



Effective blended teaching and learning approaches

Background

The Welsh Government plans to respond to the disruption to student learning caused by Coronavirus-related school closures by committing £150 million in 2021/22 via the Renew and Reform programme. This includes a £35.8 million commitment to recruiting, recovering and raising standards in Welsh schools (Welsh Government, 2020a). The success of this approach will be affected by (among other things):

- The way that experiences of distance and blended learning are built on and potentially developed going forward;
- The methods and models of 'catch-up' support provided; and
- The design, delivery and uptake of teacher professional development.

This policy briefing reviews the best available evidence on blended teaching and learning approaches. It should be read in conjunction with the other two policy briefings in the series, on catch-up interventions and professional development.

Executive summary

Blended teaching and learning can be an effective educational pedagogy involving both face-to-face and remote learning opportunities. While there is limited research on its use in compulsory education settings, the recent need to engage in Emergency Remote Education around the world due to the Coronavirus pandemic has resulted in rapidly developing practice and a growing literature which can

inform the future development of blended teaching and learning in Wales.

This briefing considers the current evidence on effective blended teaching and learning and examines the challenges of the remote aspect, as they impact the Welsh Government's Recruit, Recover, Raise Standards programme and the current Renew and Reform agenda (Welsh Government, 2020a; 2021a). It prioritises literature on compulsory education in the UK, from age 3-18, during the Coronavirus pandemic (see Annex 1 and 2 for further information on the research methodology and limitations). Evidence from other sectors and countries is included where relevant.

Key insights from the literature and recommendations include the need for digital equality and teacher professional development, and the use of **Universal Design for Learning** principles (a teaching framework that aims to give all students an equal opportunity to succeed).

What is blended teaching and learning?

Blended teaching and learning is a well-known but problematic term in so much as there are a range of definitions and categorisations of it (Oliver and Trigwell, 2005). For the purpose of this review, we consider it to mean a **purposefully designed combination of in-class and remote learning**. The remote element typically consists of online learning activities completed outside school. Alternatively, it can involve offline digital or

paper-based activities such as work-packs, or a combination of offline and online activities.

Organisations such as the Open University have championed blended teaching and learning for many years, and this has included the use of radio and television broadcasts. However, schools often access resources (such as BBC Schools) online rather than via scheduled programming, and therefore remote provision now relies heavily on online tools.

The remote learning element, as with in-class learning, is set and guided by teachers. Teaching can be undertaken either synchronously (at the same time as student learning) or asynchronously (before and/or after student learning). Where students engage in asynchronous activities, they are able to choose the time, place, path and pace of the activity, in conjunction with other commitments.

Importantly, the remote aspect of blended teaching and learning is not the same as homework which is traditionally a given set of activities to complete away from the classroom and designed to reinforce and enrich skills and knowledge taught during the school day.

Educational inequality, particularly around digital resources at home, have impacted on the consistency with which students have been able to engage with learning.

It should be emphasised that there is a substantial difference between the pedagogy of blended teaching and learning and of Emergency Remote Education (ERE). ERE describes the sudden move to remote learning in early 2020, which teachers and schools had to rapidly develop in response to the Coronavirus pandemic. The term ERE also reflects ongoing uncertainty about the nature of education provision in the short to medium term. However, there is significant opportunity to

inform the use of blended teaching and learning in Wales going forward with research- and practice-based insights based on educators' experiences of ERE.

ERE and blended teaching and learning

ERE is concerned *only* with the delivery of remote learning. It captures the urgency with which teachers and schools had to change the mode of education at the start of the pandemic and subsequent waves of infection from in-class to remote learning, without the blend of face-to-face interaction, for large periods of time.

With blended teaching and learning, the teacher purposefully designs for *both* face-to-face and remote learning. When teachers and students return to school from ERE, the teaching will likely return to being classroom focused. ERE therefore cannot accurately be described as blended teaching and learning, although insights developed through ERE can be useful in relation to blended practice.

Current context and blended teaching and learning going forward

Since the end of March 2020, as a result of the Coronavirus pandemic, schools in Wales have had to turn to remote teaching and learning provision for long periods of time as stay at home rules were put in place. Most of this teaching has been in the form of ERE, using a range of approaches such as online synchronous activities, asynchronous activities (online or offline), and often a blend of all of these. This has brought blended teaching and learning approaches to the front of the minds of educators and policymakers both as they manage the current learning crisis and plan for the future development of education.

