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Evaluation of Personal Learning Accounts

Impact and Cost–Benefit Analysis Framework

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Glossary

Abbreviation	Definition
CQFW	Credit and Qualifications Framework for Wales
DiD	Difference in Differences
FE	Further Education
LEO	Longitudinal Education Outcomes
LFS	Labour Force Survey
LLWR	Lifelong Learning Wales Record
MI	Management Information
ONS	Office for National Statistics
PSM	Propensity Score Matching
RCT	Randomised Controlled Trial
RDD	Regression Discontinuity Design
SCBA	Social Cost–Benefit Analysis

1. Introduction/Background

1.1 One objective of the evaluation of the PLA programme is to develop an impact framework with a feasible methodology for assessment of the longer-term impact of the programme. The impact framework for the programme should also include a counterfactual approach and an approach to cost–benefit analysis. More specifically, the framework needs to:

- develop indicators (to test the extent to which the intended outcomes outlined in the theory of change have been achieved);
- make specific recommendations as to data collection and data-linking techniques that would be required to provide evidence with which to show the journey of learners.

1.2 This note sets out the various options for impact evaluation and the associated requirements that are necessary to undertake them. In compiling the various options, we have assessed data availability and current processes to understand the potential feasibility of each option.

1.3 There are a number of challenges associated with implementing an impact evaluation framework for the PLA programme:

- The quality, consistency and comprehensiveness of management information captured for PLA (see section 1 of the main report – methodological limitations).
- Controlling for the wide range of qualifications, skills, experiences and interests of learners (all of which will likely influence their progression in engagement with PLA).
- The variation in the ‘intensity’ of support provided through the programme. An analysis of course data and learner perspectives shows a wide range of intensity (value (cost), duration, academic level) in the level of support offered by PLA, reflecting the flexibility of the programme. Capturing average costs and returns might prove to be the most feasible route through which to compile an impact framework; however, it may dilute the benefit of intensive support and overstate the impact of ‘light-touch’ provision.

- The availability of independent or explanatory variables (and their quality and relevance). Whilst much of the information with which to inform an impact and cost–benefit framework is recorded, how these data are currently held limits the extent of their usage within an impact framework.
- The time lag associated with the release of certain datasets and the realisation of expected outcomes of the programme.

2. Impact Framework

2.1 Assessing the long-run impact of the PLA programme requires an understanding of its net additional impact over and above what would have occurred in the absence of the programme (by discounting any deadweight associated with the provision).

Key variables for consideration

2.2 A review of various research as well as a reflection of the programme's theory of change have been undertaken to identify a selection of suitable variables against which to measure impact.

2.3 Within the impact framework it is important to measure independent and dependent variables to test cause–effect relationships. The independent variable is the cause. Its value is independent of other variables in the framework. The dependent variable is the effect. Its value depends on changes in the independent variables.

Dependent variables – the effect

2.4 The primary dependent variable for attention when considering participant learners within the impact framework relates to earnings growth (this is the intended effect; independent variables are likely to cause differences in this effect).

2.5 Facilitating earnings growth for participant learners is the overarching aim of PLA, engaging employed individuals earning below the median wage threshold and supporting them with the learning provision that will facilitate career progression and an associated increase in their earnings.

2.6 Other indicators that could be considered to be supplementary dependent variables (effects) within the framework include the following:

- Days in employment – PLA provision is intended to be geared towards growth sectors which will enhance career opportunities, strengthening levels of employability. However, participants of PLA are already employed; thus, a net additional change in days in employment is unlikely. That being said, in potentially facilitating a career change for PLA participants, there is a risk of transitional unemployment as a PLA participant pursues a change in career. Understanding any periods of unemployment, as part of that transition, will

be an important factor in quantifying the net additional impact of the programme. Comparing the number of employment days since learner enrolment could be undertaken where a suitable control group (such as early leavers) is available to benchmark against. Where a lower level of employment days is evident, these 'non-earning' days would need netting off any earnings gain.

- Hours of employment – Amongst survey respondents, 18 per cent (and 27 per cent of females) were in part-time employment at the point of enrolment in learning. Of these, 15 per cent (10/65) increased their hours of work following participation in PLA. In the absence of earnings data, understanding the value gained from additional hours of work would be possible through benchmarking hourly earnings by occupation type.
- Research illustrates a statistically significant relationship between adult learning and life satisfaction.[1] However, research also suggests that the intensity of job-related training may have an influence on the positive impact on life satisfaction.[2] Furthermore, evidence[3] suggests a relatively narrow set of circumstances associated with adult learning that had a statistically significant effect on life satisfaction. Statistically significant effects on life satisfaction were encountered where an individual had undertaken a part-time course that had either helped them to obtain their current job, increased their skills for work, or improved their skills. These circumstances are all likely through the PLA programme.

Independent variables – a cause that has an influence on the effect

2.7 There are several independent variables that will likely have a material influence on the dependent variable (earnings growth), thereby influencing the nature of the effect achieved, namely:

- Whether a learner completed the course (early leavers)

[1] See, for instance: London Economics and Ipsos MORI (2013a) *The Impact of Further Education Learning.* BIS Research Paper No. 104.
[2] See: What works wellbeing report on learning at work and wellbeing.
[3] Dolan, P., and Fujiwara, D. (2012) *Valuing Adult Learning: Comparing Wellbeing Valuation to Contingent Valuation*. BIS Research Paper No. 85.

- Course duration (number of teaching/learning hours)
- Sector subject area
- Academic level of the course (Credit and Qualifications Framework for Wales (CQFW)-equivalent – 2, 3, 4 and 5)
- Highest qualification prior to enrolment (although it should be noted that within the MI this is recorded for only 13 per cent of participants)
- Gender
- Ethnicity
- Geographical location (local authority area)
- Whether a learner considers himself/herself to have a learning difficulty, disability, or health problem.

The potential influence of each of these on earnings growth is explored below.

Early leavers

2.8 An analysis of management information for the PLA programme identifies that 45 per cent (7,591/16,717) of PLA participant enrolments completed the course in which they enrolled. A further 38 per cent of participant enrolments are reported as continuing in their learning; however, it is expected that a proportion of this group have, in fact, left their learning, but this is yet to be reported in the management information system.

