Summer Schools

Toolkit technical report

Dan Muir, Becci Newton, Howard White

May 2024

This report is produced in collaboration with staff from the Campbell Collaboration Secretariat. It is a derivative product, which summarises information from Campbell systematic reviews, and other reviews, to support evidence-informed decision making'.

The Campbell Collaboration thank Suchi Malhotra for the AMSTAR coding of included reviews (second coder).

Technical Report: Summer Schools

Plain Language Summary

This technical report reviews the evidence on the effect of summer education programmes, described as Summer Schools in the Toolkit, on disadvantaged and at-risk young people's violence and offending outcomes, and related education outcomes. This technical report is based on the systematic review by Muir et al. (2024). This review considers summer education programmes alongside summer employment programmes as the two summer programme types have various commonalities and may seek to achieve similar outcomes. This technical report focusses only on elements of the review pertaining to summer education programmes.

Muir et al. (2024; p. 24) describe summer education programmes as 'an out-of-school-time programme that takes place during the summer months in whole or in part, where content is majority administered through education-focused instruction', with the summer months defined as the period in which the long vacation takes place between academic years or after the final academic year before moving into economic activity.

There are three clusters of summer education programmes: *catch-up* programmes, focussed on addressing attainment gaps and preventing summer learning loss; *raising aspirations* programmes, aimed at inspiring and motivating young people to pursue the next stages of education, usually higher education, or explore various career paths; and *transition support* programmes, aimed at facilitating a smooth transition for young people from one educational level to another, such as from primary to secondary school or from secondary school to higher education.

Summer education programmes tend to provide a combination of: additional instruction on core subjects (e.g. English, mathematics); academic classes including in order to enhance specialist subject knowledge (e.g., STEM-related); homework help; coaching and mentoring; arts and recreation electives; and social and enrichment activities.

A rationale behind summer employment programmes identified in the literature is that they divert or distract those who have been involved in or are at risk of offending away from harmful or unproductive activities. Through providing alternative uses for the time over summer that otherwise would be unallocated, the assumption is that this reduces the risk of that time being used for criminal or anti-social activity. This may be applicable to summer education programmes, which also provide an alternative to using time for criminal or anti-social activity over the summer period (Muir et al., 2024).

Of the 68 studies included in the full summer programmes review, 49 evaluated 36 different summer education programmes. 28 of these studies evaluated summer education programmes that took place in the UK, of which 6 were eligible for meta-analysis. The review included qualitative evaluations not linked to an included impact evaluation that evaluated a UK-based summer education programme.

Overall, summer education programmes find a range of small to substantial desirable impacts on secondary education attendance rates, the likelihood of being chronically absent and the likelihood of having a suspension. The observed effect sizes of g = 0.26, OR = 0.76 and OR = 0.21, each provided by only one study, respectively correspond to an increase in secondary education attendance rates of 1.4% and reductions in chronic absence and suspensions of 22.9% and 78.8% respectively.

The review's thematic synthesis identified several mechanisms that were suggested by the studies included in the review as potentially leading from engagement in a summer education programme to outcomes. These included: skill acquisition; positive relationships with peers, including with older students as mentors; personalised and positive relationships with staff; the location of the summer education programme, including accessibility and creating familiar environments; and creating connections between the summer education programme and the students' learning at home to maintain continuity and reinforce learning (Muir et al., 2024).

Design strengths of some summer education programmes reviewed include interactive and alternative learning modes; iterative and progressive content building; incorporating confidence building activities; careful lesson planning; and teacher support which is tailored to each student. Design weaknesses of some summer education programmes reviewed include insufficient funding or poor funding governance (e.g. delays to funding); limited reach of the target population; and inadequate allocation of teacher and pupil groups (i.e. misalignment between the education stage of the pupils and the content taught by staff). Implementation strengths of some summer education programmes reviewed include: clear programme delivery guidance and good governance; high quality academic instruction; mentoring support; and strong partnerships. Implementation weaknesses of some summer education programmes reviewed include insufficient planning and lead in time, recruitment challenges, and variability in teaching quality.

The quality of evidence on the impacts of summer education programmes is relatively strong compared to that of summer employment programmes, with a relatively high number of studies and fewer with lower quality study designs. The quantity of evidence on summer education programmes is much stronger than for summer employment programmes, although further evidence is required regarding the impact of summer education programmes on health and socio-emotional outcomes.

Objective and approach

This technical report reviews the evidence on the effect of summer education programmes on disadvantaged and at-risk young people's violence and offending outcomes, and related education outcomes.

This technical report is based on the systematic review by Muir et al. (2024). This is a published systematic review and meta-analysis of the effect of summer education programmes on a range of outcomes, including those related to violent and offending behaviour, of disadvantaged or at-risk young people. This review considers summer education programmes alongside summer employment programmes as the two summer programme types have various commonalities and may seek to achieve similar outcomes. This technical report focusses only on elements of the review pertaining to summer education programmes. A separate technical report discusses the evidence for summer employment programmes.