The development of the Hwb national learning platform facilitated the transition to remote teaching and learning in Wales, and during the

Spring / Summer of 2020, documentation was produced by the Welsh Government and Local Consortia to support the adoption of blended teaching and learning approaches in schools.

This builds on existing initiatives across the Welsh education system. For example, **e-sgol** is a blended learning initiative to deliver online teaching and learning opportunities to post-14 and post-16 learners, which aims to increase the number of subjects available through the medium of Welsh. It initially focused on rural schools to increase the accessibility of low-uptake subjects. The Digital Competence Framework has been in place in schools in Wales since 2017, however this emphasises more generic skills and learner knowledge rather than competencies of teachers and pedagogies. The **Digital Professional Learning Journey** was developed in 2021 to support effective implementation of the Digital Competence Framework, by providing a structure to help schools 'develop and implement their vision for digital learning'.

Blended teaching and learning offers several advantages for students over purely classroom-based learning or purely remote learning (see below for further information), but in the context of the pandemic most students have relied on ERE, which has meant that these advantages have often not been realised. In the context of Coronavirus, it is clear that teachers were limited in their ability to plan for or deliver effective blended teaching and learning, and that there were significant challenges for students and their families in how they were able to engage with the learning approaches offered by schools.

Educational inequality, particularly around digital resources at home, have impacted upon the consistency with which students have been able to engage with the provision. The statistics on digital inequality are stark, with an estimated one million children in the UK not having access to digital devices and connection at home prior to the Coronavirus pandemic. This has necessitated a range of additional support mechanisms being put in place to supplement online learning in Wales, such as printed work packs, the **distribution of laptops and other**

digital devices, and 'Stay Safe, Stay Learning' guidance for ensuring continuity of learning amongst other things, particularly for digitally excluded learners (Welsh Government, 2020b). A digitally excluded learner is defined by the Welsh Government as 'a learner who does not have access to an appropriate internet connected device to engage in online learning activities from home' (Welsh Government, 2021b).

The impact of issues of access and provision such as these have been demonstrated in the literature. For example, WISERD's (2021) 'Life in Lockdown' study found that 47% of young people in years 7-12 stated they were working five days a week but 28% reported only doing three or less days per week. Each week, only 15% of students reported completing 20+ hours of work (a timetable week in school is approximately 25 hours of lesson time), with 41% reporting completing fewer than ten hours per week.



Evidence suggests that certain groups of learners have been particularly affected by the shift to remote learning, including those with additional learning needs and those eligible for pupil premium (the England equivalent to the Pupil Deprivation Grant in Wales) (NFER, 2020). The Centre for Economic Performance estimated that an average of 124 classroom days were lost to students between March 2020 and April 2021 (Major, Eyles and Machin, 2021). When considering the learning undertaken at home, these losses constitute an average of 66 days learning per pupil in Wales. The study also showed that there was a significantly greater impact on pupils within the lowest fifth income

bracket, who missed approximately 10% more learning than those in the highest fifth income bracket.

However, while certain groups have been particularly affected, the Coronavirus pandemic has affected *all* students in Wales regardless of socio-economic status: 'Evidence from a range of reliable sources (OECD, ARC, Estyn, the regions, Sutton Trust, Children's Commissioner, Barnardo's, International Intelligence Updates), including those focusing closely on Wales, suggests that most or all learners have been affected' (Welsh Government, 2020a).

Local consortia and Estyn advise a 'blend of in-school and distance learning' on return to school and outline how schools should 'evolve their current distance learning models to include in-school face to face contact' (Regional School Improvement Consortia and Estyn, 2020, p.3; p.6). However, current advice and support provided for and used by schools in Wales in terms of blended teaching and learning approaches relate to ERE-type provision as opposed to a fully planned and integrated blended teaching and learning provision (e.g. Welsh Government, 2020b; 2020c).

Based on the impacts outlined in the literature of the impacts of ERE on learning and access to learning, if blended teaching and learning is to be taken forward in the Welsh education system more broadly (that is, beyond ERE provision), it is important that any changes and developments are grounded in the best available evidence, to ensure effective and equitable delivery.

