Levelling Up Physics

Implementation Guide

University Onboarding Pack | Document 2 of 3 | v1.0 28/4/26

Dan Cottle, University of Birmingham, on behalf of the Levelling Up Physics Steering Group

Introduction

This guide provides step-by-step practical guidance for outreach and widening participation staff at universities joining the Levelling Up Physics collaboration. It covers everything from initial setup through to programme delivery, including tutor recruitment and training, participant recruitment and selection, safeguarding, online delivery, and embedding the programme in your wider outreach strategy.

> *This guide is designed to be used alongside Document 1 (Programme Overview & Rationale) and Document 3 (Evaluation Toolkit). It would be helpful to read Document 1 before proceeding.*

1. Programme Timeline

Levelling Up Physics runs on an annual cycle. The timeline below describes the key stages and their typical timing within an academic year.

Phase	Key Actions
Setup Summer–Autumn	• Join steering group and establish contact with programme coordinator • Recruit UG/PG student tutors • Complete safeguarding training with tutors • Set up online platform (e.g. Zoom, Teams) • Access and review jointly produced tutorial materials • Decide on local delivery model (group size, session frequency, any in-person elements)
Recruitment Jan–Mar	• Advertise programme via local schools, colleges and physics networks • Open and manage application process for participants • Review applications against selection criteria

	• Notify successful applicants and obtain consent to contact parents / teachers • Form groups of 8–15 participants per tutor pair
Delivery: Short Course or Phase 1 of longer course Apr - Jul (Y12)	• Introductory session: programme overview, community building, engaging physics talk • Weekly tutorials including element of near-peer mentoring • Administer start-of-programme survey (see Evaluation Toolkit) • Check in with tutors regularly; provide pastoral support as needed • Monitor attendance and engagement of participants. • Administer mid-point or end point survey depending on length of LU programme delivered. • Invite participants to university open day • Close of short course: issue participation certificates and sign-post to further physics outreach opportunities
Summer Break July–Aug	• Optional: keep participants engaged via Isaac Physics problems or similar • Tutors review and refresh materials for Phase 2 • Review mid-point survey data and adjust programme if needed
Delivery: Phase 2 of longer course Autumn (Sep-Dec)	• Resume weekly tutorials • Consider further university application support e.g. Personal statement workshops; student finance info etc.. • Monitor attendance and engagement of participants. • Administer end-of-programme survey • Close of programme: issue participation certificates and sign-post to further physics outreach opportunities
Follow-up Spring (Y13)+	• Track participant destinations where possible • Collect tutor feedback • Conduct evaluation of survey data • Report outcomes to steering group • Begin planning for next cohort

2. Participant Recruitment and Selection

Recruiting a diverse cohort of participants is central to the programme's purpose. This section describes how to attract and select the right students.

Who Are We Looking For?

Levelling Up Physics targets 16–17 year olds (typically Year 12 in England) who are studying for a post-16 qualification in physics and have declared an intention to study a physics-related

subject at university. Participation is prioritised on the basis of underrepresentation in university physics, using multiple measures agreed in the institution that offers Levelling Up, such as:

- Gender (non-male students prioritised)
- Ethnicity (non-white students prioritised)
- Household income (low-income households prioritised)
- Educational background of parents (first-generation university students prioritised)
- Index of Multiple Deprivation (IMD – based on post code)
- Type of school attended for pre and post-16 study

Safeguarding — Important

Participants are under 18. All tutors and programme staff must complete appropriate safeguarding training before any contact with participants. See Section 4 for safeguarding guidance.

How to Reach Prospective Participants

It can be challenging to make contact with hard to reach potential participants in Levelling Up Physics. The following approaches have been found effective:

- Contact local schools and colleges directly, especially those with high proportions of pupils from widening participation backgrounds.
- Work with your university's access and participation team to identify target schools and postcodes from IMD data.
- Promote via sixth form subject teachers, especially physics teachers, who can identify suitable students.
- Use the Institute of Physics regional networks to send details to students/teachers.
- Promote via your university's own outreach events (open days, taster days) to students already engaged with the university.

Warm Referrals Work Best

The most effective recruitment tends to come through trusted adults who can personally encourage students to apply. A personal email or conversation from a known physics teacher or trusted adult is far more effective than a general poster campaign.