The following inclusion and exclusion criteria were used to inform selection of systematic reviews.

Inclusion criteria

To be included in this report, a systematic review must include evaluations of the effects of summer education programmes on violence or offending outcomes, or outcomes across other domains that are related to or predictors of violence of offending outcomes (e.g., school attendance rates, disciplinary incidents or suspensions in school). The summer education programmes should be targeted at disadvantaged and at-risk young people. The included primary evaluations should evaluate the summer education programmes using experimental or quasi-experimental methods, employing a treatment and comparison group. Lastly, the review should seek to source evidence from UK-based summer education programmes.

Exclusion criteria

Reviews were excluded if they did not meet the inclusion criteria i.e., they did not include evaluations of the effects of summer education programmes targeted at disadvantaged or at-risk young people that used experimental or quasi-experimental methods employing a treatment and comparison group, and excluded interventions occurring in the UK. For example, the review of summer programmes by McCombs et al. (2019) is not included because it does not focus on those interventions targeted at disadvantaged or at-risk young people and it excludes any evidence on interventions occurring outside the USA.

Outcomes

Muir et al. (2024) reported the effects of summer education programmes on outcomes across other domains that are related to or predictors of violence of offending outcomes, including: secondary education attendance rates; likelihood of being chronically absent; and the likelihood of having a suspension. Muir et al. (2024) were unable to perform meta-analysis across multiple summer education programmes for each of these outcomes related to violence or offending outcomes, as for each outcome only one study of a summer education programme evaluates it.

Description of interventions

Muir et al. (2024; p. 24) describe summer education programmes as 'an out-of-school-time programme that takes place during the summer months in whole or in part, where content is majority administered through education-focused instruction', with the summer months defined as the period in which the long vacation takes place between academic years or after the final academic year before moving into economic activity.

The review identifies three clusters of summer education programmes: *catch-up* programmes, focussed on addressing attainment gaps and preventing summer learning loss; *raising aspirations* programmes, aimed at inspiring and motivating young people to pursue the next stages of education, usually higher education, or explore various career paths; and *transition support* programmes, aimed at facilitating a smooth transition for young people from one educational level to another, such as from primary to secondary school or from secondary school to higher education.

Intervention components

Summer education programmes tend to centre on offering additional instruction on core subjects, including mathematics, English, and science, or in subjects where participants may wish to pursue further studies, such as advanced STEM subjects. There are various common components to summer education programmes, such as academic classes, homework help, arts or recreation electives, and mentoring sessions. The programmes often include additional components covering social or enrichment activities (for example, team building, arts, sports, and creative writing), field trips, career-shadowing opportunities, and community service projects.

Catch-up programmes focus on academic skill-building and catch up in specific subject areas, such as English and mathematics.

Transition support programmes provide a blend of academic instruction, guidance on educational readiness and success, and social integration and enrichment activities. Academic instruction is often delivered in an accelerated format with contextualised and active learning. In the UK studies, these programmes seek to balance academic support with social and enrichment activities, while US programmes, (which still include enrichment activities) place stronger emphasis on academic skill building and preparation.

Raising aspirations programmes typically provide combinations of academic learning, mentorship, enrichment, and exposure to campus life. Academic subjects such as mathematics and science may be covered, along with hands-on classes and workshops, exposing students to real-world applications of the academic content. The academic focus is often complemented by social activities, such as university visits and cultural activities, and independent time to allow students to connect with peers, engage in shared experiences, and build a sense of community.

Targeted or Universal

Muir et al. (2024) set as an inclusion criterion that the summer education programmes should target disadvantaged or at-risk young people, although they do not set specific criteria on what form these disadvantage and at-risk characteristics should take. As such, a wide range of young people are targeted by the interventions included in the review.

The summer education programmes included in the review tend to target students identified as being most able to benefit from additional academic support, such as those who come from low-income backgrounds, with lower academic attainment, or from areas with relatively poor higher education participation. Programmes also commonly target young people experiencing other forms of disadvantage, including those from ethnic minority backgrounds, young people with disabilities or those with a health condition, students from the first generation in the family to attend university, students in care, immigrant students, and young people at risk of or with a history of offending.

Some programmes target areas that have generally poor academic performance, but then select individuals within those areas that have high academic performance. In both the US and the UK, summer education programmes target disadvantage at the individual, family, school or neighbourhood level.

Summer catch-up programmes tend to occur in schools located in socio-economically disadvantaged areas, where students are at the highest risk of summer learning loss, and target students who are performing below the expected level or are at risk of falling behind academically. By targeting schools in these areas, the programmes aim to provide educational opportunities to underperforming students who may otherwise have limited access to academic support. This can

include learners of English as a second language or students who have been grade retained or are at risk of grade retention (the practice in the US whereby students repeat a grade level). Summer transition support programmes tend to focus on supporting first-generation and low-income students, students from ethnic minority backgrounds, and those from rural areas, with the aim of supporting educational progression, particularly to higher education. This is on the basis that students within these groups may lack external support systems in particular as they may have few if any relationships with people who have participated in higher education. Similarly, programmes aimed at raising students' aspirations are more likely to target disadvantaged learners who come from areas with lower-than-expected higher education participation rates.