2.9 The survey of learners undertaken as part of the evaluation included a subset of participants identified as ‘early leavers’. Amongst that group, 17 per cent described having completed at least half of the course in which they had enrolled, and seven per cent described having completed three quarters of the course. Whilst it is reasonable to assume that those who had participated in more than three quarters of the learning provision had gained benefit from that support, they represent just over one per cent of all learners. As they constitute such a small minority of learners and there is uncertainty surrounding the degree of benefit of partial course completion, it would seem to be reasonable to exclude them from the impact framework.

2.10 Those learners who had left the course and had completed less than half of that course may provide a suitable comparison group against which to benchmark impact. The relative suitability of early leavers as a comparison group is explored further in section 4.

Course duration

2.11 An analysis of management information suggests that 53 per cent of course enrolments were for courses that lasted three days or more (based on an analysis of the start date and end date of each course enrolment), whilst six per cent of course enrolments delivered through the PLA programme appear to have lasted one day or less. Whilst learners can only enrol in one course at a time, they can enrol in a series of sequential courses that may, for example, reflect a series of modules that are necessary for a change in career or new employment opportunity. However, 90 per cent of learners who enrolled in a course with the same start date and end date (and therefore lasting a single day) did not enrol in any further courses.

2.12 More widely, 23 per cent of learners have enrolled in more than one course. In benchmarking the impact of their participation in PLA against a suitable comparator group, the full support that they have received from multiple courses would need to be taken into account; otherwise there would be a risk of underestimating the level of support that a learner had received.

2.13 A key limitation of the course start date and end date captured in the management information for PLA is the lack of detail on the intensity of learning/training required over that period of time. Some courses that might be delivered remotely, for example, could have flexible timeframes for course delivery with limited virtual teaching hours resulting in the start date and end date of different courses being misleading. By way of example, Table 2.1 below shows three of the most popular courses (based on the number of enrolments) delivered through PLA and the number of days between the start date and end date as recorded by the completer. It illustrates huge variation in duration between the start date and end date and likely reflects the flexibility of approach in delivering courses by a variety of means as well as different interpretations of course dates by each FE college.

Table 2.1: Estimated range in duration of learning based on analysis of learner start and end dates in PLA MI

Course title	Number of completers	Range of duration (min. and max.)	Mean average duration
City & Guilds L2 Health and Social Care	41	24 days to 619 days	406 days
Highfield L3 Award in Emergency First Aid at Work	43	1 day to 364 days	83 days
PRINCE 2 Foundation	73	20 days to 669 days	344 days

2.14 The scale of variation in course duration suggests that this variable should not be included as a proxy indicator within the impact framework.

2.15 One alternative approach would be to draw on evidence captured within course costing sheets. Course costing sheets are required from FE colleges when applying for the funding of new courses through PLA. The sheets capture details of the duration in academic years of the course and the number of expected hours for teaching the course. For some longer-term courses, determining the course duration can be challenging (as the course length is flexible in relation to learner availability); the duration of one Level 3 course ranges from 6–18 months.

2.16 For the number of anticipated hours to deliver the course, there are also various elements to consider. The course costing sheet currently captures hours on a wide range of elements, including teaching, course development, examiners, post-course support, etc. There would need to be agreement on the consistent use of the form with FE colleges as to what could be counted as hours of provision (the evaluators would suggest using teaching hours only). Subject to ensuring consistency in the completion of these forms, this information could be used to provide a benchmark regarding course intensity.

Sector subject area

2.17 Earnings trajectories are influenced by the industrial sector within which job roles are based. Data on the sector subject area for PLA participants are captured within the Lifelong Learning Wales Record (LLWR) and, therefore, replicate the sector subject categories for all post-16 learning provision in Wales. In England, data analysing the average annual earnings of those who enrolled in a full NVQ Level 3 in 2014, for example, illustrated that earnings three years after completion ranged from £8,400 in Arts, Media and Publishing to £26,900 amongst those who studied a full Level 3 in Engineering and Manufacturing Technologies.[4]

2.18 A challenge with this approach is that one third of participant enrolments (7,025/21,403) are for courses assigned to the 'generic/other' sector subject area. For this cohort of enrolments it would not be possible to match to this variable.

2.19 Given the extent of variance in earnings potential (and aside from the challenge with those associated with generic/other sector subject areas), controlling for sector subject areas in the impact framework would appear to be necessary. A further challenge with this approach, however, is that amongst those 23 per cent (3,712/16,241) of learners who undertook multiple courses through PLA, 19 per cent (695/3,712) undertook those courses in more than one sector subject area, equating to four per cent of all learners. If data are available for these learners, consideration should be given to their removal from the impact framework.

CQFW-equivalent level of course

2.20 The academic level of a course will also be influential in the earnings growth and/or potential of a participant.[5] However, the PLA delivery model prioritises flexibility and responsiveness in approach and provides the ability to support vendor qualifications. Assigning a CQFW level to a wide variety of courses could therefore be challenging. The evaluation team attempted to benchmark courses against a CQFW level and whilst in some instances this process was straightforward, as the

[4] Department of Business Innovation and Skills (2014) Further Education Learners – Average Earnings Post-Study – 2010/11 to 2012/13, BIS.
[5] See, for instance: House of Commons Education Committee (2020) A plan for an adult skills and lifelong learning revolution – third report of session 2019–21 (which refers to evidence that shows variation in the rate of salary increment when comparing the academic level and the age of the learner).

level was referenced in the course title, it was only possible for around three quarters of course titles.

2.21 Within the course application sheet for PLA the form requests a 'level of qualification'.[6] This suggests that the course level may be available but that the response box is open text, which offers scope for variability as to how that information is reported.

2.22 Within the course costing sheet there is no category for capturing the academic level (equivalent) of the course. Its inclusion within the sheet would be beneficial for determining the course level. However, with an emphasis on flexibility and vendor qualifications, it may be difficult for providers to allocate a CQFW-equivalent level to the courses.

