadvantaged	28.55
Black Caribbean	28.35
Black African	28.92
White British	26.74
First language English	28.31
English additional language	27.69
SEN	26.68

Disadvantaged students are more able on average by KS2 prior attainment than non-disadvantaged students. As such, a positive gap in performance at Key Stage 4, a major focus for Ofsted and the government, should be carried through. Girls are less able than boys on average, so additional tracking, intervention and support will be required in order to enable all girls to reach our own entry criteria for Key Stage 5. Likewise SEN and White British students stand out as having achieved lower than average Key Stage 2 scores, and will need additional support.

Year 12

Intake into the UTC is selective in Year 12, with all courses on offer at level 3, with entry requirements of either 5 GSCEs at A*-C including English and maths for the Technical pathway, or 5A*-C including English and maths including B grades in chosen subjects for A level for the Academic pathway. As a consequence, there is less of an ability spread than in Year 10.

For Year 12 entrants to the UTC, far more current prior attainment data is available in the form of GCSE results obtained in the summer before joining. These GCSE results are expressed in a points scale (to be changed as 9-1 grades arrive) as follows:

- A* 58 points
- A 52
- B 46
- C 40
- D 34
- E 28
- F 22
- G 16

Thus a student with an average of C grades across all of their GCSE entries will have a Key Stage 4 average points score of 40 points. At the UTC, the Year 12 intake overall has 41.3 points on average, corresponding to a C-. It is useful to split this figure amongst those on the technical and academic pathways:

Technical pathway (lower entry criteria): 39.2 points, equivalent to a D+ Academic pathway: 45.2 points, equating to a B-.

Average points scores may be misleading in the context of the UTC curriculum. For example some students have GCSE results far stronger in STEM subjects than in English, languages or humanities for example, in keeping with their technical and hands-on learning styles. Average scores are taken across all subjects studied too, rather than only those to be studied in Key Stage 5.

Looking at GCSE average points scores by group:

All students	41.32
Boys	40.59
Girls	43.27
Disadvantaged	40.53
Non-disadvantaged	42.68
Black Caribbean	41.19
Black African	42.78
White British	42.28
First language English	40.93
English additional language	41.97
SEN	39.16

By gender, prior attainment is 43.3 points for girls, and 40.6 for boys, revealing that our girls are more able on average. Disadvantaged students achieved a lower GCSE points score on average than non-disadvantaged students. SEN pupils performed less well at GCSE than their peers with no special educational needs. Of the key ethnic groups, Black Caribbean are the least able by prior attainment. Tracking and intervention strategies will be put in place to monitor performance by group and ensure that all groups are progressing in line to achieve challenging targets. It is important too that attainment targets are achieved, in order that students from all backgrounds are able to access the wide range of pathways on offer after their journey at the UTC.



	CONFIDENTIAL
Paper title:	Learning Leaders Management Report – Autumn term 2016 to date
Board/Committee:	South Bank Engineering UTC Learning & Teaching Committee
Date of meeting:	16 November 2016
Author:	Principal
Purpose:	To discuss
Recommendation:	The committee is requested to note and discuss the report.

This report is designed to outline student and staff performance along with teaching facilities and resources. It has been organised by subject.

Engineering

Performance of students

- Yr10 groups on target for Units 2 (Investigating an Engineered Product) and 6 (Computer-aided engineering) completion by end of term one
- Grade distribution will likely end up as 30% Distinction, 50% Merit and 20% Pass across both units which is broadly in line with overall target grades
- Bamboo bicycle project is progressing well, expected completion by 18th Nov. Kings project underway after a field visit to KCH.
- Yr12 Progress is on track, Unit 4 (Applied Commercial and Quality Principles in Engineering) and 10 (Computer Aided Design) will be completed by the end of term one and the learning for the Unit 1 (Engineering Principles) exam
- Grade distributions look promising, likely a 60/30/10 (D/M/P) spilt
- Unit 1 exam is a new addition for the 2016 Level 3 specification but is causing no concerns
- Students are enjoying enrichment activities which centre around competitions and 3D printing/CAD.

Staff performance

DBE has shown excellent leadership with an inexperienced team. High quality strategic and medium-term planning has taken place, underpinned by good management and support, meaning lessons are good and are driving good levels of progress both in the BTEC courses and in employer projects.

