2. Education and Skills

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The last year has seen a huge growth in interest in the application of behavioural science to education and skills policy in the UK and in the rigorous use of evaluations to test and trial 'what works' in educational settings. Much of the credit for this change has to go to the Education Endowment Foundation (EEF), which more than any other organisation has helped to show how it is possible to run large scale evaluations in school settings.

BIT has also been at the forefront of this agenda, not least through the dedicated Behavioural Research Centre for Adult Skills and Knowledge (ASK) that we set up with backing from the Department for Business, Innovation and Skills in September 2014. Last year, we reported some of the early findings from the small trials we had run through ASK in its first year. This year, we can report on some of the biggest trials ever run in the sector.

We are also conducting a number of projects with the then-Department for Business, Innovation and Skills, now Department for Education (DfE), on apprenticeship policy and with the Careers and Enterprise Company (CEC) on how young people make their study and career choices. This will ultimately result in behavioural science influencing policy in these important areas in the future.

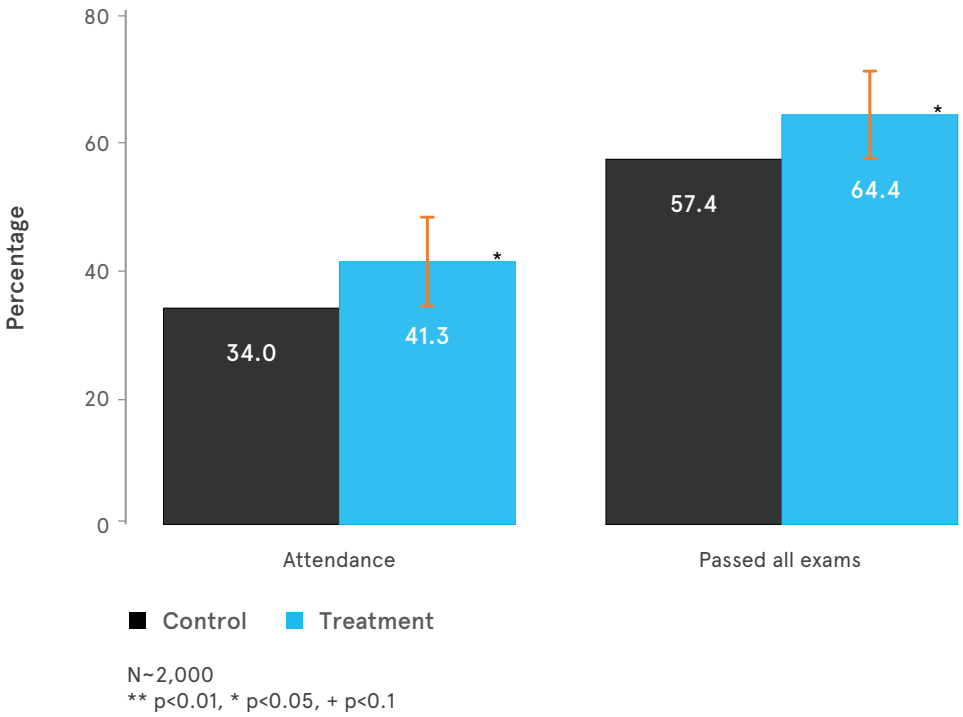
Adult Learner Engagement and Retention

One of the major reasons for creating ASK was to enhance our understanding of interventions that might help adults to become more literate and numerate.

In our previous Update Report, we gave interim results for a trial that aimed to improve attendance rates at adult numeracy and literacy classes by sending learners weekly text messages. We called this ALERT (the Adult Learner Engagement and Retention Trial). These messages were designed to encourage learners to keep going even if they were struggling with the material and to create a sense of social belonging in their college. The interim results showed that after three weeks these weekly messages increased attendance compared to the control group.

We now have the final results of the trial, which are shown in Figure 2.1. They show that the improvement in attendance, compared with the control group, persisted all the way through to the end of the year. More importantly, they show that learners who received our text messages were also 12 per cent more likely to pass all of their exams.