Application and Selection Process

Applications can be managed through a simple online form collecting, for example: name, school/college, year group, contact details, current physics qualification, intended university subject(s), diversity data (gender, ethnicity, household income, parental education, postcode).

Selection could be made against priority criteria agreed in your department. Aiming to over-recruit slightly (by 20–30%) to account for expected attrition over the programme is advisable maintaining engagement over several months is one of the known challenges. A sample Microsoft Form for recruitment can be found in Appendix 1.

3. Tutor Recruitment and Training

The quality of the tutors is the single most important determinant of participant experience. In previous evaluation, participants consistently highlight the tutors as the most valued element of the programme.

Recruiting Tutors

Tutors can be current undergraduate (typically second year or above) or postgraduate students in physics or a closely related discipline. You will need approximately one pair of tutors per group of 8–15 participants. Tutors are usually paid an equivalent rate to other student teaching roles in the university e.g. PG lab demonstrators. To support engagement by tutors, paying them for delivery of the tutorials, preparation time for tutorials and for attending training is advisable. Effective ways of recruiting tutors include:

- Promoting via your department's student noticeboard, email lists, and student physics society.
- Asking academic staff to personally recommend suitable students.
- Highlighting the programme's value for employability, CV building, improving communication skills and promoting equity in physics.
- Using repeat tutors from previous years (where possible)

It is useful to interview prospective tutors before appointment. Important qualities of tutors are: genuine enthusiasm for physics and communicating it to others; patience and empathy; reliability and commitment; willingness to be trained; and ideally, students from underrepresented backgrounds who can serve as near-peer mentors and role models. As tutors will work with young people under the age of 18, references should also be sought where possible asking in particular whether the applicant is suitable to work with children.

Tutor Training

Training for tutors is advisable and could cover issues such as: details of the Levelling Up Physics programme, safeguarding; online pedagogy; approaches to teaching physics; mentoring skills; and equality and diversity awareness. Sample tutor training materials can be found in the online folder here: https://bham-my.sharepoint.com/personal/d_cottle_bham_ac_uk/_layouts/15/guestaccess.aspx?share=IgDREobpjq_nRKaByQktcmUrAamBirZibpauMoqz7QGpjn0&e=rhJU9v

Ongoing Support is Essential

To support tutor confidence, scheduling regular check-ins with tutors throughout the programme is important. This provides quality assurance, pastoral support, and an opportunity to share ideas and problem-solve together.

Tutor Development and Recognition

- A certificate of participation or letter of recognition for their CV
- A reference letter from the programme coordinator if requested
- Access to any teaching or communication skills training available through your institution
- The opportunity to contribute to evaluation reports if they are interested

4. Safeguarding

Levelling Up Physics involves regular contact between university students and young people under the age of 18. Safeguarding must be taken seriously and robust procedures are advised before the programme begins. Sample risk assessments and codes of conduct for participants can be provided on request for reference, although it is likely that individual institutions will need to develop these in the light of their individual circumstances.

DBS Checks Required

It is highly likely that university safeguarding policies will require Enhanced DBS checks for all tutors, mentors and programme staff who have contact with under-18's before the programme begins. This is due to the ongoing, regular contact between adults and young people. We strongly recommend contacting your institution's safeguarding lead for guidance.

Safeguarding Ideas for Levelling Up Physics

- Safeguarding training for tutors and programme staff should be provided before they work on Levelling Up Physics. Examples are provided as part of the tutor training materials but it may be that there are institution specific requirements to consider.
- One-to-one contact between a tutor and a participant should be avoided wherever possible.
- Consider whether recordings of sessions should be made and if so what consent would be needed from participants and/or their parents/guardians. There may also be data security and storage issues to consider..
- Tutors must know who to contact if a participant discloses something concerning or they are worried about the wellbeing of a young person. Designate a named safeguarding lead for the programme.
- We advise that participants' personal contact details should not be shared with tutors; communication should instead go through the programme coordinator.
- Social media contact between tutors and participants outside the programme platform should not be permitted.
- Parental/guardian consent should be obtained before participants join the programme.

5. Online Delivery

Levelling Up Physics can be delivered online or in person. One of the advantages of online delivery is accessibility to learners from a wide geographic area. However, effective online tutoring requires deliberate design and specific skills that differ from face-to-face teaching.