2.23 The absence of an academic level within existing management information or course costing sheets, combined with limitations surrounding matching course titles to CQFW levels, suggests that it is currently not possible to control for the academic level of learning through PLA within the impact framework.

Highest qualification prior to enrolment

2.24 Research identifies that the qualification level of an individual has a strong correlation with earnings. Capturing an individual's highest qualification level prior to enrolment in PLA would therefore be an important variable for the impact framework, particularly if a 'policy off' model for identifying a counterfactual is adopted (see section 4 below for further details).

2.25 Currently, however, there is no information in the MI of the PLA programme on the highest qualification of 87 per cent of participants prior to enrolment. Whilst there is a field in which to capture this information in the LLWR, it is optional for FE colleges. It is therefore strongly recommended that the highest qualification prior to learning become a mandatory field within the enrolment form for FE providers.

[6] See, for example: Annex 2 of Personal Learning Account 2022–23 Guidance (Final v.1).

Gender

2.26 There is a gap in the earnings of males in comparison to females. The gender pay gap is the percentage difference between men and women's median hourly earnings across all jobs in the UK — it is not a measure of the difference in pay between men and women for doing the same job. Among full-time employees, males in the UK typically earn around eight per cent more than females (2022).[7] Amongst all employees (regardless of hours worked), the gender pay gap is around 15 per cent.[8]

Ethnicity

2.27 There is a variation in average salary by ethnicity. In 2019, most minority ethnic groups earned less than White British employees; however, those in the Chinese, Indian and White Irish ethnic groups earned higher hourly pay than that of White British employees.[9] Again, it should be noted that this analysis is not a measure of the difference in pay between individuals of different ethnic origins doing the same job.

Geographical location (local authority area)

2.28 Where an individual works is likely to have an influential role in their level of earnings. By way of example, adults who work in Cardiff on average earn 19 per cent more per hour than do those who work in Blaenau Gwent. The scale of earnings uplift that a participant of PLA gains may therefore be influenced by the location in which they work.

Whether a learner considers himself/herself to have a learning difficulty, disability, or health problem

[7] ONS (2022) Gender pay gap in the UK: 2022, ONS. The analysis uses data from the Annual Survey of Hours and Earnings (ASHE) and is presented here (last accessed February 2023).
[8] Ibid.
[9] ONS (2020) Ethnicity pay gaps: 2019, ONS. The analysis uses data from the Annual Population Survey and is presented here (last accessed February 2023).

2.29 There is a pay gap of around 14 per cent between those employed adults with a declared disability and those with a non-declared disability. The nature of impairments influences the scale of this gap, with, for example, those suffering from autism having the largest pay gap to non-disabled people with no long-lasting health conditions.

Other beneficiary stakeholders affected by the PLA intervention

2.30 The emphasis within this impact framework has been on benefits associated with the individual learner. However, other key stakeholder groups are likely to be affected by the intervention.

Employers

2.31 The programme has likely generated positive impacts for employers (in terms of addressing skills shortages); however, with the removal of the ELA strand for the programme, there no longer remain elements within the programme that are employer-led. Therefore, in the design of a long-term impact framework, capturing direct employer benefits from ELA provision would seem to be unnecessary, whilst capturing indirect employer benefits arising from the upskilling of the working-age population via PLA would be incredibly difficult to isolate.

FE college

2.32 FE colleges are also likely beneficiaries of the PLA programme in terms of additional resources with which to develop and deliver new and/or niche course provision. The costs and benefits, however, for these groups would be extremely difficult to estimate, given the complexity of operational models within FE colleges.

3. Key Data Sources

3.1 Reflecting on the variables of interest outlined in the previous section, there are several key sources of data that would be useful in the formulation of an impact framework. These sources are summarised along with their potential limitations below.

Longitudinal Education Outcomes

3.2 The Longitudinal Education Outcomes (LEO) dataset collects educational data (including those captured through the LLWR) alongside employment, benefits and earnings in the years since enrolling in post-16 learning provision, enabling longer-term education outcome research. The dataset is accessible through the ONS Secure Research Service and, as such, the user must be an accredited researcher.

3.3 The LEO dataset includes data drawn from the LLWR on a host of variables of importance for measuring the impact of the programme, including:

- Learning start and end date
- Sector subject area
- Demographic data (including gender, age, ethnicity, disability, and marital status)
- Level of learning (in descriptive and/or numerical form)
- Prior education attainment

3.4 However, the previous section outlined that, aside from demographic data, there are a range of limitations associated with the current nature of data captured for the other variables. Without considerable enhancements to the PLA MI there is limited scope for utilising the other variables of importance through LEO in a robust manner for those in receipt of support. LEO could, however, provide a suitable dataset for the creation of an appropriate comparison group.

3.5 Recent publications using the LEO dataset have drawn on evidence of learning that ended in 2016. Whilst this is partly influenced by the fact that earnings data in the fiscal years after learning constitute important factors in measuring impact, it is also illustrative of the time lag associated with the upload of data into the LEO system.

3.6 Prior to the COVID-19 pandemic, LEO data on earnings were published two years after the fiscal year in question. The disruption caused by COVID-19 has led to a three-year delay. This suggests that impact evidence for the PLA programme for the treatment variable is unlikely to become available before 2025/26. This is based on the learning enrolments following the rollout of PLA, commencing in 2021, and earnings data one year after learning being captured for 2021/22 and two years after learning being captured for 2022/23. There would, therefore, be a considerable time lag in the use of LEO to assess the impact of the programme.

Labour Force Survey

3.7 The Labour Force Survey (LFS) is a survey of households living at private addresses in the UK. Its purpose is to provide information on the UK labour market which can then be used to develop, manage, evaluate and report on labour market policies. The first LFS in the UK was conducted in 1973; since 1992, with a sample boost, quarterly publication of LFS estimates has been possible. The sample now includes a panel design in which individuals stay in the sample for five consecutive waves or quarters; each quarter, therefore, one fifth of the sample is replaced. The data are accessible to individuals who hold the status of an ONS secure researcher.