Figure 2.1: Effect of encouraging weekly text messages on exam performance and attendance



N~2,000
** p<0.01, * p<0.05, + p<0.1

Supporting non-cognitive skills in Further Education (FE) Colleges

Encouraged by these results, ASK then undertook one the biggest and most challenging sets of trials ever undertaken in the FE setting anywhere in the world. These trials involved some 10,000 learners, across 19 colleges. The learners were randomly allocated into one of three treatment groups, or a control group that got no additional intervention. The outcome measures for the trials included attendance, achievement, completion and some qualitative questions such as attitudes to education and sense of belonging. Some of these outcome measures will not be available until next year. At this time, we can set out the initial results on mid-year attendance.

The first intervention sought to improve learners' 'grit' via a set of online modules which we developed in collaboration with Professor Angela Duckworth and her team at the University of Pennsylvania. By 'grit' we are referring to non-cognitive skills like persistence and perseverance in relation to a long-term goal. The intervention focused on two core ideas. First, 'deep practice', in which students learn how to set goals, concentrate completely on their work and then actively find feedback. Second, learners were taught that frustrations are to be expected along the way when learning and that it is not only talent that matters, but effort too. The intervention was designed to improve learners' attainment in their final exams rather than attendance rates per se. However, as shown in Figure 2.1, we were pleased to find that the intervention improved attendance rates for all learners by over 4 percentage points, or nearly 10 per cent.

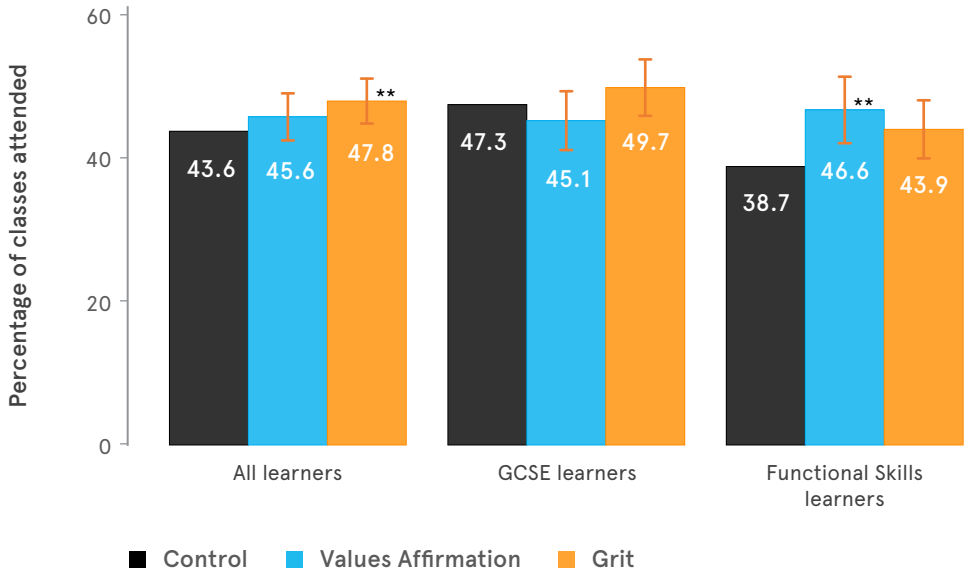
The second intervention was an online Values Affirmation (VA) exercise, which we developed with Professor Geoffrey Cohen and his team at Stanford. The intervention involved, amongst other things, an exercise in which students were encouraged to think about what is most important to them in their lives, and then to write about times when these values were particularly important to them and why.

There is substantial research, including that conducted by BIT, which has shown that exercises of this kind are effective at helping people to overcome 'stereotype threat', a situation where people are or feel themselves to be at risk of conforming to stereotypes about their group. 'Stereotype threat' can create a self-fulfilling prophecy where underperformance confirms the stereotype. Our extensive qualitative work in FE colleges combined with the existing behavioural science literature has led us to believe that some FE college students might be experiencing 'stereotype threat', particularly those who had previously struggled to attain maths and English qualifications. The intervention was designed to improve attainment and also learners' attendance.

The chart (Figure 2.2) below shows the effect of the VA intervention on mid-year attendance rates for all learners and then separately for learners retaking their GCSEs and for learners taking Functional Skills courses. Functional Skills courses tend to be taken by learners whose priority is to develop their numeracy and literacy skills for work and everyday life rather than further academic study.

