UNIVERSITY OF BIRMINGHAM

Who wants to be an engineer? Vocational diversification in English secondary schooling and the decision-making and experience of girls and boys from different social class backgrounds

Ann-Marie Bathmaker
University of Birmingham

The vision for UTCs (1)

University technical colleges (UTCs) are government-funded schools that *offer* 14–18 year olds *a great deal more* than traditional schools. They *teach* students technical and scientific subjects *in a whole new way* and are *educating the inventors, engineers, scientists and technicians of tomorrow*. [my emphasis]

http://www.utcolleges.org/about/overview/ (accessed 30 August 2014)

The vision for UTCs (2)

The vision for UTCs (3)

"Amongst the first UTCs no student has joined the ranks of the unemployed. Every student continued in education, or went into employment or training. There were no "NEETs" [Not in Education, Employment or Training] and this is our aim for all UTCs."

Lord Baker, Chairman, Baker Dearing Educational Trust

http://www.utcolleges.org/about/baker-dearing-educational-trust/ (Accessed, 30 August 2014)

All UTCs in England at September 2014.
Open: 17. Planned: 33

Education policy imperatives surrounding UTCs

- Encouraging greater participation in STEM subjects
- Increasing school ‘choice’ and diversity
- But set within an “A-C economy”

Wider social and economic concerns

- Skills shortages
  at technician and graduate level in engineering, manufacturing, technology, IT and science (CBI, 2014)
- Earnings
  for those aged 22–30, median earnings are 15 per cent less than before the recession, driven by a combination of lower hourly pay and fewer hours of work.
- Geographic mobility
  not an option with low earnings: 25% of 20–34-year-olds live with their parents (State of the Nation, 2014)
- Social mobility
  Average-ability children from wealthy families on average overtake high-ability children from poor families by the time they sit their GCSEs (Child Poverty and Social Mobility Commission, 2014)

The study

Funded through a British Academy small grant

Fieldwork in 2 UTCs, one new, one established

- Questionnaire to all Y10 students:
  demographic information
  reasons for attending the UTC
  career goals
- Interviews with 16 students at each UTC:
  reasons for moving to UTC
  career goals
  their perceptions of the UTC (curriculum, teaching and learning, behaviour management)
- Interviews with the principal, assistant principal, and teachers in each UTC

UNIVERSITY OF BIRMINGHAM

Schools for the boys

	New UTC	Established UTC
Female	12	6
Male	66	19
Total students	78	25

Schools for ordinary kids

	Both UTCs	New UTC	Established UTC
	TOTAL	Total	Total
Working class	**59**	**45**	**14**
Middle class	27	19	8
Too little info	17	14	3
TOTAL	**103**	**78**	**25**

Schools that reflect the ethnic background of the immediate local population

New UTC

	Total
White male	61
White female	12
Asian male	2
Mixed race male	1
Other male	2
TOTAL	**78**

Established UTC

	Total
White male	15
White female	5
Black male	3
Asian Male	1
Other female	1
TOTAL	**25**

Why did students decide to study at the UTC?

Established UTC **Reason**	**Total**
UTC specialism	**14**
UTC deemed better than previous school	**7**
Fresh start	1
Total students in category	25

New UTC **Reason**	**Total**
Fresh start	**35**
UTC deemed better than previous school	**25**
UTC specialism	**22**
Total students in category	78

What were the students' career goals?

CAREER GOAL	New UTC	Established UTC
Career associated with UTC specialism	27	9
Various trade jobs	11	1
Armed forces for career with UTC specialism	1	3
Armed forces	10	2
Graduate jobs, not UTC specialism	11	1
Misc. unrelated to UTC specialisms	12	3
No response	9	8
Don't know	1	0
Total responses	81	27
Total students	78	25

Future engineers, scientists and technicians?

- At New UTC (78 students):
  28 students named STEM jobs
  11 students named trade jobs (e.g. welder)
  33 students named jobs unrelated to STEM (e.g. chef, physiotherapist, PE teacher)
- At Established UTC (25 students):
  12 students named STEM jobs
  1 student named a trade (mechanic)
  7 students named jobs unrelated to STEM (e.g. journalist, English teacher)

Gendered/classed differences in future goals?

GENDER

At New UTC

- all 3 middle class white girls wanted to be architects, as did 1 working-class white girl
  Only 1 out of 8 working-class white girls named a job linked to the UTC's specialisms (architect)

At established UTC

- 2 out of the 5 (white) girls (1 wk/cl, 1 m/cl) named a job linked to the UTC's specialisms

So how did students explain what the UTC meant to them?

3 aspirational narratives

1. An opportunity to get an apprenticeship (through partnership arrangements and networks)
2. A route to an idealized future
3. A chance to reposition yourself as a worthwhile student

An opportunity to get an apprenticeship

They [staff from a sponsor company] come in Thursday, they're our sponsors. They come in Thursday all day, teaching us on the machines.

[…] My dad said, here's a better opportunity, cos you can get an apprenticeship but at [previous school] you wouldn't get an apprenticeship as good as this or you wouldn't be able to get as far.

What do you plan to do at the end of year 11?

Hopefully I'll get an apprenticeship with [sponsor company]. If not I want to go to college and study either engineering or motor mechanics.