Summer education programmes are generally voluntary and may be subject to self-selection effects, although some programmes are mandatory for instance for students that are performing poorly (e.g., Summer Success Academy – see Mariano, 2013)).

Implementation setting and personnel

Summer education programmes often take place in traditional education settings, in school buildings or on higher education campuses. These may not be the same as the traditional education setting that the participants receive 'business as usual' services in. Some summer education programmes however are located in alternative settings, such as the outdoors, providing a different context for learning that can support young people to engage differently and to achieve, thereby building confidence for learning in the traditional classroom setting (Muir et al., 2024).
Catch-up programmes tend to employ highly structured and supportive traditional learning environments, with strong focus on small class sizes to enhance learning and provide individualised support to struggling students.

Transition support programmes often incorporate elements that help students become familiar with the new learning environment (typically the campus of the next phase that they are transitioning to), such as introductions to student services or faculty in the new educational setting, and campus tours. They can also include residentials, providing participants with an immersive experience on a university or other educational campus. Building familiarity with the campus and the services available can increase likelihood to seek out and use support services post-transition, which provides crucial underpinning to sustaining this destination that is, reducing the likelihood of drop-out, particularly important when transitioning to higher education.

Raising aspirations programmes can also have elements of the programme that take place on higher education campuses, including university visits to expose students to life in this new environment.

Duration and Scale

Summer education programmes take place between July and September i.e., the summer months when summer breaks commonly take place in the UK and US where studies included in review are concentrated. In the UK and US, some summer transition support programmes are offered either at the very beginning of summer vacation to promote sustained engagement, or right before the start of new academic year to facilitate the transition process. Other summer education programmes are more diverse in terms of when they take place.

Programme durations vary: short summer programmes, of several days or up to one week, are more frequent in the UK than the US where programmes tend to last between two and six weeks. In the UK these can take the form of short residentials which are not common in the US. However, there is one example of a residential summer programme in the US taking place over five weeks. Catch-up programmes are similar in duration in the UK and US. They tend to last four to five weeks, delivered over four to five days per week for around five hours per day.

Theory of change/presumed causal mechanisms

A rationale behind summer employment programmes identified in the literature is that they divert or distract those who have been involved in or are at risk of offending away from harmful or unproductive activities. Through providing alternative uses for the time over summer that otherwise would be unallocated, the assumption is that this reduces the risk of that time being used for criminal or anti-social activity.

There is also recognition that the selected target group is not engaging with service as usual as effectively as other groups, or not engaging at all. Therefore, the assumption is that an alternative approach is required to foster more positive engagement or re-engagement in services as usual. By offering alternative and extra provision, summer education programmes should avoid interference with the standard curriculum and to build additional support to improve outcomes in 'service as usual'. Summer education programmes also provide participants the opportunity to form better relationships, potentially resulting from the group of young people formed for the programme. Alternatively, this can occur where delivery teams are new to the young people, which offers a chance to re-set engagement with adults which can then set the tone for the next stage of service as usual. Improved engagement in services as usual, facilitated by mechanisms including those highlighted here, may lead to improved violence and offending outcomes.

Summer education programmes may employ a range of mechanisms leading to the achievement of a range of outcomes across domains including socio-emotional, education and employment related. Various components of summer education programmes including content focussed on socio-emotional learning and socialisation with staff and peers may lead to soft skill development including self-esteem and confidence, emotion control, communication, and responsibility and time

management, which may reduce instances of violent or offending behaviour which may arise as a result of deficiencies in these. Additionally, improvements across all of these domains will improve the young person's future economic opportunities by increasing the individuals' skills and desirability in the labour market, setting expectations about their future quality of life, and making young people less likely to offend as the opportunity costs of the punishment are increased. In this way, outcomes across socio-emotional, education and employment domains can be seen as intermediaries in the path to better violence and offending outcomes.

Evidence base

Descriptive overview

Of the 68 studies included in Muir et al. (2024), 49 evaluated 36 different summer education programmes. Twenty-eight (28) of these studies evaluated summer education programmes that took place in the UK, twenty took place in the USA and one took place in New Zealand. Of the 49 studies evaluating summer education programmes, 27 of these were eligible for meta-analysis. The review included qualitative evaluations not linked to an included impact evaluation that evaluated a UK-based summer education programme. Of the 28 studies of summer education programmes that took place in the UK, only 6 were eligible for meta-analysis. All of those studies of summer education programmes in the USA or New Zealand were eligible for meta-analysis.