Looking at all learners together, the VA intervention did not lead to a statistically significant improvement in attendance rates overall. However, further analysis suggests that the intervention appears to have been effective for learners taking Functional Skills courses, improving attendance rates by as much as 20 per cent, but was ineffective for those studying for GCSEs. This is a good example of how an intervention might appear to be ineffective, but a deeper analysis suggests that it works for a specific group of people – those studying the 'less academic' courses who otherwise tended to have lower attendance rates (subject to confirmation in future trials).

Figure 2.2: **Effect of the 'grit' and Values Affirmation interventions on mid-year attendance for all learners, GCSE learners and Functional Skills learners**

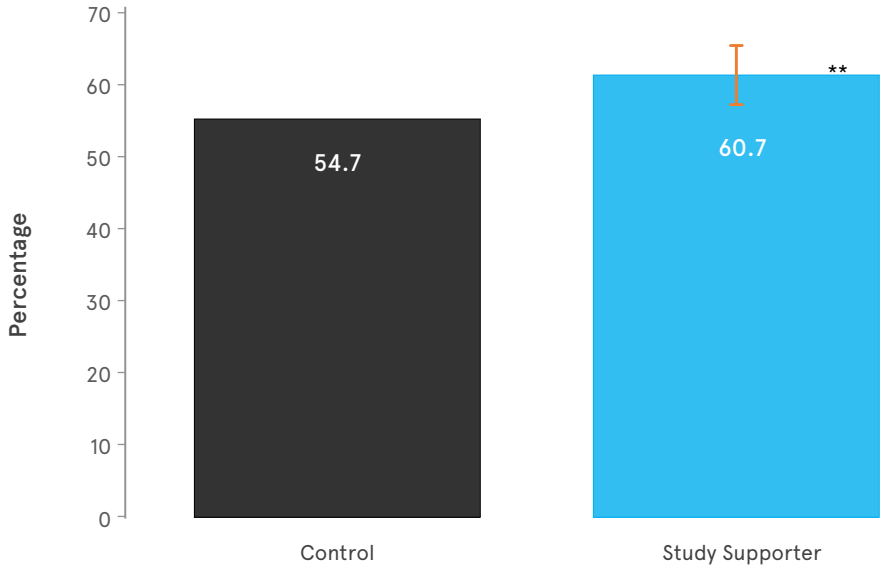


N=8,986
** p<0.01, * p<0.05, + p<0.1

The third intervention was run as a separate trial in partnership with Harvard Professor, Todd Rogers. It sought to leverage the power of the students' social networks and the potential role of these networks in supporting educational outcomes. The student nominated up to two individuals, such as a parent or friend, who received text messages at moments of importance during the education of the student. Nominated 'Study Supporters' were sent weekly texts throughout the academic year. These texts aimed to prompt the text recipient to provide support, for example in the run up to a test.

The graph below shows that the texts resulted in an 11 per cent increase in attendance (or an increase of 6 percentage points). This is a huge increase by any measure, and particularly for a low cost intervention that is relatively easy to implement. Again, we will wait to see what impact this has on academic performance later this year.

Figure 2.3: **Effect of study support interventions on mid-year attendance**



Total N=745
** p<0.01, * p<0.05, + p<0.1

Box 2.1: Learning lessons from implementing complex interventions in the field

Alongside the quantitative work in the trials with FE Colleges, we also undertook qualitative research to better understand how the trials were working in practice and to learn lessons on the implementation of future interventions. This included carrying out 25 in-depth interviews with learners in relation to each of the three interventions to capture their experiences and perceptions of the exercises and the challenges associated with the implementation. Additionally, we interviewed tutors who delivered the interventions in their classrooms.

These interviews, particularly with learners, were overwhelmingly positive. Learners mentioned that the exercises had helped them express themselves, and had even improved their relationships with their study supporters. For example, one interviewee said, *"it was helpful because... I don't think I would have got through the year without having someone to support [me]..."*

The qualitative work also revealed some of the challenges in trial implementation. For example, in order to maintain the rigour of the trial, the tutors were not able to know of the content of each of the intervention groups. This proved to be a source of frustration, which tutors felt made it harder for them to play as strong a role as they would have liked in actively encouraging learners to engage in the programme.