Platform Choice

Most partner institutions use either Zoom or Microsoft Teams. Key requirements are: breakout rooms for small group work; screen sharing for collaborative problem-solving; a whiteboard or annotation tool for equations and diagrams; and a waiting room for safeguarding purposes.

Use a Consistent Platform

Participants will attend weekly for an extended period of time. Using a consistent, simple platform and keeping the meeting link the same each week reduces friction and helps with attendance.

Running Effective Online Sessions

- Starting every session with a brief social check-in before moving to physics content. Building community takes deliberate effort online.
- Keeping physics tutorial sessions interactive: asking questions, using polls, invite active participation throughout.
- Encourage but do not rely on participants having cameras on. Some will not want to for a variety of reasons. Build engagement through voice, chat and polls instead.
- Use the chat function actively: participants who are reluctant to speak up will often engage in writing.
- Set optional home learning tasks for participants to attempt between sessions.
- For mentoring sessions, use structured prompts and discussion starters — the jointly produced materials include these.

Common Challenge: Maintaining Engagement

Attendance will fluctuate through delivery of Levelling Up Physics, especially around exam periods and school holidays. This is normal and expected. Contacting participants who miss several consecutive sessions helps as does also contacting schoolteachers and parents asking for them to remind the participants.

Tutorial and Mentoring Session Themes

Physics Tutorial Topics	Mentoring Session Topics
Electric Circuits	Aims for University Study
Projectile Motion	Study Skills
Energy Levels	Life at University
Waves and Slit Interference	Writing a Personal Statement
Optics	Coping with Setbacks

Inverse Square Laws	Revision and Exam Technique
Circular Motion	Managing Finances at University
Particle Theory	Dealing with Change
Particle Physics	Next Steps
Photoelectric Effect	
Simple Harmonic Motion	
Nuclear Physics	

6. Embedding in Your Wider Outreach Strategy

Levelling Up Physics works best when embedded within a broader outreach and widening participation strategy rather than existing as a standalone activity.

Connecting to Other Activities

- Invitations to public physics lectures and seminars
- Access to department open days or taster sessions
- Priority places on any residential physics summer schools
- Connections to relevant student societies (Physics society, Women in STEM, etc.)
- Virtual campus tours or Q&A sessions with admissions staff

Linking to Access and Participation Plans

Levelling Up Physics can make a meaningful contribution to your university's Access and Participation Plan (APP). It may be worth making contact with the relevant university access team to discuss targeting students from underrepresented groups prioritised by your institution. Levelling Up Physics is a sustained, rather than one-off intervention, and has a growing, published evidence base that could demonstrate impact. Linking to whole university initiatives may be useful in gaining institutional support or funding for Levelling Up Physics.

Equality Awards

Several partner institutions have found that participation in Levelling Up Physics strengthens their department's applications for equality awards such as Athena Swan. The programme demonstrates sustained, evidence-based action on gender and ethnicity diversity in physics, with documented outcomes.

7. The Steering Group Community of Practice

One of the most valuable aspects of joining Levelling Up Physics is access to the inter-university steering group. This community of practice meets regularly to share experiences, problem-solve, co-develop materials and support each other in running the programme.

- Jointly produced and regularly updated tutorial and mentoring materials
- Templates for consent forms, safeguarding policies, recruitment materials, evaluation surveys etc..
- Anonymised data from previous cohorts to support your own evaluation and reporting
- A shared repository of resources including, for example online lectures and revision activities

> *The collaborative spirit in which Levelling Up Physics runs is one of its greatest strengths. You are not starting from scratch — you are joining a community with years of collective experience and expertise.*

8. Pre-Launch Checklist

Done?	Task
☐	**[Setup]** Joined steering group
☐	**[Setup]** Named programme coordinator identified within your department
☐	**[Setup]** Budget agreed for tutor payment and any programme costs
☐	**[Setup]** Safeguarding policy agreed with your institution's safeguarding lead
☐	**[Tutors]** 2–4 UG/PG tutors recruited
☐	**[Tutors]** All tutors completed safeguarding training and DBS checks
☐	**[Tutors]** All tutors completed online pedagogy training
☐	**[Tutors]** Tutor contracts/payment arrangements in place
☐	**[Participants]** Recruitment promoted to target schools and colleges
☐	**[Participants]** Application form live and accessible
☐	**[Participants]** Selection criteria agreed and applied
☐	**[Participants]** Consent forms obtained from all participants (and parents/guardians)
☐	**[Participants]** Participants grouped (8–12 per group) and groups assigned to tutors
☐	**[Delivery]** Online platform set up with consistent meeting links
☐	**[Delivery]** Tutorial materials reviewed and adapted for local context
☐	**[Evaluation]** Start-of-programme survey ready to send (see Evaluation Toolkit)