3.8 The LFS contains a host of variables of importance for conducting an impact assessment, including:

- Demographic data (including gender, age, ethnicity and disability)
- Employment status and whether an individual is in a government training scheme
- Industrial sector of occupation and occupation code
- Highest level of qualification
- Earnings (asked of panel respondents in their first and fifth waves of the five waves in which they participate)

3.9 Data are released more quickly than LEO, typically with a time lag of 3–6 months.

3.10 To avoid being encumbered by the delays associated with the release of LEO data, a statistically representative survey focused on learner impact could be conducted.

Evidence suggests that this would most suitably take place 12–24 months after learner engagement, thereby giving sufficient time for any impacts from learning to arise.

Participant learner survey – self-reported impacts

3.11 Capturing self-reported impacts of the PLA programme is a useful mechanism for gathering evidence on outcomes for the various learner journeys funded through PLA. It plays a particularly important role where impacts are less likely to be picked up in administrative data or will suffer from a time lag in the data being populated within administrative datasets.

3.12 A survey also provides the ability to test and validate the theory of change, ensuring that any unforeseen or unintended outcomes are identified through the survey work and then reflected in the summative assessment and considered as part of the quasi-experimental approach to impact assessment, informing the development of an impact framework.

3.13 Finally, the administration of a learner survey provides a mechanism for capturing data in a manner that is consistent with other national surveys (capturing data on life satisfaction, for example, to inform well-being valuation activities), should this be deemed as appropriate. Furthermore, it provides a mechanism for capturing evidence of self-reported outcomes that can be benchmarked against other provision.[10] [11] This non-experimental approach has been used in the formative evaluation of the PLA programme to identify the range of impacts reported by learners, employers, and FE colleges and as a basis for testing the outcomes articulated within the theory of change.

[10] See, for instance: Wiseman, J., Roe, P., Parry, E., Speckesser, S., and Gloser, R. (2013) Evaluation of the Impact of Learning Below Level 2. BIS Research Paper No. 150. The paper includes the proportion of learners referring to career moves, promotions, increased job satisfaction, and job security.
[11] Harding, C. and S. Ghezelayagh (2014) Community Learning Learner Survey: additional analysis of participants following family learning courses. BIS Research Paper No. 180.

3.14 The survey could also be a mechanism through which to capture well-being through the inclusion of a question on life satisfaction that is phrased to reflect that which is asked within ONS4[12] personal well-being questions: 'Overall, how satisfied are you with your life nowadays?' This would need to be captured upon enrolment and then followed up after learning through the learner survey.

[12] ONS personal wellbeing questions.

4. Methodological Proposals

Quasi-experimental methodology

4.1 To estimate the net long-run impact of the PLA programme, it is recommended that the impact framework utilise some form of quasi-experimental method. Quasi-experimental designs involve the identification of a comparison group that is as similar as possible to the 'treatment' group (those who received support), prior to receiving support (at the baseline). Key characteristics (or variables) are identified for both groups that are dependent on the support and these are matched (as close as is possible between both groups). The independent variables outlined in section 2 that existed prior to the learning commencing (at the baseline) would be prominent in the list of characteristics for matching.

4.2 The programme was not established as a randomised controlled trial (RCT); thus, a true experiment approach is not feasible. Were the programme established as an RCT, then it would have likely involved one group of eligible people for PLA being able to receive support (the treatment group) and a random selection of a group of people with the same characteristics being unable to access the support (the control group). It should be noted that it is difficult to see how the PLA programme could, in practical and ethical terms, have been established in the form of an RCT, given its emphasis on eligibility for all who wish to participate and who meet the identified criteria.

Identifying a control (comparison) group

4.3 When investigating the net additional impact of learning through PLA there are several groups that might be considered to be suitable as a comparator or control group:

a) Individuals who present similar characteristics to those of the treatment group who have not embarked on publicly funded post-16 learning provision within the study timeframe.

b) Individuals who present similar characteristics to those of the treatment group whose earnings are just above the median average salary in Wales and were therefore ineligible for the programme.

c) Individuals who present similar characteristics to those of the treatment group who chose to embark on part-time learning available through FE colleges at similar levels of qualification (typically CQFW Levels 2–5) that did not form part of the PLA programme.

d) Individuals who embarked on a course through the PLA programme who failed to complete their learning.

'Policy off' option

4.4 Option A, which can be referred to as a 'policy off' comparator, possibly provides the largest control group and, therefore, the highest chances of matching by characteristics. Respondents to the Labour Force Survey (LFS) typically offer the most suitable control group when seeking a 'policy off' comparator for vocational provision.[13] Matching would typically focus on those individuals with the same highest level of qualification as the intervention group (at the point of enrolment in the PLA programme).

Salary threshold option

4.5 Option B would present the opportunity to adopt a regression discontinuity design (RDD) quasi-experimental approach to the impact evaluation. An RDD compares those who have passed a threshold for a programme intervention with those who are just short of that threshold and, thus, have not qualified to be included in the treatment group.

4.6 The obvious threshold for applying an RDD for the PLA programme is that of annual earnings. RDDs seek to compare two groups that operate close to a threshold. However, based on the survey response, a large proportion of PLA learners would be ineligible for the RDD. The survey shows that 45 per cent (157/346) of PLA learners earnt £20,000–£30,000 at the point of enrolment in the programme, whilst 15 per cent (52/346) were very close to the earnings threshold, earning £25,000–£30,000 at the point of enrolment. Furthermore, identifying a group of individuals

[13] See, for instance: Hedges, S., Patrignani, P., and Conlon, G. (2018). 'Settling the counterfactual debate: Is there a preferable counterfactual when estimating the returns to vocational qualifications?', CVER Discussion Paper 013; London Economics (2022) Education and Skills Impact Measurement – report for the Enterprise and Skills Strategic Board.

with earnings just above the threshold as well as their associated data on characteristics will be challenging without the individuals engaging in some form of provision. The ability to track their earnings trajectory over time would therefore appear to be difficult to achieve.