BIT believes that, wherever possible, it is worth conducting qualitative work of this kind alongside a quantitative study, and using the results to add nuance and to inform future work.

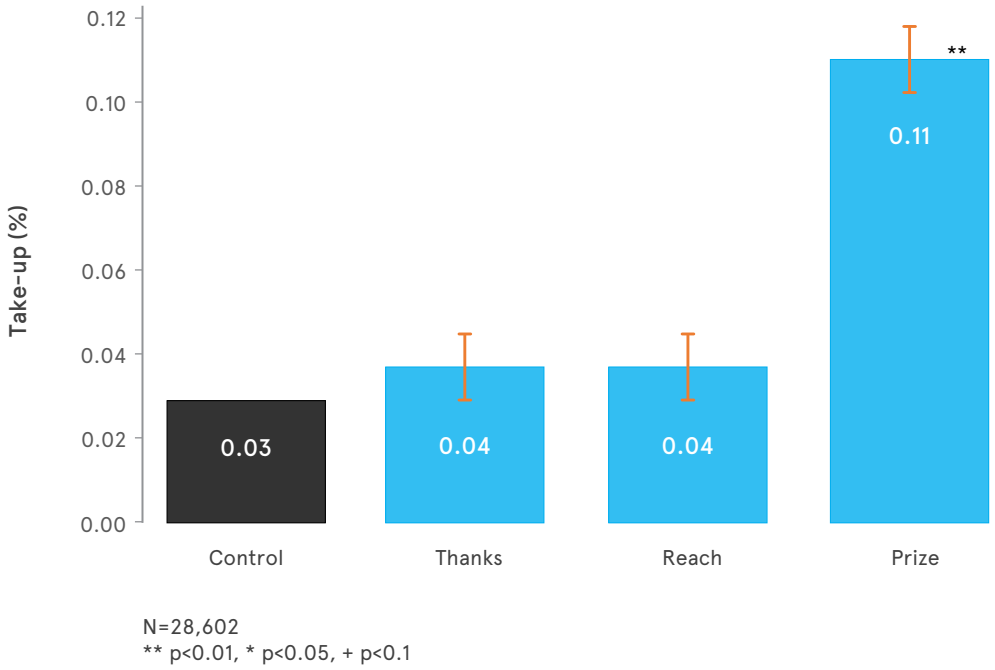
Network nudges to raise awareness of workplace learning

Some large organisations offer in-house English and maths functional skills classes, tailored to the working context. These classes are a great opportunity for employees to improve their skills, but employers sometimes face challenges with take-up. We worked with a large public transport network provider to raise awareness of the classes on offer.

We wanted to test the impact of peer networks on sign-ups, so we divided up learners who had attended classes over the past three years and got in touch with learners to see whether they would refer their friends. This idea takes forward the concept of `network nudges' that we reported on in last year's Update Report in relation to charitable giving. The first group simply received an email asking for feedback on their experience. The second group were asked to reach out to their friends and colleagues. The third group got an incentive: anyone who signed up to a class would go into a lottery to win shopping vouchers worth £250 or £25. We had postulated that the incentive would motivate past learners to notify their friends, and then those friends, to sign up to courses.

This third group had sign-up rates more than double those of the other two. At first glance, there is a relatively simple explanation. Offering an incentive increases the number of people who sign up. However, we think that something more interesting may be going on. There is a chance that the lottery may help to destigmatise signing up for a course by providing an alternative rationale for the learner (instead of admitting that their maths was not up to scratch, learners could say it was because of the prize). That said, it is worth noting that the sign-up rates overall were extremely low: even in the most successful arm, only around one in 1,000 staff responded to a prompt from their colleague.

Figure 2.4: Sign-up rates by email received



N=28,602
** p<0.01, * p<0.05, + p<0.1

Finding a 'purpose for learning' with the British Army

In order to be eligible for selection for promotion with the British Army, enlisted men and women are required to have English and maths qualifications at Level 1 for promotion to the rank of Corporal, and Level 2 for further promotion to Sergeant and above. If soldiers cannot demonstrate that they have nationally recognised qualifications at these levels, the Army offers maths and English provision tailored to individual soldiers' needs, including intensive English and maths Functional Skills courses.