The outcomes evaluated by Muir et al. (2024) that are most closely linked to violence and offending outcomes are secondary education attendance rates; likelihood of being chronically absent; and the likelihood of having a suspension. Only one study of a summer education programme evaluates each of these outcomes. Therefore, meta-analysis of the impact of summer education programmes on these outcomes is not possible.

Two studies evaluating different summer education programmes evaluate these outcomes. Both are raising aspirations programmes set in the USA (Robotics Summer Learning Programme, Aim High). The interventions are targeted at individuals that are socio-economically disadvantaged, the first generation in their family to attend higher education or have challenging family structures or home instability (Aim High), or individuals with relatively poor academic performance (Robotics Summer Learning Programme). Age ranges of students participating in these interventions (based on descriptions of eligibility criteria and programme duration) are 10-13 years old for both programmes. Sample sizes used in the analysis by studies of these evaluations range from 652 (Robotics Summer Learning Programme) to 7,908 (Aim High).

Multiple other outcomes were provided by Muir et al (2024) related to education. Many of these are also relevant to the users of the Toolkit seeking to understand the impact of summer education programmes on outcomes for children. We have selected three to summarise the impact on school

tests, attendance and completion of higher education. These are provided in Table 1 below. The full review provides breakdowns for impact on English and Maths, for example.

Table 1: Mean effect sizes for school test scores and high education

Outcome (n)	ES (SMD and OR)	CI (ES)	*P*	I^2 (%)	Evidence rating
Impact of summer education programme participation on all test scores (n=8)	SMD = 0.13	0.01 – 0.26	0.00	89.07%	3
Impact of summer education programme participation on likelihood of attending higher education (n=8)	OR = 1.42 d = 0.19	1.04, 1.90	0.00	97.02%	3
Impact of summer education programme participation on likelihood of completing higher education (n=5)	OR = 1.46 d = 0.21	1.16, 1.86	0.06	53.52%	3

Note: ES = the weighted mean effect size; n = number of summer education programmes evaluated to estimate ES; CI = 95% confidence intervals for the mean ES; p = the statistical significance of the mean ES; OR = odds ratio; SMD = standardised mean difference.

Assessment of the strength of evidence

The review is by Muir et al. (2024) rated 'Yes' on seven items, and 'partly yes' on one item, of the modified AMSTAR tool used for the assessment (see Annex 2). The inclusion criteria capture all elements of the PICOS. A comprehensive search was used of five databases plus websites and handsearching journals. Studies were double screened. Coding was done by one researcher, and checked a second. The authors give a descriptive overview of included studies, and use separate risk of bias tools for quantitative and qualitative studies. Heterogeneity analysis was planned but could not be conducted because of the small number of included studies for each crime outcome. There is a statement of conflict of interest and sources of funding. In addition, the protocol was published online in Campbell Systematic Reviews (Muir et al., 2023).

The number of included studies for the offending outcomes included in the review is just one for every outcome, so no meta-analysis is performed.

Impact

Summary impact measure

The individual studies evaluating outcomes across other domains that are related to or predictors of violence of offending outcomes reported on by Muir et al. (2024) find desirable impact on each of the outcomes of interest, ranging from small to substantial

Overall, summer education programmes find a range of small to substantial desirable impacts on secondary education attendance rates, the likelihood of being chronically absent and the likelihood of having a suspension. The observed effect sizes of g = 0.26 (CI: 0.08, 0.44, p<0.01)
, OR = 0.76 (CI: 0.50, 1.15, p = 0.20) and OR = 0.21 (CI: 0.04, 1.03, p = 0.06) each provided by only one study. These respectively correspond to an increase in secondary education attendance rates of 1.4% and reductions in chronic absence and suspensions of 22.9% and 78.8% respectively.

In order to convert the dichotomous outcomes (likelihood of being chronically absent or having a suspension) to a percentage reduction, we first assumed that there were equal numbers (n = 100) in the experimental and control conditions. We then assumed 6.1% of persons in the control condition were chronically absent and 1.4% had a suspension i.e., the prevalence of these outcomes amongst the control/ comparison groups in the single studies underlying each of the effect size estimates. With these assumptions, the OR of 0.76 translated to 4.7% of experimental persons being chronically absent, which is a 22.8% relative decrease, and the OR of 0.21 translated to 0.3% of experimental persons having a suspension, which is a 78.8% relative decrease.

For the one continuous outcome (secondary education attendance rate), a Hedge's *g* of 0.26, based on a mean attendance rate amongst persons in the control condition of 95.6% and a pooled standard deviation of 5.3% using/ derived from the information in the one study underlying this estimated effect size (Mac Iver 2019), translates to a 1.4% increase in secondary education attendance rate.