Part-time learners

4.7 Option C provides the opportunity to use data on adult learners who have chosen a part-time funded course through FE colleges that is core-funded by the Welsh Government. These types of comparisons represent the conventional approach typically taken to investigating the impact of learning at different levels in Wales, including apprenticeships and traineeships.[14] The latest data show that there were 42,800 part-time learners in FE colleges, providing a sufficient number of learners to match as a control group. By participating in post-16 learning, their data will also be captured through the LLWR, which, in turn, is integrated into the Longitudinal Education Outcomes (LEO) dataset, thereby providing the opportunity of tracking earnings over the long term. The analysis would again need to control for age, employment status, and earnings at the point of enrolment.

Early leavers

4.8 Option D would provide a matched group who also theoretically had similar aspirations to study to those of the treatment group but had ultimately dropped out of their learning. Their information would only have been captured for the LLWR upon commencement of the course; however, information on the proportion of the course that they had completed would not be available through existing management information systems. That being said, the learner survey targeted a cohort of early leavers as part of the evaluation and, as outlined previously in this report, 17 per cent of early leavers felt that they had completed half of the course, whilst only seven per cent had completed three quarters of the course. A further risk to the use of this cohort as a comparison group relates to the reasons behind learners leaving early. For 15 per cent of early leavers they had moved job roles, which meant that the course was no longer relevant to their new role. This group

[14] See, for instance: Egglestone, C., Aylward, N., Melville, D., Bivand, B., Allies, O., Burgess, A. (2019) Evaluation of the Traineeships Programme: Final Report (2015–2019), Cardiff, Welsh Government.

would undermine the suitability of early leavers as a match, as their earnings status would likely have immediately changed as a result of that new role.

4.9 With over 80 per cent of early leavers having left the course prior to fulfilling half of the requirements, as well as only 15 per cent leaving because they had already changed roles, it would appear that early leavers could offer a reasonable comparative benchmark to the treatment group.

Summary

4.10 Of the four options presented, options A, C and D would likely be the most feasible approaches for identifying and obtaining a suitable comparison group for testing the net additional impact of the programme.

Matching methodology

4.11 A range of quasi-experimental approaches could be adopted to estimate the net impact of the PLA programme, including matching methodology. The choice of methodology will depend on the scope of the data that are available and the size of the available dataset. Some matching methodologies in particular require larger sample sizes in order to be effective. Details of each proposed methodological approach are presented in Annexe A, with the preferred approach being propensity score matching (PSM).

Limitations

4.12 There are various limitations to the proposed approach of propensity score matching. The primary concern relates to the challenges associated with management information reflected upon throughout this paper. In addition, this modelling of impact is unable to capture any return for two key stakeholder groups:

- Employers who are likely to benefit from the upskilling/reskilling of individuals in sectors and/or occupations in which skills shortage vacancies exist. It is unclear as to how the extent of influence of PLA on addressing skills shortage vacancies could be measured.
- FE colleges that, through PLA investment and the specific funding model adopted, are able to develop new and innovative courses and flex their offer.

Again, isolating, quantifying and attributing the specific impact derived from PLA investment would be particularly challenging; therefore, qualitative assessment would appear to be most suitable.

4.13 As outlined throughout the paper, PLA is incredibly diverse and flexible in its offer. There is not a typical PLA intervention against which to benchmark impact, with learners approaching learning (that itself is wide-ranging) in various manners. To overcome this issue, there is scope to consider a more targeted impact assessment of certain courses, sector subject areas, or national priority schemes. Whilst these will be unable to quantify the overarching net additional impact of PLA, they will provide the ability to target certain elements or initiatives within the PLA sphere, subject to there being a sufficient sample of learners within the treatment group against which to benchmark performance.

5. Value-for-Money Assessment

5.1 A social cost–benefit analysis of the PLA programme will provide an estimation of the programme's value for money. It would likely rely on a combination of data supplied by FE colleges and the Welsh Government. The approach adopted should be in line with Treasury Green Book guidelines and other supplementary guidance associated with the Green Book.

Costs

5.2 Delivery of the PLA programme incurs costs for various stakeholders and in a variety of ways.

FE colleges

5.3 FE colleges incur costs in promoting the programme, in engaging and enrolling participants, in course design, equipment and accreditation, and in course delivery, examination and certification. Furthermore, there are the various administrative costs associated with the management and monitoring of programme delivery.

5.4 The course costing sheets compiled by FE colleges capture much of this information, thereby theoretically enabling a cost per participant learner to be calculated on a course-by-course basis.

5.5 Colleges are awarded a package of funding in each academic year against which to deliver, with the aforementioned course costs drawing on the majority of this funding; however, allocations are also made for administrative support and as an optional barrier fund. With funding allocated on a college-by-college basis, it is possible to establish social cost–benefit models for each FE college. The robustness of these models will increase the greater the number of learners enrolled in each academic year.

Welsh Government, RSPs, and employers

5.6 Further resource costs will be incurred by other stakeholders associated with the PLA programme. These are likely to include:

- Resource expenditure by the Welsh Government in providing the management, administration, and general governance of the PLA programme
- Resource expenditure by RSPs in identifying course provision and appraising course applications
- Employer costs through expending resources on engaging with RSPs and FE colleges to identify suitable course provision with which to address demands for skill provision.

5.7 The scale of costs incurred by the Welsh Government and RSPs should be relatively easily captured through consultation. Employer costs will be more challenging to capture and of a lower scale. Their inclusion within an SCBA would need further consideration.

Learner costs

5.8 Learner costs may include:

- Travel costs to access learning provision
- Course learning materials
- Childcare/care provision whilst engaging in learning
- A reduction in working hours to undertake the learning provision

5.9 The potential scale and prevalence of these costs could be modelled through evidence captured via a learner survey.

Cost framework

5.10 In considering the cost sources, their variation, and the broad spectrum of provision offered through the PLA programme, there are several approaches that could be used in the social cost–benefit framework:

- Bottom-up costing – course level: Capturing course costs and mapping them against learner benefits would provide a very targeted and granular assessment of PLA but would be resource-intensive. Course volume (c.800) alone would make a challenging SCBA model to deliver. Stakeholder partner

costs could be apportioned based on the learner volume for this approach and all other 'bottom-up' options outlined below.