The benefits of blended teaching and learning

The international literature demonstrates that learning can be enhanced through a blended approach in non-pandemic circumstances. For example, research into students of higher education institutions often find increased student satisfaction for courses in which both traditional classroom and online methods are employed, compared to when just face to face learning takes place (Dziuban and

Moskal, 2011; Dziuban et al. 2011; Dziuban, 2018; Means et al. 2013; Zhao, 2005).

However, as Hodges et al. (2020, p.1) state, these 'well planned online learning experiences are meaningfully different from courses offered in response to a crisis or disaster'. **Blended teaching and learning therefore has much to potentially offer teachers and learners in Wales, if it is embraced as the new normal,** rather than as a response to a short-term period of crisis management.

One significant advantage of blended teaching and learning is that it allows time spent in the classroom to consist of more active and learner-centred pedagogies. Active pedagogies refer to where students are working with teachers and with each other to develop their own learning. Blended teaching and learning allows for this due to students having spent time remotely being exposed to core knowledge or skills, whereas classroom teaching in isolation needs to cover the core knowledge in the lesson as well as the practical development of it (Kaur, 2013). In light of the new Curriculum for Wales, which offers a crucial opportunity for broader scale change to the education system, this may allow teachers the flexibility to develop more project-based or thematic style units of work, utilising remote learning as well as in-class provision to support the learners.

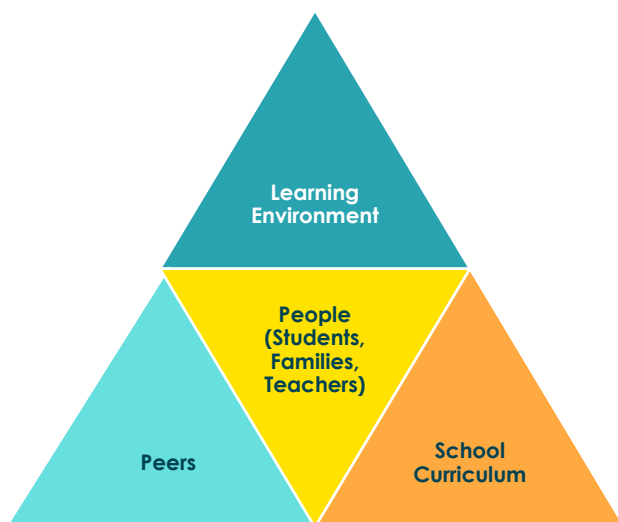
Blended teaching and learning also provides opportunities for students to engage in ongoing collaboration, unbounded by place or time (Sun et al., 2017). Learning materials can be used by students again and again, allowing them to re-engage with content as and when they require it, both in and out of school.

Effective blended teaching and learning

For blended teaching and learning to be successful, teachers and students require a range of skills in addition to access to and ability to use the chosen technologies. As a result, any broad scale shifts in the education system in Wales would need to be met with training in new

pedagogies to fit this new style of blended teaching and learning (Sahlberg, 2020).

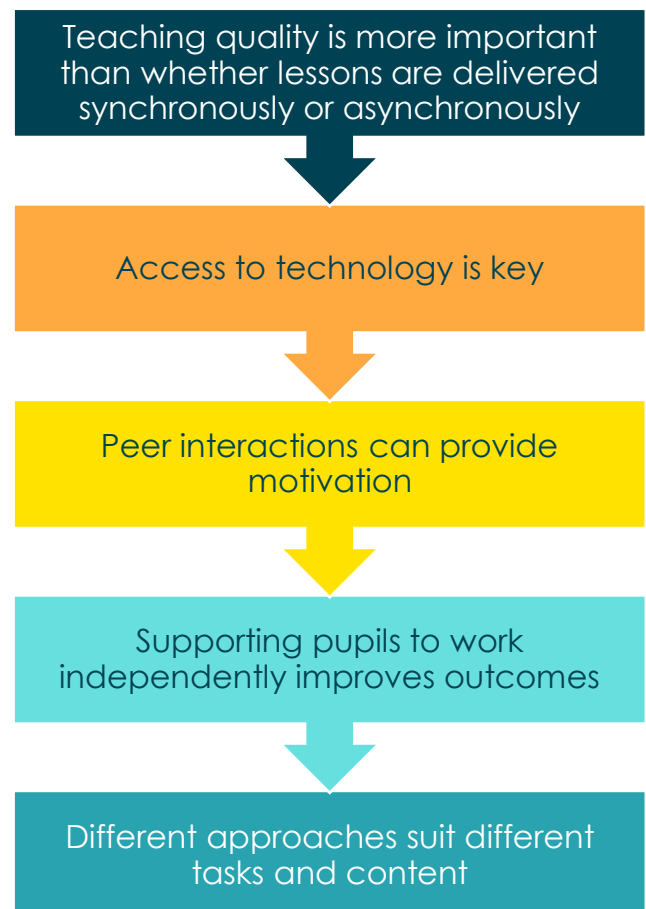
Bond's (2020) international review of ERE found that the majority of studies focused on teachers and those that involved students and parents were mainly focused on secondary school level. Across the studies, teachers, families and students themselves were seen as the most influential factors for student engagement in ERE, followed by schools, curriculum, learning environment and peers. These factors are also replicated in blended teaching and learning studies which have been conducted in both primary and secondary settings. This suggests that effective approaches to blended teaching and learning need to take into account families, as well as teaching and students.



