

Science, Technology, Engineering and Maths (STEM)

Buttershaw Business and Enterprise College (BBEC) began developing the STEM pipeline for students back in 2012 to provide experiences for all students from Year 6 through to post-16. At the heart of this provision was the founding of the STEM Academy which has to date provided specific STEM experiences both for students within the Academy and for students outside of the Academy. The Academy has allowed all students in Year 7 and primary students from feeder schools to gain STEM experiences and raise the profile of STEM careers.



STEM is clearly addressed through core subjects and our strong provisions around technology. However, we also took a lead in broadening our STEM pipeline with the introduction of the Design, Engineer and Construct (DEC) course in 2014.

<https://designengineerconstruct.com/>

In 2014, BBEC was the founding school of an Industrial Centre of Excellence for Science, Environment and Technology (CE:SET) – a collaboration with the University of Bradford, Bradford Council and leading businesses. The decision to implement DEC came from this centre to raise the engagement of students with careers across the built environment and to engage with businesses from that sector. CE:SET also provides STEM provisions for our A-level Biology, Chemistry and Physics courses, which includes sessions to support the practical endorsements. All the sessions are delivered by university experts in their state-of-the-art STEM centre. We also deliver bespoke sessions for students and participate in a range of STEM competitions.



Since 2014 DEC has grown into a real success story and we are nationally recognised as a leader in its delivery. The course gives our students a full GCSE engineering qualification, which includes strong STEM components throughout. The focus of the course is around sustainable architecture, with students gaining a thorough grounding in all aspects of building design, construction, functioning and sustainability – our students learn to use architectural REVIT software; a skill normally taught to second and third year architectural undergraduates.



1 Front perspective #1

Floor Schedule 1st option	
Family and Type	Area
Floor: Generic 150mm	199 m ²
Grand total: 3	199 m ²



2 Front perspective #2

Floor Schedule 2nd option	
Family and Type	Area
Floor: Generic 150mm	201 m ²
Grand total: 3	201 m ²

In modern times, STEM qualifications are absolutely essential for young people to access the best possible career pathways. STEM is also essential to the economic prospect of Bradford and our South of Bradford locality which is the 5th most deprived local authority in England. A 2016 survey by Bradford Council showed that over 150,000 people across this authority live in areas ranked amongst the 10% most deprived in the UK. There is also a very high proportion of young people across Bradford; 23.7% of the population of 531,000 are aged under 16 and their progression into youth employment is 93.7%, 3.5% lower than the national figure of 96.2%. Our NEET (Not in Education, Employment or Training) figures are also generally 2-3% below national figures. This is a tough backdrop which reminds us of the importance of good STEM qualifications.

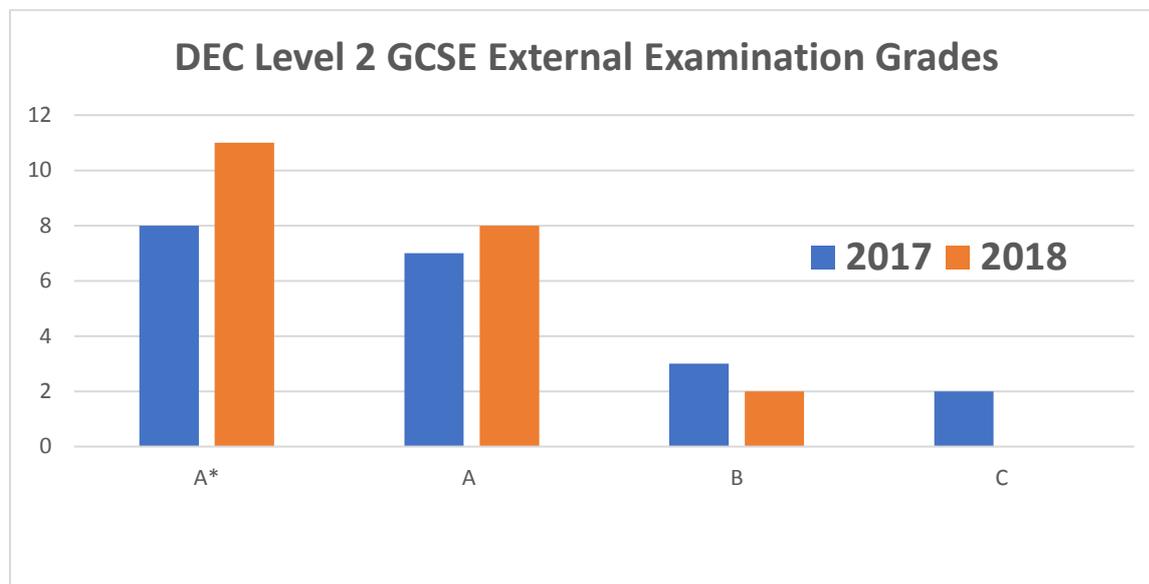
The improvement of our STEM provisions and the growth of DEC have played a major part in school improvements and was recognised at the 2017 Bradford T&A Schools Awards with the winning of the 'Science and Technology Award'.