- Bottom-up costing – college level: Running an SCBA at the college level will severely restrict the number and complexity of models to run. The approach would mean that the capture of costs would be relatively straightforward, however, when reflecting on benefits would overlook the diversity of provision offered through PLA within FE colleges.
- Bottom-up costing – sector subject area and academic level, where courses can be matched to a qualification level: Grouping course provision, into sector subject area and academic level, and excluding those courses that did not lead to a formally recognised qualification constitute replicating similar models adopted elsewhere. Whilst likely excluding some vendor qualifications, consideration could be given to running a separate SCBA assessment of these grouped qualifications, perhaps through the application of an arbitrary threshold of teaching hours.

5.11 It is recommended that the SCBA model be run using the sector subject area and the academic level, where the course is recognised and can be matched to a qualification. Tests can then be run on the distribution of costs against the sector subject area and the academic level to explore the range and sensitivity of cost per hour of delivery.

Comparator costs

5.12 Where the impact assessment assesses the outcomes of PLA learners against the alternative provision (option C in the list outlined in section 4), the potential costs of this alternative learning need to be taken into account. The costs of this alternative provision can be estimated using data from the Auditor General for Wales (AGfW),[15] which focuses specifically on part-time learning provision.

5.13 Net present values will be applied to the various costs and discounted back to a common base year with discount rates applied in accordance with HM Treasury

[15] Taken from Auditor General for Wales (2017), 'Welsh Government oversight of further education colleges' finances and delivery', Wales Audit Officer.

Green Book guidance. The approach will ultimately enable the estimation of benefit–cost ratios (BCR) for the PLA programme.

Benefits

Economic benefits

5.14 As outlined previously within this paper, the primary evidence for modelling economic benefits will be derived from the additional earnings gained by participants of the PLA programme. There would also likely be productivity gains for employers as well as economic benefits derived from addressing skills shortages within the economy, but financial modelling of these will be particularly challenging.

Non-economic benefits

5.15 There is a wealth of non-economic benefits associated with lifelong learning provision. Research[16] has identified how adult learning leads to improvements in health as well as better social relationships. Research has also identified improvements to well-being through improvements in confidence, happiness, and life satisfaction.[17]

5.16 Research conducted on behalf of the then-Department for Business Innovation and Skills[18] estimated the well-being benefits of taking a part-time course for work over one year to be equivalent to £1,584 of income per year generated through greater satisfaction, optimism, self-esteem, hope, and purpose; the ability to cope with stress; and building and strengthening social relationships through interactions with other people.

5.17 The data that informed the estimate of £1,584 of income per year were obtained from the British Household Panel Survey, an annual survey of more than 10,000 adults. In the survey, respondents are asked questions about their life and circumstances, including their income, whether they are undertaking a part-time

[16] Fujiwara, D. (2012) Valuing the Impact of Adult Learning – an analysis of the effect of adult learning on different domains in life, National Institute of Adult Continuing Education.
[17] See, for example: BIS Research Paper Number 85 (2012) Valuing Adult Learning: Comparing Wellbeing Valuation to Contingent Valuation, Department for Business Innovation and Skills.
[18] Department for Business Innovation and Skills (2012), Valuing adult learning: comparing wellbeing valuation and contingent valuation. BIS Research Paper Number 85.

course, the reason for undertaking such learning, and their life satisfaction. An analysis of these data enabled the calculation of the estimated value.

5.18 An alternative approach has been adopted through recent research[19] to monetise changes in life satisfaction. The approach values goods or services in which value is estimated as the amount of money that would be required to achieve the same observed gain or loss in life satisfaction that the good or service produces.[20] This is monetised through the calculation of a monetary value of an increase in well-being over a single year (referred to as a WELLBY). The research found a central value of £13,000 per one point change in life satisfaction per year on a 0–10 scale.

5.19 However, it should be noted that a What Works Wellbeing (2017)[21] review of training on well-being found inconsistent results. Delivery style, for example, appears to affect well-being outcomes, with online provision being less likely to affect well-being unless it incorporates a social element in the learning process alongside online delivery. Moreover, research shows a gender difference (depending on age) associated with life satisfaction alongside several of the other independent variables set out in section 2. Any modelling of well-being returns will need to control for these independent variables where feasible.

5.20 As outlined previously within the report, a pragmatic approach to capturing this benefit would be through learner survey activity to explore the influence of training on confidence and self-esteem. The enrolment process and any learner survey could also capture perceptions of life satisfaction to assess any change in learner response to a suitable matched population. However, it should be noted that the lack of consistent perspective on the extent of well-being benefit from participation in training should be reflected upon in resource allocation for the capture of well-being aspects.

[19] HM Treasury and Social Impacts Task Force (2021) Wellbeing discussion paper: monetization of life satisfaction effect sizes – a review of approaches and proposed approach.
[20] What Works Centre for Wellbeing (2017) A guide to wellbeing economic evaluation, What Works Centre for Wellbeing.
[21] What Works Wellbeing (2017) What types of wellbeing training are effective in different sectors? Learning at work and wellbeing briefing.

6. Summary of Findings and Recommendations

Impact framework

6.1 The impact framework identifies a clear set of variables of importance for analysing the impact of PLA. Across several key indicators, however, the nature of management information (MI) captured undermines the ability to undertake an impact assessment. Refinements to the MI would lead to considerable improvements in the robustness of impact modelling.

Recommendations

1. That the highest qualification gained prior to learning become a mandatory field within the enrolment form for FE providers.
2. To better understand the scale and intensity of learning support received, refinements to MI should be made to ensure that the number of teaching hours is captured for each course in a robust and consistent manner.
3. The assignment of the sector subject area for approved courses should be revisited with the aim of reducing the proportion of courses assigned to 'generic/other' where it is appropriate to do so.
4. Amend the course application form for PLA to ensure that a CQFW-equivalent level of qualification is included and that this is captured in programme MI.
5. That learners who have undertaken multiple courses in multiple sector subject areas be removed from the impact framework.

