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Key content

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The changing world of work: Pupils who are future-ready

Today’s learners will be entering a jobs market and workplace which will look very different from those of today. The changing world of work is being shaped by forces such as the increasingly rapid march of technology, a changing political climate, the continuing globalisation of the economy, and concerns about the sustainability of our way of life.

In this context, one question is being asked more and more frequently of our education system: how do we prepare learners for job roles and careers that do not even exist yet?

In a report entitled ‘The future of skills: Employment in 2030’ (Bakhshi et al, 2017), which addressed the future demand for UK occupations, Pearson, NESTA and the Oxford Martin School identified the top five most important workplace skills and abilities as:

- Judgement and decision-making.
- Fluency of ideas.
- Active learning.
- Learning strategies.
- Originality abilities.

There is a challenge here for education: how should these future skills and abilities be taught?

In response to this challenge, Pearson has created its Future Ready Framework, which sets out key stage 2 to 5 learning outcomes across four key characteristics. These Future Ready skills are:

- Forward thinkers (higher order cognitive skills).
- Digital superusers (excellent information age skills).
- Powerful influencers (superior communication and interpersonal skills).
- Most valuable players (strong leadership and team-work skills).

Schools can link the framework skills to subject teaching and learning activities across the key stage 2 to 5 curriculum (for example, Pearson has integrated the Future Ready Framework into its new Mastery in Science pathway).

The framework supports schools’ project learning approaches too, including the Level 3 Extended Project Qualification (EPQ) in Future Skills for Employability (worth up to 28 UCAS points) which includes resources such as a scheme of work to support teachers.

The project qualification is perfectly suited to the teaching and learning of Future Ready skills, as it encourages active collaboration, on-going discussion, negotiation, problem-solving, active research, practical decision-making, and self-reflective review.

This short guide aims to discuss what PBL approaches – including in the guise of qualifications such as the Level 1 Foundation Project Qualification (FPQ), Level 2 Higher Project Qualification (HPQ), and Level 3 Extended Project Qualification (EPQ) – have at their heart quality first teaching, effective teacher explanations and modelling. However, they also enable students to make choices about how to demonstrate their learning.

Running project qualifications at key stage 4 and 5 can also ensure students are assessed in a range of ways and are thus able to demonstrate their knowledge and skills holistically.

In this sense, project qualifications complement those GCSEs and A levels which are assessed solely by means of terminal examinations because they afford students the opportunity to engage in active collaboration, on-going discussion, negotiation, problem-solving, active research, practical decision-making, and self-reflective review.

What does effective project-based learning look like?

Project-based learning (PBL) – whereby independent projects are used as a means of assessment – can be very effective, not least in terms of developing students’ independent learning skills and thus better preparing them for the next stage of their education, employment and lives.

PBL approaches – including in the guise of qualifications such as the Level 1 Foundation Project Qualification (FPQ), Level 2 Higher Project Qualification (HPQ), and Level 3 Extended Project Qualification (EPQ) – have at their heart quality first teaching, effective teacher explanations and modelling. However, they also enable students to make choices about how to demonstrate their learning.

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Further information & resources


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Among these papers, Strobel and van Barneveld's research review (2009) noted that PBL is “significantly more effective than traditional instruction to train competent and skilled practitioners and to promote long-term retention of knowledge and skills acquired during the learning experience or training session”.

Elsewhere, Barron and Darling-Hammond (2008) note that: “Students who may struggle in traditional instructional settings have often been found to excel when they work in a PBL context.”

**Design principles**

One extensive literature review sought to identify the “design principles” of effective PBL. The review – Condliffe et al, 2017 – draws upon a wide range of research and lists the following crucial ingredients of effective PBL (for full references and further detail, see the original paper, pp S-12).

- A “driving” question: The PBL unit/curriculum should be motivated by a driving question. Driving questions are at the core of the project-based design principles. There are five criteria for high-quality driving questions: feasible, worthwhile, contextualised, meaningful, and ethical.
- Significant learning goals: A well-designed PBL approach should teach students the “important content standards, concepts and in-depth understandings that are fundamental to subject areas and academic disciplines”. It should expose students to “big ideas” and “should be authentic and related to important issues in the real world”. Learning goals should align to national standards.
- Promote learning: Projects are not the culmination of learning, but are the process through which learning takes place.
- Sufficient time: In-depth or extended investigations require a good deal of time. As such, PBL should take place over an extended period.
- Construction of knowledge: Projects should include “multiple solutions and methods for reaching solutions and should lead students to confront and resolve conflicting ideas”. PBL is understood as “involving students in the construction of knowledge, in-depth inquiry, and/or the use of problem-solving and critical thinking skills”.
- Student engagement: Teachers should begin PBL by cultivating students’ “need to know”. This can be done effectively by giving students roles in the project before then delivering background knowledge (this approach creates a “readiness or eagerness” in the students).
- Use scaffolds: “A key element of scaffolding is that the scaffold needs to be tailored to a student’s current level of understanding (not too much assistance, not too little).”
- Encourage student choice: The research notes the importance of student choice, autonomy, and authority.