A strong start from both LTA and SBE has resulted in good student progress and little deviation from the assessment plans. LTA has displayed high levels of academic knowledge, excellent work ethic and high expectations of students. She currently leads Unit 1 (Level 3). SBE has shown high levels of organisation, solid preparation and good pace. He currently leads Unit 2 (Level 2)

Students are receiving excellent support from SAR, he is making a direct difference to the progress of our students. LPA is assisting with projects including Bamboo Bicycle Club to good effect, adding capacity. One weak member of staff has departed, with a new and experienced engineering teacher recruited for January 2017. In the interim, timetables have been rearranged to enable high quality teaching from the existing staff team.

Facilities and resources

Limited facilities have not hindered the student experience, instead the curriculum adapts to our facilities this year. Much of the machinery is now commissioned and training completed for staff, although some orders remain outstanding. H&S (DATA) training has been completed by all engineering staff. Engineering workshops have provided a good environment to conduct practical sessions, with electrical cutoffs fitted to aid safe operation.

External assistance

Contact with the VP, Johnathan Nicholls, from UTC Reading has been made, we are awaiting communication from the LIV to arrange external moderation prior to any SV sampling.

Science.

Topics studied to date.

- Year 12 PHYSICS: Physical Quantities and SI Units, Scalars and Vectors, Kinematics, Linear Motion, Projectile Motion, Dynamics
- Year 12 CHEMISTRY: Atomic Structure, Bonding, Calculations, Electronic Structure, Structure, Periodicity
- YEAR 12 BIOLOGY: Ultrastructure of cells, microscopy, plasma membranes, diffusion, osmosis, active transport, cell cycle, biological molecule.
- YEAR 10 BIOLOGY: CELL, microscopy, diffusion, osmosis, active transport.
- YEAR10 CHEMISTRY: History of the atom, atomic structure, mass number and atomic mass, electron configuration, periodic table, elements and compound and mixtures, chemical reactions and equations.
- Year 10 PHYSICS: ELECTRIC CHARGE, series and parallel circuits, potential difference, current, resistance, AC and DC, UK mains electricity, Cables and plugs.

Student Performance

- Year 12 PHYSICS: Student performance is in line with expectations and target grades
- Year 12 Chemistry Student performance is in line with expectations and target grades.
- YEAR 12 BIOLOGY: General performance is very good. All students are working above their targets.
- YEAR 10 BIOLOGY: general students' performance is higher than the other sciences. Students' performance is very encouraging. Most students are working above their targets.
- Year 10 CHEMISTRY: General performance is encouraging compared to physics. Some students have already met their targets.
- YEAR 10 PHYSICS: The module we are doing involves application of physics equations in calculations. Able students and middle ability students are performing very well. The less able students find it difficult to apply equations in calculations.

Staff Performance

KBA has been teaching A level chemistry very effectively, and developing FAF's expertise with close monitoring and support. FAF has improved over the half term. The pace, content and activities in lessons have been consistent. The limitations of space and equipment have meant that limited practical activity has occurred in the first half of term. This is being addressed in the second half of term. He is responding positively to advice that is given.

SDE, FAF and SAR have delivered a theoretical and demonstration based physics course over the half term. The focus on mathematical skills has been developed by SDE and demonstrative physics by SAR.

Facilities and resources

Room 5 is used for all science lessons, with micro-scale science procured to enable practical lessons to take place in all three sciences, at GCSE and A level. Some delays in delivery of materials and storage facilities slowed practical delivery in the opening weeks.

Maths

Topics studied to date

Yr10 GCSE

- 1. Laws of Indices
- 2. Surds (simplifying and rationalization)
- 3. H.C.F and L.C.M
- 4. Recurring Decimals
- 5. Trigonometry (2D)
- 6. Pythagoras Theorem
- 7. Trigonometry (3D)
- 8. Standard Form
- 9. Simultaneous Equations (Simple Linear)

10. Polygons

11. Transformation – Translations and Enlargement (Current)

Yr12 A level

- 1. Algebra and Fractions Revising GCSE algebra techniques.
- 2. Quadratic Functions Solve quadratic equations using different ways i.e., Factorisation, Completing the square and Difference of Squares
- 3. Equations and Inequalities Solving Simultaneous Equations both linear and quadratics; solving linear and quadratic inequalities
- 4. Sketching Curves Drawing/Sketching curves for Quadratic and Cubic equations.
- 5. Co-ordinate Geometry (x,y) 2D plane Equation of a line (all forms); Eqn. of Tangent and Normals
- 6. Sequences and Series Arithmetic Sequences, Recursive Sequences and Sigma Series

Differentiation – First and second order derivatives; Gradient functions; Slope of a curve at a point.