Naturally, the assumed prevalence of chronic absence or suspensions amongst persons in the control condition are plausible as these are sourced from the studies evaluating these outcomes reported on by Muir et al. (2024). However, prevalence of these outcomes may vary greatly, for example depending on the time, place, sample and definition of chronic absence or suspensions. Nevertheless, these numbers are not greatly affected by different assumptions about the prevalence of chronic absence or suspensions. The 22.9% reduction in the likelihood of being chronically absent would become 23.8% if we assumed a 1% chronic absence rate amongst persons in the control condition, or 22.1% if we assumed a 10% chronic absence rate amongst persons in the control condition. Meanwhile, the 78.8% reduction in the likelihood of having a suspension would become 79.0% if we assumed a 0.1% suspension rate amongst persons in the control condition, or 77.2% if we assumed a 10% suspension rate amongst persons in the control condition.

Moderators and mediators

Whilst Muir et al. (2024) performed a number of moderator analyses through sub-group analysis and meta-regressions, due to the small number of studies of summer education programmes evaluating the outcomes of interest to this technical report, for these outcomes these analyses are unable to provide any meaningful findings.

Implementation and Cost analysis

Implementation

Muir et al. (2024) report on implementation evidence from the summer education programmes included in the review. This covers all summer education programmes included in the review, not just those that evaluate the outcomes of interest to this technical report.

Successfully implemented summer education programmes exhibit clear programme delivery guidance and good governance, high quality academic instruction, mentoring support, and strong partnerships.

Schools participating in a UK programme highlighted funding and guidance provided by the funding and administering authority, which in this case was the Department for Education (DfE), as key to successful implementation. Clear communications about funding arrangements and involving the school governors in monitoring progress ensured transparency and accountability. Insight from this programme also highlights the importance of ensuring school administrators are aware of the funding arrangements and level of funding, are effectively managing these resources, and keep school governors informed about how funding is utilised. This allows foresight on funding adequacy, which means additional resources can be sought where necessary. In this example, additional funds were raised through local businesses, use of volunteers, and in-kind support (CooperGibson, 2022).

The study of another UK-based transition support programme, the Future Foundations Summer School, highlights the importance of ensuring high-quality delivery through a structured curriculum, and engaged mentors and teachers. On the latter, a key aspect of successful implementation is that in the third week of the Summer School, a changeover phase takes place where a new batch of teachers replaces the previous ones, which provides alternating teaching and rest periods to staff. It helps to ensure those teaching the programme can bring their full energy, while allowing rest in between the standard academic terms. It also works to ensure that the Summer School maintains a high level of teaching quality. Before the changeover, a handover session is organised to allow new teachers to meet their colleagues, learn about the students, and understand the site's rhythms and routines. This enables a smooth transfer of information and ensures that the new teachers are well-

prepared to continue the programme effectively. Both batches of teachers receive the same training, ensuring consistency to help maintain the quality of instruction and ensure that all teachers are well-prepared for their roles. A further key feature is that while the teachers changed, mentors and peer mentors remained the same. This consistency ensured some continuity for participants throughout the programme (Siddiqui, 2014).

The key role played by highly engaged mentors to facilitate successful delivery is also highlighted in studies of other programmes. In one US-based transition support programme, Scholars Academy, participants cite peer mentors as one of the best parts of the summer school. Peer mentors are described by participants as someone to relate to outside of their teachers and families who can guide them on which societies to join, and introduce them to other students, facilitating their successful transition into their first year of university (Henson, 2018).

Partnering with external organisations and drawing upon their expertise in curricular and enrichment activities, such as sports, arts, and drama, may enhance the success of summer education programmes. In particular, in effective summer transition support programmes such as the DfE Summer Schools, secondary schools engage with feeder primaries early on and co-design programmes to ensure relevance and effectiveness for prospective participants. The DfE Summer Schools work particularly well where they offer curricular and enrichment activities with an emphasis on 'fun'. This enables pupils to enjoy new experiences, build confidence, reinforce learning and develop positive patterns of behaviour. Additionally, embedding proactive measures to address students' concerns, such as bullying or anxiety about making new friends, is highlighted as an aspect of successful delivery (Day, 2013). Providing specific activities to help new bonds to form, alongside support and opportunities for pupils to mix with their peers and school staff, to become familiar with the expected behaviours and boundaries at secondary school, is suggested as fostering a safe and supportive environment which facilitates delivery.

Also key to successful implementation is integrating programme evaluation and the sharing of results. The UK DfE Summer Schools programme conducted a thorough review of implementation and delivery with staff and shared the learnings and effectiveness information with stakeholders. The report identified key success factors to be built upon and improved in future planning, including: the provision of diverse and engaging learning activities; individual target-setting and mentoring for disadvantaged pupils; open discussion of topics that might be causing pupils concern (e.g. bullying, transitioning to the next stage of education, and the unfamiliar school environment); involving older students to welcome incoming students; involving parents in the delivery of the summer school and organising a celebration event; and identifying and assessing students' strengths and weaknesses during the summer school to inform planning for the school year. Integrating evaluation activities also supports in identifying transferable learning from the summer programme to other areas of the

school, such as wider transition support programmes, curricula, and learner support, ensuring that the benefits extend beyond the summer period.