The 2017 literature review also focuses on assessment, stating that “it is increasingly recognised that assessment plays a critical role in student learning when it is used to promote student reflection and inform instruction – thus educators are interested in assessments both for learning and of learning.” It cites three approaches that emerged from the review:

- Create a product that answers the driving question: Tangible products can include “physical models, games, plays, and computer programs”.
- Provide opportunities for student reflection and teacher feedback: Throughout a project, students – and teachers – should reflect on what, how and why they are learning.
- Present products to authentic public audiences: This can be highly motivating for students and can present opportunities for feedback and industry/community engagement.

**Evidence-based approaches**

Another review of research on inquiry-based-learning outcomes and best practices in PBL (Barron & Darling-Hammond, 2008) outlines evidence-based approaches to support these approaches in the classroom. These include:

- Clear goals and guiding activities.
- A variety of resources (e.g. “museums, libraries, internet, videos, lectures”).
- Time for students to share, reflect and use resources, including debating over information discrepancies.
- The use of evidence and a culture of collaboration, for example framing debates as productive conflicts and using public performances.
- “Formative assessments that provide opportunities for revision.”
- Summative assessments that support students in evaluating their own work against standards through revising and modifying work, redirecting energies, and taking initiative to promote their own progress.

**A PBL classroom**

According to Drayton and Falk (2001), individual classrooms in which teachers emphasise PBL – even when the rest of the school does not – tend to have the following characteristics or design principles. These principles have been adapted/quoted from Drayton and Falk (2002, p4):
Projects take the form of real-life problems and work within the context of the curriculum and/or local community.

Projects capitalise on the areas of students’ natural curiosity.

Data and information are actively used, interpreted, refined, digested and discussed.

Teachers, students and other key staff (such as the librarian) work together to plan projects.

The local community is connected with the project in some way, either as research material or audience, or indeed both.

The teacher continually models the behaviours required of the student-researchers.

The teacher uses the language required of the student-researchers on an on-going basis.

Students take ownership of their own learning from beginning to end.

The teacher facilitates the process of gathering and presenting information.

The teacher and students use technology to advance their project, both in information-gathering and presenting.

The teacher embraces PBL as both curriculum content and pedagogy.

The teacher and students interact more frequently and more actively than during traditional instruction.

Building a culture of PBL in your classroom also means recognising, supporting and teaching the role of metacognition. PBL also provides opportunities for students to develop life-skills such as resilience, character, team-working, collaboration and so on.

Community and social engagement

Another aspect of PBL – already alluded to in terms of creating “driving questions” and boosting student engagement – is the potential of this approach to promote students’ social and community engagement.

This is because, of course, the problems being tackled can be related to students’ local (and global) contexts as well as to the world of industry.

For example, in his introduction to the book Powerful Learning (Darling-Hammond et al, 2008), Dr Milton Chen talks about PBL classrooms in which “students are working in teams to address open-ended and complex questions, such as What is the air and water quality in your community? How would you design a school of the future? Or a hybrid car?”. An excerpt from the same book talks about the “authentic pedagogy” of PBL: “A growing body of research suggests that students learn more deeply and perform better on complex tasks if they have the opportunity to engage in more ‘authentic’ learning – projects and activities that require them to employ subject knowledge to solve real-world problems.” (Barron & Darling-Hammond, 2008).

Another recent investigation found that PBL using political simulations as part of a high school government course helped students to “learn content and skills through tackling authentic issues and problems” (Piper & Neufeld-Kaiser, 2018). These included simulations of elections, assigning students to advise particular interest groups, and placing students in roles as court justices and lawyers.

Back at Pearson, Dr Taylor acknowledges the potential of PBL to boost students’ engagement with their local community and wider social issues: “PBL starts when students and teachers ask questions that arise from their own interests and concerns about the world around them. This can mean engaging with the challenging social issues of the modern world in general or more immediate concerns arising from their perception of the needs of their local community. In both cases, learning becomes more real and meaningful as it grows out of a response to real-world problems.”