Impacts at BBEC

To date, two of our year groups of students have completed the Level 2 DEC course. These results from summer 2017 and summer 2018 are shown in the graph below. This summer (2018) we achieved outstanding results: 19 of the 21 students gaining A* or A grades and a surprising improvement on the excellent results from the previous year when 15 of the 20 students gained A* or A grades.

Both the 2017 and 2018 results show an average attainment of higher than +2.0 - which indicates all students averaged two full grades above targets. For example, students who were expected to

achieve a C grade achieved an A grade. Our average for all students and courses at BBEC is approaching 0 (zero) which positively puts us in line with national expectations.



The success of the course has also grown DEC numbers across our year groups. From September 2018, DEC is part of the core technology offer for our Year 9 students and there is a total of 140 students on our Year 9 level 1 programme and Year 10 level 2 programmes.

Year Group	Total Students	Pupil Premium	Females
11 (15-16 years)	19	5	0
10 (14-15 years)	40	14	4
9 (13-14 years)	81	39	24
	140		

One of our most important successes has been the continued business partnerships with external companies and we were immensely pleased to gain Gleeds as our main industry partner:

<https://gb.gleeds.com/>

To date we have worked closely with Gleeds on several aspirational events and they have provided three of our Year 10 students with one-week work experience placements.

Gleeds have also provided the level of expertise, technology equipment and guidance to directly impact on our students' learning and aspirations. We are now in discussions to further develop our partnership in this forthcoming year. This is what Gleeds have said about our highly successful partnership:

“We are delighted to have been able to share our skills and resources with Buttershaw Business and Enterprise College in 2018. Through sponsorship of the Design, Engineer, Construct curriculum, Gleeds has equipped students with the knowledge of a variety of future career roles, including project management and cost management. During student placement week, students experienced the world of work and were introduced to real construction projects as they happened in Gleeds' Leeds office whilst learning essential workplace skills. We look forward to continuing to support

students of Buttershaw Business and Enterprise College and to inspire them to join the ever-evolving world of construction.”

Steven Green, Director, Gleeds.

STEM Impacts – Career Destinations

The analysis of the 213 students GCSE students leaving in summer 2017 showed 62 of them progressing onto STEM-related pathways. There were 12% doing apprenticeships, 11% in employment and the majority of 62% undertaking higher education courses: significantly, only two students (1%) were NEET at the time compared to the overall figure for Bradford in 2016 which was 8%.

A recent survey of all DEC students showed that 90% of our students were considering STEM pathways through A-level (37%), apprenticeship (32%) and technical (37%) routes. 79% of our students recognised that DEC had positively impacted on the development of their STEM skills.

These are some of the quotes from our students:

"I have enjoyed learning about certain things that will help me with my career path."

"Very enjoyable and varied lessons about different areas of construction which keeps you intrigued and wanting to learn more."

"Architecture!"

Over 85% of students rated the challenge and teaching of the course as better than good.

We are very proud of our STEM pipeline at BBEC and consider it to be amongst the best in the UK. If you have any further questions please do not hesitate to contact me.

Regards

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