Attainment is relatively high compared with the general population, but the Army is concerned that English and maths courses are seen by individual soldiers as a 'tickbox' exercise for promotion and not as something important in their own right. Therefore, the Army wanted to increase engagement in these courses for their intrinsic value and to discover whether this led to more effective learning, more retained knowledge and better opportunities in the future for those who leave the Army.

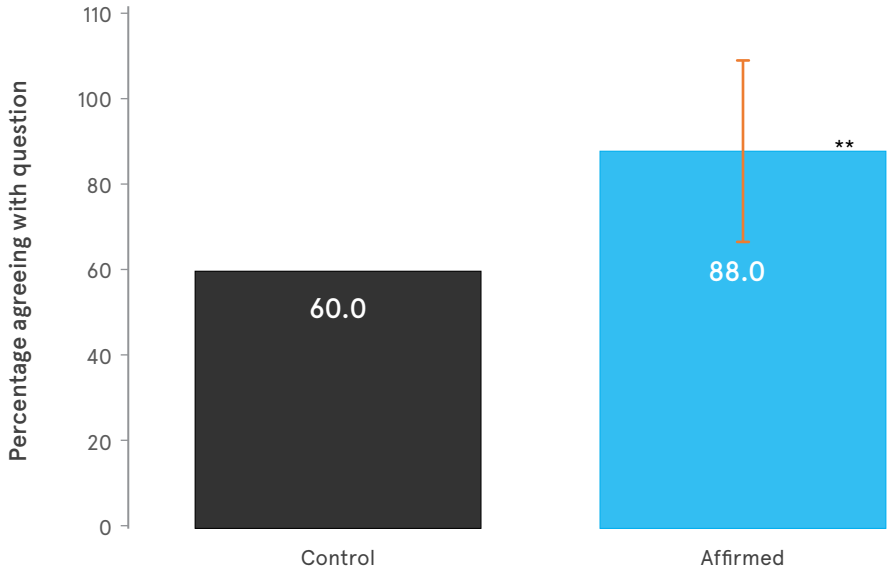
We devised a short intervention with the Army to test whether we could enhance the soldiers' intrinsic motivation to learn more deeply, their engagement with the course and consequently their exam scores. Specifically, it aimed to make intrinsic motivations more salient to the learner.

The intervention, delivered at the beginning of the maths or English course, involves asking students to generate reasons why the learning task is meaningful to themselves and how it might benefit others. These are similar to the VA interventions undertaken in FE Colleges, reported above.

A pilot study with a single Army Education Centre (AEC) showed promising initial results. At the end of the course, in most cases directly after they sat the exam, we administered a survey which asked soldiers a range of questions about their satisfaction with the course. As the graph below shows, soldiers that received the `purpose for learning' intervention were much more likely to say that they would have taken the course, even if it wasn't a requirement for promotion.

We will now be scaling up the trial to around 800 soldiers in 11 sites across four AEC Groups, to see if there is a similar effect, not just on motivations, but on learning outcomes too.

Figure 2.5: Percentage stating that they would take the course, even if not required for promotion