Maths in Context (Year 12 Level 3 – for students with a C grade at GCSE)

- 1. Data
- 2. Averages estimated mean, median, mode
- 3. Interquartile range, estimated median
- 4. Box Plots
- 5. Cumulative frequencies
- 6. Moving average graph
- 7. Percentages (Change, reverse and compound interest)
- 8. Probability
- 9. Scatter diagram
- 10. Histograms

Student Performance

GCSE: A wide range of performance in Year 10 as expected given the wide ability spread and mixed ability class teaching. Students performing across the range of abilities in each set. 10B show a weaker performance which is being remedied by being taken over by SDE from CBO. A Level:

the 12A1 group is performing well and working toward their target grades. The 12T1 group is weaker. The work ethic between the groups is quite marked and has had an impact upon the progress of 12T1. Maths in Context: Most of their basic maths is very weak. Those who are capable have real difficulty with the literacy and understanding what the question is asking them. All of them require a lot of revision and independent studies – this course is being managed closely.

Staff Performance

SDE is moving students along at pace and has high expectations of all classes. He is working consistently well and sets demands tasks of groups. He is well organised and his preparation of assessments has been thorough. HPA has started to develop resources for the new AQA course. Well organised and structured teaching, but the

literacy levels are holding back students' interpretation of the material. HPA has handed her notice in, with SAR to take on Maths in Context lessons from January with support.

Facilities and resources

Given that most maths specifications are new, there were delays in being able to access resources to support teaching and learning. This has necessitated changing exam boards for maths in context. Books and resources have now been delivered to drive progress.

English

Topics covered

- English Literature GCSE Macbeth (2/3 of the way through), GCSE modern texts (started), Poetry
- English Language GCSE Development of close reading skills, literary techniques and creative writing.
- English Language GCSE Covered whole syllabus. Going into depth with writing assignments and textual analysis. Working on structure, language skills and confidence

Student Performance

Students are performing consistently well in the year. Many are on target and a number ahead of target. Regular support is provided for those who are below target or finding the subject a challenge. Variable ability and Key Stage 2 experience is being managed, with intervention and support to enhance already strong teaching and resourcing.

Staff Performance

RVA is an inspirational teacher who is meticulously organised and professional in her approach. Highly creative and original and proving to a be strong line manager for EKE. EKE is able to support in lessons as well as withdrawing small groups, focusing on catchup support and SEN students.

Computer Science

Topics covered to date

GCSE

- 1. Systems Architecture
- 2. Memory
- 3. Storage
- 4. Wired and Wireless Networks
- 5. Network Topologies

A Level

- 1. Processors, input, output and storage devices
- 2. Software and development
- 3. Exchanging Data

Student Performance

GCSE: A wide ability range is reflected in the performance of students. All engaged with the course. Excellent conduct and enthusiasm levels. A Level: Students are working hard and making progress in line with their target grades.

Staff Performance

MMA is a strong classroom teacher who is creative and has high expectations of classes. He has engaged a number of outside agencies eg Google to assist with engaging and motivating students to good effect.



	CONFIDENTIAL
Paper title:	Employer Partner Inputs
Board/Committee:	South Bank Engineering UTC Learning & Teaching
	Committee
Date of meeting:	16 November 2016
Author:	Principal
Purpose:	To discuss
Recommendation:	The committee is requested to note and discuss the report.

Since opening, the UTC has benefited from a range of partner inputs.

