Higher Education Institutions’ explicit encouragement for Extended Project Qualifications and its likely detrimental impact on the uptake of level 3 mathematics qualifications post-16

**Background**

The Extended Project Qualification (EPQ) was introduced in 2008. All awarding bodies offer EPQs, with AQA having the greatest number of entries. The EPQ is similar to an AS qualification in that it is usually studied alongside A levels and carries UCAS points.

The Extended Project is a single piece of work of a student's choosing that should include evidence of planning, preparation, research and independent learning. It is available as a stand-alone qualification for A level students, or it may form part of a diploma qualification.

The EPQ is an attractive qualification for students as it offers an opportunity to carry out independent research into a topic of personal interest. For schools and colleges it is a means of increasing the number of qualifications that a student achieves without the need for nearly as much teacher contact time as an AS qualification.

**Growth in entries**

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<tbody>
<tr>
<td>Male</td>
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<td>6601</td>
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<td>11766</td>
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Data from JCQ, entries for EPQ first reported in 2009.

![Graph showing growth in entries for EPQ in UK](image)

The ratio of entries female to male is approximately 3:2. Analysis of entries for EPQs in 2014/15 by Cambridge Assessment showed that “… the spread of EPQ students across school types was fairly close to that of A level students. However, in comparison to A level students, EPQ
students were more likely to attend academies, grammar schools and sixth form colleges and less likely to attend comprehensive schools, FE/Tertiary colleges and independent schools.” (Gill 2016)

In 2016 well over 40% of those completing the EPQ achieved an A* or A grade.

<table>
<thead>
<tr>
<th>2016 % Grade</th>
<th>A*</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>U</th>
<th>%A*- A</th>
<th>%A*- B</th>
</tr>
</thead>
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<tr>
<td>Male</td>
<td>15.5</td>
<td>22</td>
<td>21.5</td>
<td>19.4</td>
<td>11.9</td>
<td>6.4</td>
<td>3.3</td>
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<tr>
<td>Female</td>
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<td>26.6</td>
<td>22.4</td>
<td>16.3</td>
<td>8.5</td>
<td>4</td>
<td>1.7</td>
<td>47.1</td>
<td>69.5</td>
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<tr>
<td>All</td>
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<td>24.8</td>
<td>22</td>
<td>17.6</td>
<td>9.8</td>
<td>5</td>
<td>2.3</td>
<td>43.3</td>
<td>63.3</td>
</tr>
</tbody>
</table>

A higher proportion of female students achieved A*/A grades than male students. “The attainment was highest in independent schools by some distance, followed by grammar schools. The lowest attainment was amongst secondary modern students.” (Gill 2016). In 2014/15 60% of students in independent schools achieved A* or A grades.

**HEI encouragement for EPQs**

The FMSP has been reviewing degree entry requirements in relation to level 3 mathematics. The aim is to evaluate the extent to which HE departments signal the importance of studying AS/A level Mathematics and Further Mathematics as preparation for degree level study.

For STEM degrees where A level Mathematics is a requirement, such as Mathematics, Physics and Engineering courses, there are very few courses that additionally require or indicate a preference for AS or A level Further Mathematics. For other STEM degrees for which A level Mathematics is not always a requirement, for example Chemistry and Biology courses, there is little signalling that studying AS or A level Mathematics would be advantageous to students. However, many HEIs have introduced new standard admission statements that explicitly encourage students to take the EPQ. This encouragement is often in the form of a reduced conditional offer for students who have a grade A or better in an EPQ.

Examples:

**University of Southampton general admissions statement**

*The University of Southampton believes the EPQ offers an unparalleled introduction to the skills needed for students to thrive at leading UK universities like ours. We were the first university to introduce a dedicated admissions offer for students who excel in the EPQ, and we work with schools across the country to support students and raise the profile of the EPQ.*

. . . eligible applicants to subjects across our humanities, business, law, social sciences and related programmes may receive two offers – our usual offer plus an offer of an A in the EPQ and one grade lower in their A level subjects (e.g. AAA at A level; or AAB at A level AND an A grade in EPQ). (http://www.southampton.ac.uk/learnwithus/transition/epq-support/admissions-policy.page accessed 10/10/2016)

**University of Bath – BSc Chemistry requirements for entry in 2017**

*GCSE requirements*

English grade C or 4 (or equivalent) and Mathematics grade B or 6 (or equivalent)

Strong preference for Chemistry/Science at grade B or 6 (or above)
A levels

Typical Offer: AAA including Chemistry and one other core science or mathematics subject.
Alternate offer: AAB including grade A in Chemistry and one other core science or mathematics subject plus one of the following:

- Grade A in an EPQ
- Grade B in the Welsh Bacc Advanced Skills Challenge Certificate
- Grade M1 in Cambridge Pre-U Global Perspectives

Students presenting with one of the above project qualifications should receive both the typical offer and the alternative.