Influential Factors in ERE Student Engagement (Bond, 2020)

Ensuring learners feel connected to teachers and are given adequate support to adjust to remote learning methods are both important factors for effective blended learning and teaching approaches.

In April 2020 the Education Endowment Foundation completed a rapid evidence assessment of remote learning (in general, rather than in the context of a crisis) and identified five key insights to support schools moving forward. These can be summarised as:



Five key insights to support schools in delivering blended teaching and learning (EEF, 2020)

Kaur (2013) considers the three factors of blended teaching and learning to be those of the **learning environment, the media used and the instructional methods**. She emphasises the need to develop media and pedagogy that work for the specific learning context, ensuring planning for a blended teaching and learning approach in its full sense.

The OECD state that in order for schools to move forward with future blended teaching and learning approaches, governments must focus on three key areas: **quality of provision; equity of provision; and the wellbeing of young people**, which are explored in the following sections. Bond's (2020) international review of ERE similarly highlights the

importance of equity, as well as **professional development, collaborative learning activities, and using a combination of synchronous and asynchronous approaches**. However, the OECD note that there is not a one size fits all solution to any future requirement for remote provision, and each country, school and situation must be considered along with stakeholder consultation when developing any policy. As schools begin to implement the Curriculum for Wales, a school-led curriculum, aspects of remote learning may well feature in their provision as a potential way to enhance and enrich opportunities for learners. The **Schools as Learning Organisations** model provides a potential source of support and guidance for schools moving forward as part of this process.

Quality of provision

Teachers require what Graham et al. (2019) describe as 'blended teaching competencies' in order to design and implement high quality, effective blended teaching and learning. These competencies include technological skills, pedagogical skills and assessment skills. Graham et al. found that there should be an emphasis on creating a collaborative learning environment and options for developing personalised learning pathways – which depend on further teacher skills that a blended teaching and learning approach necessitates. Other pedagogical methods of note as part of a blended teaching and learning approach include metacognition (thinking about one's thinking), and scaffolding (providing successive supportive strategies to encourage greater and more independent understanding), along with effective feedback (Muller and Goldenberg, 2021).

Research in Ireland during the pandemic found that secondary school students' engagement was predicated on teachers fostering collaboration and a sense of community amongst students; providing students choice by offering information in more than one format; supporting students' understanding of new concepts; and providing guidance for manipulating and processing information (Devitt

et al. 2020). Student engagement was further enhanced in schools in low socioeconomic settings when teachers offered learners individual choice and autonomy in directing their learning and promoted expectations and beliefs that optimised motivation and self-regulation (ibid). However, the study authors note that not all students have the necessary skills to self-direct their learning.

A recent Wales-based study (Marchant et al., 2020) recommended that some changes to the learning environment and teaching practice observed during the pandemic and phased return to school are adapted more permanently. Their study of primary teachers in Wales highlighted the benefits of, for example, smaller class sizes both in terms of learning progress and support for student wellbeing.

Further evidence to support these factors relating to quality of provision has been found during ERE, and **Universal Design for Learning** principles appear to provide a valuable starting point for blended and remote learning to ensure student engagement (CAST, 2018). Universal Design for Learning is essentially the planning and design of a curriculum that reflects and supports every learner and their own unique strengths. This framework includes notions of support and challenge for all students and ensures that no learner is disadvantaged, meaning it is a fully inclusive framework. Universal Design for Learning principles could be applied to the development of the Curriculum for Wales in schools, allowing a range of pedagogic approaches (synchronous or asynchronous), to be used by teachers and schools.