In contrast to the implementation strengths, the review also highlights challenges encountered in implementing the summer education programmes. In some cases, these are the opposites of the strengths identified above. The key weaknesses cover:

- insufficient planning and lead in time, particularly common in summer transition support programmes between primary to secondary education, which in some cases results in schools not being able to run the programmes (CooperGibson 2022);
- recruitment challenges leading to lower-than-anticipated enrolment numbers. In Future Foundations, one site was abandoned as the delivery partner could not secure schools to collaborate with, which was problematic since schools took the lead on recruiting through parents/carers (Gorard 2014). The Switch On Reading programme faced similar challenges, with potential reasons identified by evaluators as the summer programme lacking appeal to the target population, alternative summer activities already having been booked and concerns about being part of the programme evaluation (Gorard 2017) – this though may be judged specific to the trial rather than implementation per se;
- variability in teaching quality and training – in the Future Foundations example, the programme embedded a formal teaching approach which mimicked a school environment. However, teaching practices were poor and errors were noted in content in some classes. In parallel, teachers appeared to lack interest in delivering the provision (Siddiqui 2014). In another programme, teachers, all of whom were certified, reported that they would have felt more prepared to deliver classes, if training had focused on the BELL programme curriculum, rather than wider instructional practices and pedagogy (Somers 2015);
- inadequate briefing of participants to set expectations – in the Higher Horizons programme, participants said that they were supervised to a higher degree than expected and not given enough independent time, while also saying activities were not as varied as they had thought (Hayes 2018);
- variation in implementation – across different sites for large scale programmes, leading to differences in goals, strengths, and institutional resources that impacted the intervention effectiveness (Cosentino 2015).

Success factors

Muir et al. (2024) explore potential causal processes that may lead from engagement in a summer education programme to outcomes across all of the domains they consider, i.e., not just those relevant to this technical report. They base this on studies of summer education programmes that achieve a significant impact across any of the outcomes they consider. Additionally, this analysis that

they perform, whilst aiming to identify factors that successfully lead to outcomes, cannot directly attribute causality. As such, this section of the review is at best based on correlational evidence.

Mechanisms identified as potentially leading from engagement in a summer education programme to outcomes are: skill acquisition; positive relationships with peers; personalised and positive relationships with staff; effective use of location of the programme; and creating links to 'business as usual' learning'.

Summer education programmes that combine a variety of social activities, such as sports, arts, and curricular activities delivered in a creative way, facilitate positive outcomes for young people given the holistic approach they take (Day 2013). By offering a blend of fun and educational experiences, they address the educational and psychosocial needs of young people. The majority of evidence for summer education programmes pertains to raising aspirations and transition support programmes, where the predominant focus is on social aspects of participation and enrichment. Martin (2013) highlights how students highly value these features, and particularly note the significance of making new friends, participating in team-building activities, experiencing shared social activities, and interacting with peers in the structured learning environments, to their outcomes. These social interactions provide opportunities to develop social skills, build confidence, and form new friendships, while also improving motivation to engage in education thereby facilitating transitions. Day (2013) also highlights that incorporating activities that support the development of independent learning skills is an important facilitator of planned outcomes. Summer education programmes that support students to learn independently help to develop their autonomy and preparation for future academic endeavours. Martin (2013), evaluating the same intervention as these studies, estimates significant impacts of participation in the summer programme on self-reported measures of pupil confidence, school readiness, and socialisation.

Summer programmes focused on raising aspirations and transition support, in both the UK and US, often focus on the development of soft skills that can support transitions and educational progression. Alongside a focus on supporting students to develop socio-emotional skills and confidence to support personal growth, this also includes the ability to make effective university applications, study skills, and life skills, particularly in programmes focused on higher education: Cohodes (2022) and Robles (2018) that highlight the importance of soft skill development in supporting transitions and progression estimate significant impacts on the likelihood of applying to, progressing to and completing higher education. These studies evaluate a summer education programme with a focus on progression within STEM, and find larger effect sizes than Wachen (2018), that evaluates a transition support programme, or Cosentino (2015), that evaluates a raising aspirations programme, do on the likelihood of progression across all subject areas. This might indicate that the specialist nature of the skills this programme develops amplifies its impact on

supporting transitions and progression to higher education, intermediate outcomes on the way to completion. Additionally, some programmes, particularly those supporting transitions from primary to secondary school, have dedicated activities on building relationships, understanding identity, navigating new challenges, and challenging stereotypes. This might lead to increased engagement in school, raising attainment: Pyne (2020) estimates a significant positive impact of summer programme participation on English test scores, for instance.

Where summer education programmes, particularly those focussed on transition support, involve older students as mentors, this provides valuable support to the young person whilst making their transition, building participants' networks in the new environment which facilitates the transition leading towards further outcomes (Day 2013).