Projects: Three golden rules

- A genuine outcome: If students are to commit time and effort to their project, they need to know that there is a genuine outcome, a real audience and means of exhibition for their work. In other words, if students know their work is going to be put on public display, there to be critiqued by members of the public, including their family and friends, not just their teachers, they are more likely to work hard and produce their best quality work.

- Multiple drafts: In real life, when the quality of work matters, we rarely submit our first attempt at something. PBL enables students to positively engage with the drafting and redrafting process, and encourages them to make time for and recognise the importance of polishing work until it represents their best efforts.

- On-going assessment: Producing multiple drafts helps students to engage in formative assessment, learning from feedback and making gradual improvements. Redrafting also enables students to learn from each other by critiquing each other’s work. Regarded in this way, critique, far from being a distraction or added burden, becomes integral to the learning process. Critique can become a lesson in its own right, providing opportunities for the teacher to give instruction, to introduce or refine concepts and skills. Such lessons can also bring students’ misunderstandings to the fore, enabling the class to respond en masse.

Further information & resources


The disruption to schooling during the Covid-19 pandemic has accelerated the need to explore a wider variety of teaching, learning and assessment methods. It is undoubtedly true that those schools already running a Level 1 Foundation (FPQ), Level 2 Higher (HPQ) or Level 3 Extended Project Qualification (EPQ) have been at an advantage in terms of having robust evidence of students’ achievements when examinations were cancelled in 2020 and again this year. In fact, many schools who were not already running project qualifications, elected to run Pearson’s Project Qualification Express in order to provide a meaningful end to study during the partial school closures.

**Pearson’s PQ Express**

Pearson launched the PQ Express in April 2020 which – as the name suggests – is a fast-track approach to the qualification, meaning it can be delivered within a shorter timeframe. The PQ usually takes a year to complete, but the Express approach means that the same guided learning hours can be completed over a period of three to six months.

Students have the opportunity to undertake project-based work within one of four components: dissertation, investigation, artefact, or performance. The final part of their project is delivering a presentation on their chosen topic and the project management process. The PQ is equivalent to half an A level and is worth up to 28 UCAS points.

The PQ Express can be used at key stage 3 to provide students with the opportunity to complete small-scale project assignments as a means of exploring topics more deeply, as well as developing their project management and independent learning skills, and as a springboard to GCSE. It can be used at key stage 4 to complement GCSEs and BTECs and as a springboard to A level.

By the end of the PQ Express, students have a qualification on top of extra-curricular experience. Dr John Taylor, chief examiner of the Extended Project Qualification at Pearson, says that the project qualification “allows students to select questions and challenges that relate to their own interests and skills, which is a more meaningful and personal way of engaging with learning”. It “deepens the learning experience, delivers future-ready skills and promotes engagement”, he added.

**Case study: A little TLC**

TLC Private School in Cyprus operates a curriculum based on the English system. The emphasis is on preparing students socially and emotionally to become confident and resilient young people. PBL is at the heart of its approach.

More recently, the PQ Express has helped students at TLC during the pandemic at a time when schools were closed and exams cancelled. Many TLC students did a PQ Express during the time set aside for exam revision, giving them a meaningful end to their studies and a chance to gain a further qualification amid the disruption.

Principal David Lewis, who is also an EPQ tutor, explains: “The EPQ prepares students to become independent learners. This is achieved by introducing them to project management and providing them with an opportunity to identify their own research question or project brief, taking ownership of what they study and their own learning. The EPQ undoubtedly prepares students for the next stage of their educational journey and introduces them to the skills needed in later life.”

Louis, a year 12 student, said it had been “an extremely rewarding programme”. He added: “I have adored working on deep research projects and absolutely love the independence and organisation of this programme.”

**Further information & resources**

- Pearson PQ Express: https://bit.ly/3fhlj8Yq

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Pearson encourages learners to receive mentoring from volunteers who are experts on their chosen EPQ topic or are working in a relevant or interesting job – thus strengthening the links to industry and the workplace insights offered by the qualifications.

Mentors can enrich a student’s experience by giving them industry insight and supporting them to evidence the skills and knowledge required within the EPQ and to succeed in the world of work.

A mentor supports the project process in a non-assessor role and so is there to serve as a source of expertise for the learner to access. Crucially, a mentor does not need to be an expert in all aspects of the EPQ – they are there for the learner to utilise as a source of relevant knowledge of specific aspects of their project.

One way to find EPQ mentors is to use Inspiring the Future, an organisation that matches volunteers from the world of work to schools.