N=62
** p<0.01, * p<0.05, + p<0.1

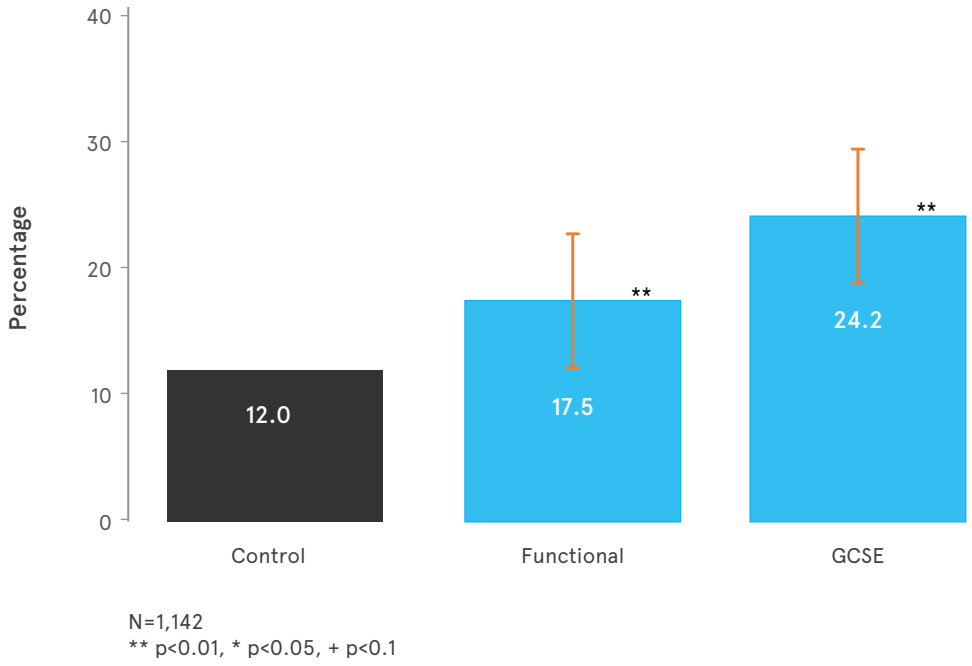
Labour market signalling of different qualifications

We conducted a trial in partnership with the University of Bristol's Centre for Market and Public Organisation, which involved sending CVs with different attributes in response to publicly available job advertisements. The aim was to better understand the impact that different English and maths qualifications might have on recruitment decisions.

There were 15 CVs in total, each containing combinations of three levels of qualifications (no qualifications, Functional Skills qualifications and GCSEs) and three levels of volunteering (no volunteering, altruistic volunteering (non-functional) and skill-based (functional) volunteering). The team submitted these CVs to over 1,000 job advertisements. We then measured the responses to the different CVs by looking at the number of emails and phone calls received to telephone numbers that had come from recruiters.

Perhaps unsurprisingly, we found that qualifications have a positive and significant effect on responses to job applications. What is more surprising is the size of the effect. Having GCSEs resulted in a doubling in responses, which is a much higher response rate than for equivalent Functional Skills qualifications. This may be because employers are less familiar with these latter qualifications.

Figure 2.6: Percentage response to job applications by qualification type



N=1,142
** p<0.01, * p<0.05, + p<0.1

The trial also showed that at the aggregate level, volunteering does not have an effect on getting an invitation to interview, but that there is an interesting interaction with qualifications. For unqualified individuals and those with Functional Skills qualifications, the effect of altruistic volunteering is in the negative direction (although not significant for Functional Skills), yet it is strongly positive and significant for people with GCSEs. This result merits further investigation. It might be for example, that volunteering presented with GCSEs may signal that an applicant is a 'high achiever', whereas when combined with Functional Skills, this does not apply.

The trial highlights the important work to be done in raising employer awareness of Functional Skills qualifications, and ensuring that these qualifications are rigorous and relevant to their needs.

Supporting the new Apprenticeships Policy

In June 2015, the UK Government gave renewed priority to apprenticeships. The commitment was made to reach 3 million apprenticeships by 2020, and to put them legally on a par with degrees. As a result of this new push, the DfE asked BIT to support it in rolling out and communicating the new arrangements.

One of the main focuses of BIT's work is to support DfE to incorporate a range of behavioural insights into the key touch points for the new apprenticeship levy and the digital apprenticeship service account. In addition, we are working with teams from the Skills Funding Agency to drive greater employer engagement with apprenticeships. We are also investigating how an 'apprenticeship social contract' might increase quality, completion, and benefits for apprentices, employers and training providers.

Much of this work involves running large-scale field trials. Some of these trials will test mechanisms to encourage the hiring of apprentices. This should provide DfE and employers with ongoing feedback on what the best ways of increasing uptake might be, as the Government progresses towards its 3 million apprenticeship target. As an organisation that now meets the threshold for hiring apprentices, BIT may also soon have some first-hand experience of the system.