6.2 At least two other stakeholder groups are likely to benefit from the PLA programme:

- Employers through upskilling the workforce and addressing those areas currently experiencing skills shortages
- FE colleges through the use of additional, upfront resources enabling the development and piloting of new or niche course provision to respond to the market demand.

6.3 For both groups, quantifying such impact will be incredibly challenging and in both instances would be better captured through qualitative research.

Recommendation

6. That the emphasis on quantifying programme impact be placed on PLA learners, and that qualitative research methods be used to explore the impact on other stakeholder groups.

Capturing evidence for the impact framework

6.4 Two key secondary data sources (in addition to the MI data captured for PLA learners) have been identified as potential routes to both measuring impact for those in receipt of support and identifying a suitable comparison group, namely the LEO dataset and the LFS.

6.5 LEO is a particularly robust dataset; however, the variables that it uses are primarily those that are inconsistently captured for PLA participants. Without the refinements to the MI, LEO could only be used to capture comparison group data (as the frailties in the MI data for participants (the intervention group) would be carried through to the LEO dataset). Furthermore, the LEO dataset suffers from a considerable time lag; thus, it is unlikely that comparable data for 2020–2022 learners will become available until 2025 (at the earliest).

6.6 The LFS would offer an alternative route to a comparison group. As a survey it has a smaller sample size than that of LEO (which captures information on all who participate in post-16 learning) and there is a risk that matching will impact the scale of the comparison group. However, the time lag is much shorter than that of LEO.

Recommendation

7. That in the short term the LFS be used to formulate a comparison group.

6.7 The current limitations of the MI and LEO highlight that the most appropriate route to capturing impact data for learners will be through a participant learner survey conducted c.12 months following learner enrolment. Adopting this approach will enable the tailoring of survey questions to overcome current shortfalls in MI and align with key questions within the LFS.

Recommendation

8. That a robust participant learner survey be used as the primary source of evidence for the intervention group.

6.8 There are indications of well-being effects from adult learning, and the PLA programme provides the opportunity to build on this evidence base.

Recommendation

9. That the ONS4 life satisfaction question be included on enrolment forms and revisited in the participant learner survey.

Methodological and matching approach

6.9 A quasi-experimental approach to measuring impact is the most suitable to adopt for the PLA programme, with three groups being considered most appropriate as a comparator or control group:

- Individuals who present similar characteristics to those of the treatment group who have not embarked on publicly funded post-16 learning provision within the study timeframe.
- Individuals who present similar characteristics to those of the treatment group who chose to embark on part-time learning available through FE colleges at similar levels of qualification (typically CQFW Levels 2–5) that did not form part of the PLA programme.
- Individuals who embarked on a course through the PLA programme but who failed to complete more than half of their course.

Recommendations

10. That all three comparator groups be piloted as part of an impact study (where data allow).
11. That propensity score matching be used to control for variation in the independent variables identified in section 2.
12. Where sample sizes allow, consider more targeted impact assessments by FE college, sector subject area, or national priority scheme.

Value for money

6.10 A social cost–benefit analysis framework is proposed for the assessment of value for money that aligns with the Treasury Green Book and its supplementary guidance.

6.11 Due to the wide variation in the nature (scale and intensity) of PLA courses, there is a need to consider a grouping or typology of provision.

Recommendation

13. That the SCBA model be run through groupings of sector subject areas or academic levels, but only where a course is recognised and can be matched to a sector and a qualification level.

Annexe A: Methodological Approaches

Regression discontinuity design (RDD)

One methodology alluded to previously (in section 3) as a potential approach to analysing impact is RDD. We have illustrated the role that this could play in the design for the evaluation. There would need to be additional supplementary matching of characteristics in this model to reflect, for example, the sector of learning (and employment) which would likely have a strong bearing on future earnings potential. As well as including the appropriate controls to properly quantify the impact of PLA, the nature of the programme presents other challenges which would need to be considered before implementing an RDD research design.

There are multiple eligibility criteria for the programme, two of which are continuous variables with clear eligibility thresholds which could be used in an RDD (age and earnings). Researchers would need to decide which of these continuous variables to use as a running variable for the design; in other words, is it more appropriate to compare PLA users with people who were slightly too young to enrol in PLA or with people whose income was slightly too high to be eligible for PLA? There is potential for both control groups to lead to very different final estimates of the impact of PLA. If the income threshold were to be used for RDD analysis (comparing people just above and just below the median income), verifying the validity of these results would require checking for clustering around the threshold. If there are a large number of PLA users reporting to have an income just below the eligible threshold, then the RDD estimate will be biased.[22]

Propensity score matching

Propensity score matching (PSM) is another (preferred) non-experimental approach that could be used to estimate the impact of the PLA programme. One appeal of the PSM approach is that it seeks to mimic an RCT by constructing a control group after the intervention.

[22] There are further details on which tests could be included to ensure that the RDD estimation is robust here: Frolich, M., Huber, M. (2017) Including Covariates in the Regression Discontinuity Design, University of Mannheim Discussion Paper, German IZA: Institute of Labour Economics

The propensity score is a balancing score which allows for close matching between the intervention group and a comparison group, and relates to the probability that a person (or unit) with certain characteristics within the comparison group will be assigned to the intervention group based on observed baseline characteristics (e.g. age, gender, ethnicity, prior qualification, occupation, etc.).

There are bias risks, as with all matching methodologies; as such, robustness tests of PSM are vital. Tests include looking visually at whether the matching has covered the range of propensity scores, estimating how robust the results are to unobserved bias (Rosenbaum bounds tests), and examining the balance of characteristics in the businesses and the proposed control group.

Analytical approach

Regression analysis

Following matching, data on PLA learners (the treatment group) and the matched comparison groups (from PSM) should be combined into one dataset with an identifier indicating whether individuals are in the treatment or comparison group. Thereafter, a multivariate regression would be estimated:

$$Y = \beta_0 + \beta_1 T + \sum \beta i Xi, \text{ for } i = 2, \ldots. n$$

Y: is the outcome variable being modelled.