Young people aspire to be what they see around them in their everyday life, but it is difficult to aspire to a future that you never see and do not yet know exists. Inspiring the Future challenges this. They believe that every young person in the country, wherever they live, whatever their circumstances, whatever school they go to, should have the opportunity to hear first-hand about jobs and the world of work.

Inspiring the Future shows young people exciting futures. They give them the opportunity to meet with a wide range of role models doing interesting, exciting jobs to inspire and motivate them. They help students to understand that by aiming high and working hard they can realise their dreams.

Using their online match-making platform, Inspiring the Future connects schools and colleges with appropriate volunteers from a range of sectors and professions that match their requirements.

Pearson has also teamed up with Young Enterprise to enable more learners to complete a Pearson EPQ while participating in the Young Enterprise Company Programme, providing guidance for teachers and learners and training for their business mentors.

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**Links to industry and workplaces**

- Inspiring the Future: www.inspiringthefuture.org
- Pearson: Using Young Enterprise Company Programme to support the Pearson Edexcel EPQ: https://bit.ly/3997mMb

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Progression and preparation for HE or employment

One of the crucial advantages of the project qualifications is their role in preparing students for the next stage of their education, employment and lives.

Dr Emma Thompson, head of enhancement at the University of Southampton and a strong advocate of PBL, says that the approach provides an opportunity for students to “take ownership of their own learning and explore issues beyond the curriculum that they have a genuine curiosity and passion for”.

She continued: “It allows students to develop an important set of skills that prepares them for their futures beyond school by encouraging them to take a critical approach to learning, challenging rather than accepting conventional wisdom.”

PBL teaches students the skills they need in higher education, including “independent learning, proactivity, self-awareness, initiative, independent thinking, critical thinking, motivation, commitment, communication (written and verbal), numeracy, literacy, presenting, time-management, intellectual flexibility, problem-solving, research skills, critical analysis, referencing, academic writing (structure and prose), project management, source management, and referencing”.

“They are brilliant,” Dr Thompson added. “We have had students for access programmes submit examples of exam scripts as evidence of their writing work, whereas others have submitted EPQs and the difference in what we can see is phenomenal. The quality of their writing and the depth to which they can reach is impressive – it shows far more than an exam script ever can.”

Nick Brown, head of MFL and EPQ at Lincoln Castle Academy in Lincoln, said that PBL is “a learning process in itself” because it puts students in the driving seat by allowing them to choose an area of interest to study. PBL provides a framework in which “students can achieve by presenting their learning in the form of an essay, artefact or performance”. Thus PBL enables students to “drill-down and explore an area in depth, bring out their interests and refine their skills, such as research and summarising – skills that are valued by the future employer or university”.

The benefits of studying a PBL qualification, Mr Brown says, include “contacting students in another country, problem-solving, organisation and many other soft skills – and researching and then writing or recording for a purpose”. Unit 1 of the EPQ, for example, allows students to study and discuss a subject area of interest to them which is then to be presented as a dissertation. This, Mr Brown explains, could be alongside the current GCSE or A level, allowing students to “dig deeper than the current curriculum offer and gain vital insight”.

PBL can also “bridge the gap between GCSE and A level”, according to Mr Brown. For example, in MFL, “a topic could be – To what extent has French cinema impacted on the world stage? – which will build upon the study of one film at A level”.

But, as well as bridging the gap between GCSE and A Level, PBL qualifications can better prepare students for further study, university and employment. “Imagine a student wanted to study a subject at university that isn’t offered in schools,” Mr Brown explained. “EPQ could offer that option and demonstrate the student’s commitment to that area of study.” And, of course, he reminds us, the skills that EPQ teaches students are “strongly valued” by employers.

Dr Thompson echoes this, adding that it was “refreshing to see students’ curiosity and personality coming through in their explorations”. She said that students who have had the opportunity to engage with PBL before coming to the university, particularly through Level 3 qualifications, are “much better prepared for the rigours of academic study”.

She continued: “Very simply, students are able to hit the ground running because they already understand that the pursuit of knowledge is not just about the acquisition of it; rather it is about challenging and critiquing in order to further develop it – standing on the shoulders of giants.”

“We also see students presenting with higher UCAS tariff points, not just because of the additional UCAS points students acquire through doing the qualification, but from their best three A levels too.”

“It is the opportunity to engage with challenging projects. They are brilliant. We have had students for access programmes submit examples of exam scripts as evidence of their writing work, whereas others have submitted EPQs and the difference in what we can see is phenomenal.”