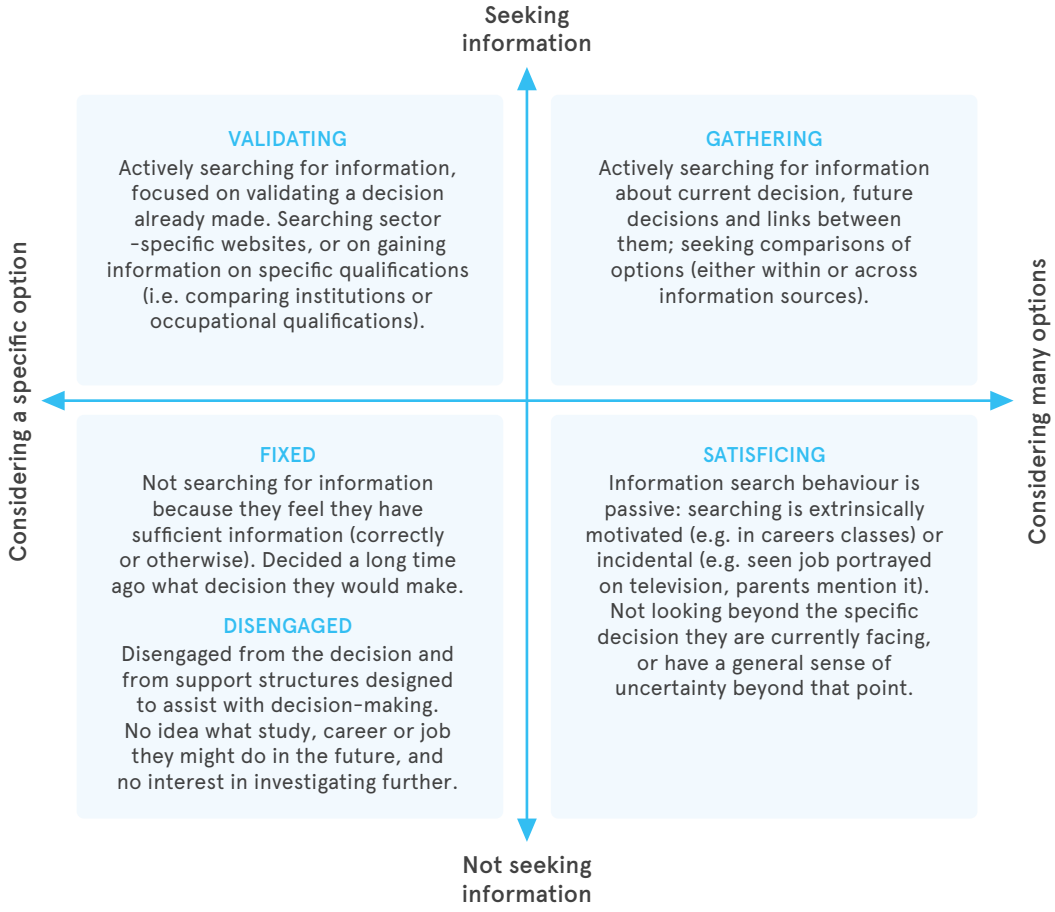
Supporting young people's study and career decisions

Young people face a difficult challenge as they navigate the increasingly complex pathways from education to work. In many ways it is positive that they face a wealth of choices and opportunities that earlier generations could not have imagined. However, this wealth of choice brings its own challenges.

The CEC commissioned BIT, together with the Cabinet Office Policy Lab, to conduct independent, theoretically and empirically grounded research on what kind of information supports young people to make informed choices about their study and career options.

We attempted to track the young people in our sample through their career decision-making journeys, and to understand at what point they sought information and about what. We plotted this on two axes to develop a segmentation model (see Figure 2.7).

Figure 2.7: Segmentation model of young people's career information seeking behaviour



The research showed that young people do not routinely seek out data and information to inform their decisions. They are more likely to seek an image of a particular career that they find appealing, which might come from a number of different sources, such as family, friends or exposure in the media. When data or information was more actively sought, it was often used to validate existing decisions rather than to explore new options.

The research suggests that we might need to rethink when and how information is provided to young people, as well as what kind of information is provided. In light of this, we developed a set of principles for what good information provision to young people should look like. We are now working with the UK Government, CEC and a number of other organisations to extend this research further, to test how these principles operate in practice and to understand the implications for career advice practice in schools.