- 1. King's College NHS Trust. All of Year 10 visited the Department of Medical Physics and Engineering to gain an insight into medical engineering. All students were given access to employer presentations through a carousel system, which students found highly engaging. The visit was designed as the launch event for a Year 10 project on wheelchair customisation. This project is fed from live work which the department has engaged in over recent times. Students are progressing well through their project in teams and are due their mid-project feedback this week prior to completion and final pitches.
- 2. Skanska. All of Year 12 spent a day with Skanska staff and supply chain partners on site to launch the Ward of the Future project. The day was structured around a series of workshops and presentations designed to give students some sector knowledge allied to input into the diverse elements of the project. The project was prefaced by the UTC running an Autodesk course so that students had some working knowledge of computer-aided design (CAD) prior to starting the course. Students are now using their project time in groups to progress towards final outcomes and pitches. Some spin-off from the introductory day is being pursued: for example a Skanska and GOSH partners are looking to develop a group to give specific input into girls.
- 3. Skanska Social Agenda graduate team. In an evolution of a relationship formed in pre-opening, the UTC has been attached a team of graduates, all recently employed by Skanska and London-based. This team is tasked

with generating some social benefit through their involvement. Having visited the UTC and understood the context and objectives, there are three main areas to be developed. Firstly the team will be attached to recruitment and marketing events to led industry weight and develop engagement. Secondly individuals within the team are exploring how they might lead educational inputs in the form of virtual site visits (using our 360 degree video camera for example), masterclasses, lectures or miniprojects. Finally, individuals are exploring further involvement as professional mentors or in competitions and events. This engagement will generate considerable value for the UTC in many respects, and is to be strongly welcomed.

- 4. Skanska governance involvement in Secondary Leaders Project. Ian Brixey and a member of the graduate team are involved in a project which involves both groups of Year 10 having a 'hot seat' session with engineers in order to prepare them for the creative phases of a competition to solve the world's problems through engineering.
- 5. Guy's & St Thomas' NHS Trust. Project on Plant Room in Guy's Hospital. Project definitions, timescales and locations agreed; venues booked and educational outcomes clarified.
- 6. Bamboo Bicycle Club. All Year 12 students have met James, Director of the company, for a Q&A in preparation for their starting the project in November. All of Year 10 are working on the project tying in with a unit of their BTEC course: teams have built bamboo frames with subsequent work on component fitting, assembly and testing along with design and marketing dimensions.
- 7. SD Structures. Bridge project further developed for delivery later in the academic year. Will involve a focus on CAD and tie in with current issues around London bridges, including the proposed 'garden bridge' in Lambeth.
- 8. Practical Action. House design project for Bangladesh (Year 12) further developed for delivery later in the academic year. Second project on water supply for South African villages (Year 10).
- LSBU Battersea Power Station BIM model project with virtual reality dimension finalised for delivery later in the academic year. Interesting link between Skanska as a contractor on the main project, Battersea Power Station themselves and LSBU.
- 10. Fluid Structures project on structural engineering modelling planned for delivery later in the academic year. Focus on traditional techniques building balsa wood models to understand structural stresses.



	CONFIDENTIAL
Paper title:	Learning and Teaching Committee Terms of reference
Board/Committee:	South Bank Engineering UTC Learning and Teaching Committee
Date of meeting:	16 November 2016
Purpose:	To note
Recommendation:	The South Bank Engineering UTC LGB approved the terms of reference at the meeting held on 28 September 2016

Learning and Teaching Committee

Purpose

- To challenge and support the school on behalf of the Local Governing Body to provide a curriculum which provides employers informed and cutting edge learning experience to students, and to monitor how it is taught evaluated and resourced.
- To ensure that the student learning support is designed and implemented to ensure that all students receive appropriate support to progress and achieve to their full potential.
- To consider the statutory guidance issued by the DfE from time to time and to ensure that the curriculum, learning and teaching, and student support are aligned.

<u>Membership</u>: three governors and the Principal. <u>Quorum</u>: two governors and the Principal. <u>Meetings</u>: once a term (three times a year)

Terms of Reference

Overall responsibilities

- o To monitor employers' involvement in curriculum development and delivery;
- \circ To review the curriculum implications of the school development plan;
- \circ $\,$ To review learning and teaching policies on behalf of the LGB.

Progress and attainment

• To monitor progress, attainment and targets in learning and teaching;



- To monitor delivery of the curriculum;
- o To monitor and evaluate implementation of curriculum policies;
- To review learning and teaching policies on behalf of the governing body.

Quality and provision

- To monitor and evaluate provision for all students including those with SEN and those from vulnerable groups;
- To monitor learning and teaching support.
- To meet academic team leaders annually to support self-evaluation and action planning