Project Qualification at Pearson, added: “Employers look for employees to be learners – people who can think for themselves and find their own way through problems. These skills are developed by engaging with challenging projects. “Because the world of the future will require people to have the capacity to deal with deep, open-ended questions and challenges, projects can reign supreme.”

The PBL learning model is also, Dr Taylor says, “inherent within the project qualification and this is what higher education uses – a model based on independent learning”. Universities, therefore, “value students who have learned that learning is not just about jumping through exam hoops – they want learners who are inquisitive, creative, capable of inquiring, able to use critical thinking, willing to persevere when the answers are not obvious”.

He added: “These attributes are developed through qualifications such as EPQ, which is why universities value learners who have studied this or other project qualifications.”

At The Sweyne Park School in Essex, the EPQ is taken as a fourth subject alongside A levels. Jenny Clements, an English teacher and HPQ/EPQ coordinator, told us: “In my school context, students take part in fortnightly research sessions as a large group of around 110 students, and then others have submitted EPQs and the difference in what we can see is phenomenal.”

“Important for us is how students perform once they are with us. The data we have shows that there are higher proportions of EPQ students (compared to non-EPQ students) making the progress from first year to second year and similarly higher proportions of EPQ students achieving first-class and upper second-class honours.”

Dr John Taylor, chief examiner of the Extended Unit 1 of the EPQ, for example, allows students to study and discuss a subject area of interest to them which is then to be presented as a dissertation. This, Mr Brown explains, could be alongside the current GCSE or A level, allowing students to “dig deeper than the current curriculum offer and gain vital insight”. PBL can also “bridge the gap between GCSE and A level”, according to Mr Brown. For example, in MFL, “a topic could be – To what extent has French cinema impacted on the world stage? – which will build upon the study of one film at A level”.

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Dr John Taylor, chief examiner of the Extended
ONE SCHOOL which has embraced PBL as a means of preparing students for the future is Marlwood School in South Gloucestershire. Ofsted has praised Marlwood for its curriculum approaches and encouraging students to “think deeply”. Headteacher Del Planter is passionate about making sure his students develop the skills, knowledge and behaviours that they need to succeed.

In January 2021, Marlwood launched a new programme for key stage 3 computing which covers core curriculum content and ensures students have the skills, knowledge and confidence to take a GCSE in computer science or a BTEC in digital information technology. This programme follows a PBL approach, with the key stage 4 Computing Programme of Study delivered using Pearson’s Level 1 Foundation Project Qualification (FPQ). The FPQ provides a means of teaching skills and an end-point assessment for the course.

PBL is not an alternative to high-quality teaching, rather it is a means of helping students to become increasingly independent once the teacher has delivered the instruction – and a means of assessing students’ learning without high-stakes terminal examinations. Marlwood’s course has been designed to be delivered via Google Classroom, so teaching and learning can take place during timetabled lessons in the computer lab or remotely. Such an approach has been invaluable in the pandemic. But it is not just about ensuring a child’s education can continue in the event of self-isolation or schools partially closing, it is about providing a variety of learning modes and assessment methods in order to ensure students are fairly and holistically assessed.

Pearson created a scheme of work to assist with Marlwood’s pilot programme and has provided an online toolkit of resources, including templates and checklists, which will enable schools to deliver PBL courses online. Pearson is also training IT teachers at Marlwood to help them use lessons to deliver this scheme of work to more than 200 students from years 7, 8 and 9. Students will study the key stage 3 scheme of work with their teachers and then complete small-scale project assignments as a means of exploring topics more deeply, as well as developing their project management and independent learning skills.

For example, a student might be asked to work collaboratively to develop a video on e-safety, which would meet the expectations of the key stage 3 scheme as well as helping to facilitate the development of key project skills for the FPQ.

Students will then work on a larger scale project for which they will be expected to choose their own title, carry out research, engage in critical analysis of ideas, and reflect on the learning process. Students can opt to produce written reports, artefacts or performances in order to demonstrate their learning.

By the end of the course, students will have gained a Level 1 FPQ, equivalent to half a GCSE. Mr Planter told us: “Combining the project qualification approach with the development of staff confidence in delivering the curriculum affords us the opportunity to provide a sustainable, engaging and meaningful curriculum experience for our students in an area which plays a vital role in their lives as well as the local economy.”

Marlwood provides the perfect example of how the FPQ can provide a framework for project skills development and subsequent assessment, leading up to an accredited qualification that forms the end-point of the project computing course.

As we have already explored in this guide, a main advantage of PBL is the fact that projects offer an opportunity for a more engaging learning process, one which allows students to pursue their own interests, develop their critical thinking, research and employability skills, and which links learning to the real world.

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