The lower student-to-staff ratio that summer education programmes often have (Day, 2013; Martin, 2013; Maxwell, 2014) enables individualised attention and support to be delivered to young people that in turn promotes student engagement, also means that programme staff can better address each student's specific needs and thereby ensure participants' academic and personal growth – Martin (2013), who studies an intervention with a lower student-to-staff ratio than would be expected in BAU, finds a positive impact of participation in the summer education programme on indexes of pupil confidence, school readiness and socialisation, and Maxwell (2014) finds a positive impact on participants enjoyment of reading and motivation to read. Receipt of mentoring and opportunities for leadership within summer programme activities further enhance the positive relationships between staff and students. The evidence highlights that these positive relationships foster a sense of competence and belonging, promoting positive learning experiences and increased engagement and integration into the college or school community: Wachen (2018), who highlights the importance of the relationships between staff and students, finds positive impacts of programme participation on retention in and completion of higher education. One of the benefits of transition support programmes, in particular, is that these provide students with the chance to meet their new teachers before the academic year commences, also placing an emphasis on the social aspect of the relationship. This early interaction helps students build positive relationships with staff that they will interact with, creating a sense of belonging, increasing confidence and comfort, and easing the transition. In the early phases of the new academic year, staff utilise the rapport established in summer transition support programmes to individualise support and foster engagement in the BAU classroom – note the aforementioned impacts of programme participation found by Martin (2013) on indexes of pupil confidence, school readiness and socialisation, and of Wachen (2018) on retention in and completion of higher education.

In the case of transition support programmes, there is evidence showing that allowing students to familiarise themselves with the new campus environment, can alleviate anxiety and help them feel

more comfortable, which in turn promotes the achievement of wider soft outcomes including measures of school readiness (Martin, 2013).Immersive experiences on university campuses, access to school resources, emphasis on navigating the college environment, and creating familiar learning environments all contribute to the effectiveness of these programmes : the five-week University of North Carolina Summer Bridge provides students with experience in navigating the university campus, using the instructional technologies and accessing academic support services, with Wachen (2018) estimating positive impacts on the likelihood of retention in and completion of college as a result of participation.

In some summer education programmes it is highlighted that creating connections between the summer programme and the students' learning at home through worksheets, activities, or recommended reading materials throughout the summer holidays helps maintain continuity and reinforces learning (Day, 2013).

Evidence from the UK

Of the 68 studies included in Muir et al. (2024), 28 of these studies evaluated summer education programmes that took place in the UK However, none of these studies evaluated outcomes that were of interest to this technical report. UK based summer education programmes, and the studies thereof, that inform the review as a whole are:

- Aimhigher West Midlands UniConnect – Horton (2020); Burgess (2021);
- Bath Autism Summer School – Lei (2018);
- DANCOP summer school – Church (2018);
- Department for Education Summer Schools Programme – Day (2013); Martin (2013); Martin (2013a); Sharp (2018);
- Department for Education Summer Schools Programme (Covid-19) – Cooper Gibson (2022);
- Discover Summer School – Torgerson (2014);
- Future Foundations summer school programme – Gorard (2014); Gorard (2015); Siddiqui (2014); Gorard (2017);
- Higher Horizons+ UNiFY residentials – Hayes (2018);
- Imperial College London summer school– Smith (2013);
- ISL Summer School – Lawson (2019);
- Nottingham Potential Summer School surveys – Younger (2017);
- Realising Opportunities – Lamont (2014); Kettlewell (2014a);
- Sheffield Outreach & Access to Medicine Scheme – Thompson (2017);
- Summer Active Reading Programme – Maxwell (2014);
- Summer Arts College – Tarling (2012);
- Sutton Trust Summer Schools – Hoare (2012);
- UEA outreach summer schools – Ferguson (2018);

- Widening participation summer schools – Taylor (2022).

Cost

Muir et al. (2024) report on cost per participant figures for delivering summer education programmes. They highlight the variation in sources for the cost data across the studies included in the review, and the effect that the definition of a participant can play in determining the average cost figures, which in combination with the wide variation in the features of summer education programmes including by the three cluster types they identify, affects the generalisability of any cost analysis across summer education programmes. Table 3 reports the average cost per participant figures across the studies that report this covered by Muir et al. (2024).

Table 3 – Cost per participant of delivering a summer education programme

Intervention	Source	Cost per person	Breakdown	Notes
Department for Education Summer Schools Programme (U.K.)	Day (2013)	£370	-	For a two-week programme, which is the modal duration
Discover Summer School (U.K.)	Torgerson (2014)	£2,197	35% venue hire, food and travel, 43% direct salary costs of staff, 5% promotion and contingency, 16% management and overheads	Assumes 125 pupils on a single site
Future Foundations summer school programme (U.K.)	Gorard (2014)	£1,681	26% administration, resources and activities, 61% staff salaries and training, 14% food and transport	Based on 160 pupils attending a school on a single site
Summer Active Reading Programme (U.K.)	Maxwell (2014)	£178	-	Does not include volunteer/ staff time. Assumes 60-90 pupils transitioning to one secondary school
Aim High (U.S.)	Pyne (2020)	£2,612	-	-