Xi: represents a set of other potential explanatory variables used to match the treatment and comparison groups, plus potential variables with which to pick up the impact of local labour market conditions on the modelled outcome, as matching within the same areas is unlikely to be feasible.

T: is the treatment variable, which takes the value of 1 for all in the treatment group (learners) and 0 for those in the matched comparison group.

β1: represents the treatment effect of undertaking a PLA course on the modelled outcome variable.

The challenge with regression analysis is that it only technically captures the association between the independent and outcome variables. The reliability of the

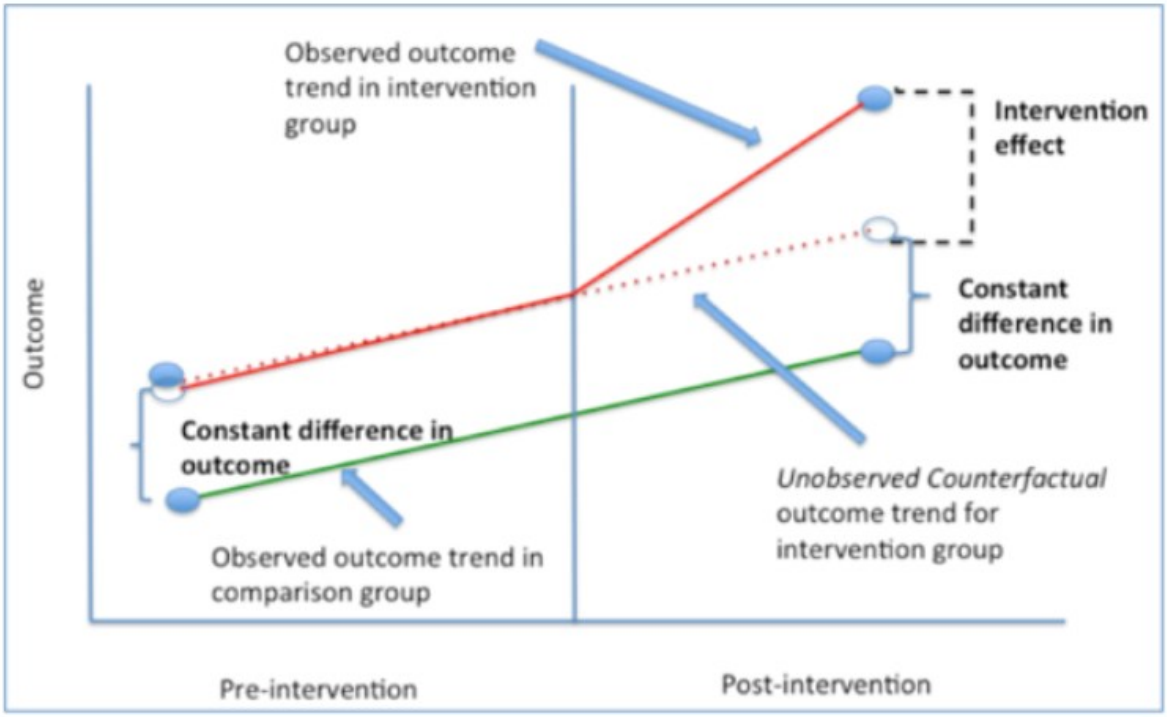
model is wholly dependent on the control variables that are applied as part of the process.

Difference in differences

Alternatively, the impact of the programme can be modelled using a difference-in-differences (DiD) approach, a version of a fixed-effect model in which a comparison is made in the changes observed in earnings over time in the treatment group and the control group. In short, the impact of the policy is the difference between earnings at T1 (pre-intervention) and T2 (post-intervention) in the treatment group minus the difference in outcome at T1 and T2 in the comparison group.

DiD, however, does rely on an equal trends assumption (see Figure 1 below). This means that the outcome variable has a similar long-term trend line for both the treatment and control groups before the intervention is applied. Matching methodology, such as PSM, can be used to construct a suitable control group as long as the equal trends assumption holds.

Figure 1: Difference-in-differences estimation, graphical explanation



An appealing characteristic of applying a DiD estimator is that not only are individual effects (unobservable traits that are different across individuals but fixed across time) eliminated, time or trend effects are also eliminated. This means that macroeconomic changes can be ignored, such as COVID-19 or the cost-of-living crisis, as long as those changes affect both participants and non-participants similarly to ensure that i) the equal trends assumption holds and ii) macroeconomic changes impact both groups in the same manner during the course.

This involves statistical analysis to control for the impact of other factors that might affect the observed changes in earnings. A control group or counterfactual is needed.

Regression with a continuous treatment variable

The breadth of the offer delivered through the programme makes capturing its effect very difficult. The PLA 'treatment' is not identical for each participant. As a learner-led initiative, it is incredibly broad in the nature of provision on offer. Learners are undertaking courses at a range of levels, with a range of intensity and a wide range of duration (and therefore costs).

One option to consider would be the creation of participation 'typologies' — essentially, agreed categorisations which could be run on the basis of course duration, course cost, sector subject area, or course level (or indeed a mixture of these elements). Thereafter, regressions could be performed against these categories. Whilst this would improve the likelihood of matching, there is a risk that narrowing the definition of categories may reduce the scale of the intervention group; testing parameters against learner numbers would be a key step in determining the breadth of categories designed through this approach. Moreover, different specifications could be run to determine whether certain provision generates a greater level of return for participants.

Variables for consideration in the preferred regression model

As alluded to previously within the report, we would recommend the running of a series of regression models to explore:

- Earnings changes over time
- Time in employment

- Life satisfaction

Explanatory or independent variables for consideration as part of the regression analysis would, subject to availability, likely include:

- Highest qualification prior to enrolment (although it should be noted that within the MI this is recorded for only 13 per cent of participants)
- Level of course provision (CQFW-equivalent – 2, 3, 4 and 5)
- Gender
- Ethnicity
- Whether a learner considers himself/herself to have a learning difficulty, disability, or health problem
- Prior attainment
- Number of teaching/learning hours
- Sector subject area
- Local authority area