(A4, lower middle-class white boy, New UTC)

A route to an idealized future

4 girls at New UTC wanted to become architects. B2, a working-class white girl, explained that she wanted to go to university in Texas to study, because:

It's one of the best university's for architecture and engineering in the United States so I want to try and go there

Ok and how did you hear about that and have that as an idea in your mind?

Cos in student development we had to um like research where places we wanted to go to and study afterwards. So I came across that university and it looks really good cos I could get, as an international student, scholarship and that.

[…] I don't wanna design like normal houses, I wanna kind of recreate Alice in Wonderland into a housing estate.

Ok and what ways is here helping you prepare for that?

Because I'm doing construction, so I'll have the upper hand of doing three years of construction so I'll be more likely to be accepted into a university

Ok, and this university that you've looked at, are the qualifications that you're doing here the right kind of thing to get you into there?

Yeah, I need um, C and above to get into there.

A chance to reposition yourself as a worthwhile student

‘The teachers did not care about you if you weren’t in the top set.’ The teachers only gave attention to the best students so ‘I didn’t really get much of an education.’ (B2, working-class white girl, New UTC)

I thought that this school was practically too good to be true. It was all the options that they were giving you, not just GCSEs, of course they’re going to focus on GCSEs but they also focus past that. They help you understand **all** your options and help you understand, erm, different pathways you can achieve and they’ll help you with that. And I also found it very useful for the fact that they also said to us that they will treat us like an adult if we respect them. If we act like an adult, they will treat us like an adult. Which I found was very good for the fact that, erm, they understood that we are our own person and that we can go our own path. (A9, working-class white girl, New UTC)

Young people attending UTCs: a summary of what we found

- Schools for the boys
- Schools for ordinary kids
- A route towards technician level jobs and the promise of apprenticeships
- An opportunity to escape the effects of the A-C economy, and reposition yourself as a worthwhile student
- Not schools for the girls
- ? Schools for black and minority ethnic young people
- Not a route for high-achieving (middle-class) STEM students

How might we understand these findings? Opportunity structures

'*Opportunity structures are formed by the inter-relationships between family origins, education, labour market processes and employers' recruitment practices.*' (Roberts, 2009: 355)

They involve the inter-relationship between:

- surrounding opportunities, role models in families and neighbourhoods, expectations and experiences of girls and women in local communities and so on
- the opportunities provided by education, including expectations of teachers and peers at school
- The real and perceived opportunities provided by employers and labour markets

How might we understand these findings? Pragmatic decision-making

- Pragmatic rational decision-making by young people

- influenced by environments and opportunity structures, and shaped by internalized frames of reference, but also involving individual level mobilisation of capacities

(Evans, 2007; Hodkinson, Sparkes and Hodkinson, 1996).

What we can learn from international comparisons

Gender affects the field of study selected. Across Europe, engineering courses at upper secondary level are predominantly male. Systems that require young people to make choices earlier regarding course show stronger gender segregation and appear 'to reinforce 'gender-appropriate' patterns of subject take-up.'

(Ianelli and Smyth, 2008: 220)

… Holland …

Holland has a highly stratified system with early course selection (starting from age 12), and it is vocationally specific. There are close ties between the VET system and the labour market.
'on the one hand, the vocational specificity of education is helpful for finding and keeping a job, but on the other hand the kind of jobs it leads to are low-prestige jobs'. HE and professions remain beyond reach.
(Graaf and Zenderen, 2013: 125)

… Finland and Sweden …

Even in Finland and Sweden, systems with relatively low levels of social inequality in educational attainment, there is evidence of social segregation at upper secondary and tertiary levels, with the middle classes securing access to more prestigious fields of study.

(Ianelli and Smyth, 2008)

… the USA …

‘Inclusive’ STEM schools in the USA have an overt and specific focus on the engagement and success of under-represented and under-served students. This can be a means of identifying critical components for success for these students.

(Peters-Burton et al, 2014)

Opportunity structures shape "pragmatic rational" decision-making

- it is not simply English prejudice against vocational education that lead to the patterns of participation at the UTCs in this study
- Opportunity structures, including real, achievable labour market opportunities, shape decision-making
- young people do not make education and career decisions free of structuring factors such as social class and gender that shape and 'bound' their opportunities and decisions
- Schools do not all serve working-class and lower achieving students well. A considerable number of the young people who attended the UTCs appeared to be poorly served in other schools
- But good vocational education alone will not solve continuing problems with transitions to working life.

Implications

1. An ‘inclusive’ STEM school approach, which actively values and supports lower (as well as higher) achievers, needs to be an overt strategy
2. Patterns of participation by gender, ethnicity, and social class may be difficult or impossible to balance simply through encouragement and careers advice, particularly in relation to technician level work. Employment practices need to be visibly changing alongside the provision of educational opportunities.
3. Small schools?
   A strength of the UTCs may be that they are small schools (c 600 students) and have time and resources to care for all their students
4. Careers Advice and Guidance needs to be robust and also connected to students’ progress and achievement
5. Employers need to provide apprenticeships, and apprenticeships that lead to jobs
   only 15% of workplaces offer apprenticeships
   only 2% of apprenticeships are at higher levels (State of the Nation report, 2014)

Who wants to be an engineer? Vocational diversification in English secondary schooling and the decision-making and experience of girls and boys from different social class backgrounds

Ann-Marie Bathmaker
University of Birmingham
a.m.bathmaker@bham.ac.uk

Paper presented at a seminar at the University of Exeter on 25 November 2014