Elevate Math summer programme (U.S.)	Snipes (2015)	£501	-	Does not include cost of classroom and a site principal (provided by school) or laptop computers provided to every student (provided through a donation). Based on average class size of 30
Higher Achievement (U.S.)	Herrera (2013)	£4,897	-	Assume figure is for 2010
STEM summer programmes (U.S.)	Cohodes (2022)	£2,001 for the 1-week and online programmes, £15,009 for the 6-week programme	-	-
Texas developmental summer bridge programme (U.S.)	Barnett (2012)	£1,458	32% staffing costs, 18% other costs, 27% student resources, 23% overheads	-
University of North Carolina summer bridge (U.S.)	Wachen (2018)	£3,908	-	Assume figure is for 2011

What do we need to know? What don't we know?

Studies of summer education programmes for disadvantaged young people often focus on outcomes across domains other than violence and offending, largely education related as would be expected. Given the belief in contemporary youth development theory that outcomes across different domains are highly interrelated, and that there is evidence that summer education programmes do achieve some education outcomes (Muir et al., 2024), it would be useful for studies of summer education programmes to consider violence and offending outcomes alongside education outcomes and outcomes across a wider range of domains.

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Annex 1: Effect size calculations

This annex shows the calculations based on the results and assumptions given in the text. We assume 200 youth, evenly divided between treatment and comparison groups. That means there are 100 youth in the control group and 100 youth in the treatment group. Assuming that 6.1% of persons in the control condition were chronically absent and 1.4% had a suspension, the effect sizes reporting by Muir et al. (2024) can be easily transformed to a percentage reduction in the relevant outcome.

If the odds ratio for chronic absence is 0.76 (Muir et al., 2024), then using the table below and the formula for an odds ratio, we can estimate the value of X. The odds ratio is estimated as: A*B/ C*D, where A is the number of young people that are chronically absent in the treatment group, B is the number of young people that are not chronically absent in the treatment group, C is the number of young people that are chronically absent in the control group, and D is the number of young people that are not chronically absent in the control group. Therefore, the value of X is 4.7.

	Chronically absent	Not chronically absent	Total
Control	6.1	93.9	100
Treatment	X	100 - X	100

Therefore, the relative reduction in chronic absence is ((6.1 – 4.7) / 6.1) * 100 = 22.9%. In relation to the suspensions the value of X is 0.3 and the relative reduction in suspensions is 78.8%.

The prevalence of chronic absence and suspensions is likely to vary between different studies and can be influenced greatly by time, place, sample and definition of the outcome. If we were to adjust out assumptions that 6.1% of persons in the control condition were chronically absent and 1.4% had a suspension, the relative reduction in the treatment group is not greatly affected.

For example, if we assume that 1% of the control group are chronically absent, the 2x2 table would be as follows:

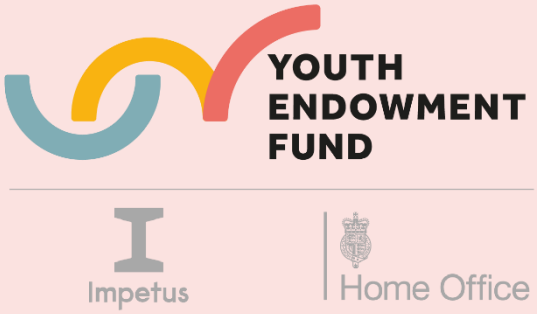
	Chronically absent	Not chronically absent	Total
Control	1	99	100
Treatment	X	100 - X	100

The value of X would be 0.76, and the relative reduction is therefore 23.8% (i.e., ((1 – 0.762) / 1) * 100). Similarly, if we assume that 10% of the control group are chronically absent, the value of X is

7.89 and the relative reduction in chronic absence is 22.1%. For suspensions, using the central assumption of 1.4% of the control group having a suspension means that X is 0.30 and the relative reduction is 78.8%. Altering the assumed prevalence of having a suspension amongst the control group to 10% and 0.1% means that X is 2.28 and 0.02 respectively and the relative reduction is 77.2% and 79.0% respectively.

Annex 2: AMSTAR Rating

1.	Did the research questions and inclusion criteria for the review include the components of the PICOS?	Yes (Table 1)
2.	Did the review authors use a comprehensive literature search strategy? At least two bibliographic databases should be searched (partial yes) plus at least one of website searches or snowballing (yes).	Yes. Five databases plus websites and hand search journals (appendix 1)..
3.	Did the review authors perform study selection in duplicate?	Yes
4.	Did the review authors perform data extraction in duplicate?	Partially (checked by second reviewer)
5.	Did the review authors describe the included studies in adequate detail?	Yes. Descriptive overview of studies by topic and Table 11
6.	Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Yes.
7.	Did the review authors provide a satisfactory explanation for discussion of, any heterogeneity observed in the results of the review?	Planned but not possible to carry out because of small number of included studies.
8.	Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	Yes.



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