(http://www.bath.ac.uk/study/ug/prospectus/subject/chemistry/entry-requirements/ accessed 10/10/16)

Other universities such as Leeds, Liverpool, Bristol, Birmingham and UEA give reduced conditional offers for students doing an EPQ and some also provide support for post-16 students doing the EPQ.

Threat to AS Mathematics, AS Further Mathematics and Core Maths

Unfortunately, changes to the structure of AS/A levels and funding pressures on schools and colleges mean that the numbers of students taking AS qualifications are now falling dramatically across all subjects. In 2016, after more than ten years of growth, entries to AS qualifications in both Mathematics and Further Mathematics fell. Core Maths qualifications have just been introduced and have been well-received by ‘early adopter’ schools and colleges, but funding and teacher-supply pressures mean their future uptake is uncertain.

University academics across a wide range of disciplines agree that new undergraduates would benefit greatly from improved mathematical skills. Perversely, despite this, and despite the greatly increased entry numbers in AS Mathematics and AS Further Mathematics in recent years, the dramatic improvement in access to Further Mathematics tuition, and the introduction of the new Core Maths qualifications, there is reluctance by many universities to signal any form of encouragement for prospective undergraduates to study AS Mathematics, AS Further Mathematics or Core Maths.

However, anecdotal evidence from schools and colleges suggests that teachers are increasingly aware of the preference shown by HEIs to students with high grades in EPQs. Below are examples of comments received by the FMSP in 2016.

My school is almost certainly not going to deliver AS exams in future due to the severe funding cuts that we face. For several years we have run what we consider to be a very successful programme offering full Further Maths and AS Further Maths. This AS Further Maths only is now under threat from our headteacher. He has decided, apparently based on a conversation with one University admissions officer, that AS Further Maths plays no part in aiding students in their University applications and that doing an EPQ would be more valuable.

Head of Mathematics

A lot of them have been persuaded/encouraged to take EPQ as a fourth subject and they have been told that this is a better option for getting into the best universities. A number of potential further mathematicians have decided to do this. I think this is bad advice.

Mathematics teacher
The “pull” from HEIs has helped to drive up entries for EPQs from 5000 in 2009 to over 35000 in 2016. The AQA examining board also promotes EPQs with examples of HEIs that encourage students to take these qualifications. No similar statements of university-wide endorsement, either by HEIs or by A level awarding bodies, are made for AS Mathematics, AS Further Mathematics or Core Maths qualifications. In addition, the new UCAS tariff for 2017 has downgraded the value of AS qualifications to 40% of the A level points. EPQ grades are worth 50% the points of the equivalent A level grade.

<table>
<thead>
<tr>
<th>EPQ</th>
<th>A*</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
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<tbody>
<tr>
<td>AS qualification</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
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<tr>
<td>Core Maths</td>
<td>A</td>
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<tr>
<td>New Tariff points</td>
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<td>24</td>
<td>20</td>
<td>16</td>
<td>12</td>
<td>10</td>
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</tbody>
</table>

Offering students the option of an EPQ alongside 3 A levels does not require nearly as many teacher contact hours as a programme of 3 A levels + 1 AS or Core Maths. This means it is economically advantageous for schools/colleges to withdraw the opportunity of studying for an AS or Core Maths qualification alongside 3 A levels and replace it instead with an EPQ. The tightening of funding for post-16 students and the decoupling of AS qualifications from A levels have compounded this issue.

It is a cause for serious concern that universities’ encouragement of EPQ qualifications, alongside their reluctance to promote mathematics qualifications, seems very likely to have the unintended effect of reducing the numbers of students studying level 3 mathematics post-16.

**What should be done?**
1. Government should investigate how the national benefit of students taking EPQs compares with that of students taking other level 3 qualifications alongside 3 A levels, particularly AS Mathematics, AS Further Mathematics and Core Maths. The result of this investigation should be used to inform policy on school/college accountability measures, funding and UCAS tariffs in relation to these qualifications.

2. Universities should investigate the following questions across different academic disciplines:
   - Why are they choosing not to encourage uptake of the mathematics AS levels or of Core Maths, and are their reasons justified in terms of students’ preparation for degree level study?
   - Why do they choose to encourage uptake of the EPQ, and are their reasons justified in terms of students’ preparation for degree level study?

The answers to these questions should be used to inform their entry policies.

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Programme Leader, FMSP

10 October 2016

**References**