☐	**[Evaluation]** Demographic data collection agreed and compliant with GDPR

Contact and Further Information

Dan Cottle, Associate Professor of Physics Education
University of Birmingham | d.cottle@bham.ac.uk

Appendices

1 Sample LU Application Form

Levelling Up Physics - y12 Online Physics Tutoring Programme Application Form

The University of XXXXX is offering an online tutoring scheme in physics for Year 12 pupils who are considering applying to university to study physics at degree level.

The aim is to support more students from under-represented groups to apply for and study physics at the University of XXXXX (and other institutions).

It will consist of a weekly programme of online tutorials over the period of April - July 2026. Tutorials will be led by trained undergraduate students in physics and contain around 10-12 Year 12 pupils per group.

The data you provide on this application form will be used to inform selection of participants in Levelling Up Physics.
Please see our privacy notice for more information on how we process your data: https://www.universityprivacypolicylink.com

* Required

Your Details

1. First name *
   Enter your answer

2. Surname *
   Enter your answer

3. Email Address *
   Enter your answer

Enter your answer

4. Home Postcode *

Enter your answer

5. Phone Number *

Your plans for degree study

6. Please confirm that you are currently studying A level physics (or equivalent e.g. IB) *

- ◯ Yes I am studying A level physics or equivalent
- ◯ No I am not studying A level physics or equivalent

7. Which subject are you considering studying at degree level? (Choose only one) *

- ◯ Physics
- ◯ Natural Sciences
- ◯ Engineering
- ◯ Materials Science
- ◯ Mathematics
- ◯ Other

Your School Details

8. Name of current school or college *

Enter your answer

9. Current year group *

Enter your answer

10. Qualifications currently studying *

Include the type (e.g. A Level) and subject (e.g. Physics, Mathematics, Chemistry, etc.)

Enter your answer

11. School you attended for GCSE *

Enter your answer

12. The name of a teacher we can contact at your current school *

Enter your answer

13. The email address of a teacher we can contact at your current school *

Enter your answer

Your personal background and circumstances

This program aims to support more students who are from backgrounds under-represented in physics to apply to study physics at university. As we have a limited number of places available on this program we may therefore prioritise applications from students from these backgrounds for places on this programme.

14. To which gender do you most identify?

- ◯ Male
- ◯ Female
- ◯ Non-binary
- ◯ Prefer not to say

15. What is your ethnic group?

- ◯ Asian/Asian British
- ◯ Black/ African/Caribbean/Black British
- ◯ Mixed/Multiple ethnic groups
- ◯ White
- ◯ Other ethnic group

16. Have you been in receipt of, or entitled to, Free School Meals, in the last 6 years?

- ◯ Yes
- ◯ No

17. Will you be the first generation in your family to attend university?

You are considered to be in the first generation of your immediate family to attend higher education if neither of your parents/guardians have obtained a degree from a university in the UK or abroad before your secondary or further education began. If either of your parents began a degree qualification but withdrew before completion, this is not considered as having obtained a degree. Whether an applicant's siblings or cousins went to or currently attend university is not taken into consideration.

◯ Yes

◯ No

18. Are you estranged from both your parents/gaurdians?

Estranged is defined as a young person who has no communicative relationship with either of their biological parents/legal guardians and who does not expect this situation to be reconciled. This may be verified by a teacher or adviser.

◯ Yes

◯ No

19. Do you have a disability and are in receipt of a Personal Independence Payment

◯ Yes

◯ No

20. Have you been in local authority care or under a care order for at least three months prior to starting year 12?

The three months do not need to be consecutive.

◯ Yes

◯ No

21. Which of these options represents the total pre-tax income in your family?

£42,875 is the national average

◯ Below £42,875

◯ Above £42,875

Commitment to the scheme

22. This scheme will involve a commitment to attending around 10 weekly online physics tutorials as well as completing problems in your own time over a timescale of April - July 2026. Please indicate below that you understand this and that you are happy to proceed. *

◯ I understand the commitment involved