Technology-related competencies that form part of overall blended teaching competencies require teachers to be upskilled in the range of digital tools available, as well as in how to plan and deliver the home learning sessions – rather than relying on parents to also become teachers (Carpenter and Dunn, 2020). Welsh data suggests that these skills may not be evenly distributed across the teaching workforce: while 63% of respondents to the 'Life in Lockdown' survey (WISERD, 2021) stated they did not use

Hwb, Hwb reported over **50 log ins per second** and record log-ins during the pandemic.

Teacher wellbeing also impacts the quality of provision and should be considered alongside teacher competencies. Jerrim (cited in Bond, 2020) raises concerns about teacher wellbeing and the impact of working exceptionally long hours to deliver remote learning, often on top of teachers' usual workload. Unsurprisingly, teachers who already had a range of digital competencies experienced less stress as a result of the sudden shift to remote online learning than those who did not (Peterson et al., 2020). However, even experienced teachers reported finding the sudden pivot to remote online learning challenging (Putri et al., 2020; Trust and Whalen, 2020). This indicates that teachers need to be equipped with the relevant skills to deliver remote teaching, and also be adequately supported to ensure quality of provision and effective delivery without unreasonable extension to their workloads and wellbeing.

Equity of provision

Whilst ERE has presented challenges to all learners, its impact has presented different challenges (and sometimes advantages) to different learner groups, which bear significance for ensuring equitable provision now and in the future.

The need for students to have suitable digital infrastructure (devices and connections) to facilitate blended teaching learning is essential. In Norway, Bubb and Jones (2020) found that pre-investment in technology set schools up to succeed over the first period of school closure, and most pupils and teachers found their digital skills improving over that time. In Wales, funding has been given to both the Hwb platform since its inception in 2012 and recently to local authorities to provide devices for digitally excluded students to continue learning during Coronavirus school closures, and the Digital Competence Framework has been part of the curriculum for several years. Alternative methods of accessing Hwb, such as by using a

PlayStation or Xbox, have also been facilitated, which increases the access of students (and particularly students in families with multiple children in school) to suitable digital infrastructure. However it is likely there are still students without adequate connection or devices to develop an effective blended teaching and learning approach longer term.

In order to effectively engage students, as well access to digital devices, learners also need independent learning skills such as being able to manage their own time effectively – this applies more for secondary school students but also for older primary students. Whilst the literature highlights that some students have benefited from the opportunity to take greater ownership of their own learning (Bubb and Jones, 2020), and that ERE has provided an opportunity for some families and schools to develop stronger relationships (Whittle et al., 2020), this depends on students receiving adequate support to develop their skills, which some students may require more than others.

Parents' skills and their ability to support remote learning is a further key factor in ensuring the equitable provision of remote learning.

For example, NFER (2020) reported that there was almost a 20% difference between student engagement and completion of work during the Coronavirus pandemic between those in the most and least deprived schools in England. They also reported that certain groups of learners engaged with learning substantially less than others, including those with limited IT access and study spaces; those with additional learning needs; those eligible for pupil premium (the England equivalent to the Pupil Deprivation Grant in Wales); vulnerable pupils; and young carers. These differences highlight key considerations and target learner groups for

ensuring equitable provision of remote and/or blended teaching and learning going forward.

There is limited but increasing research into specific learner groups and how they have been and continue to manage with the changing nature of learning as a result of the Coronavirus pandemic. It is important to consider that the wider cultural changes as a result of lockdowns will also have impacted learners' wellbeing and education, and what learnings can be taken forward. There is conflicting evidence with regard to students with additional learning needs, most notably around those with complex needs or those on the autistic spectrum. For some, there is a preference for home learning as this limits the anxiety caused by the social situations in school, which often then manifest in disruptive behaviours either in school or at home after a school day (Reicher, 2020). The energy expended by many students in self-regulation when faced with the constant sensory overload of school is no longer a factor and they can focus on their learning in the safe space of home, which presents a potential benefit for continued blended learning approaches for certain learner groups.

Poor quality as well as often inappropriate resources were two of the main concerns shared by parents about provision for their children with additional learning needs during both lockdowns, leading to broadly negative experiences around teaching and learning (Shaw and Shaw, 2021). However, they also reported positive elements, including spending time with their children and their children being less anxious learning at home.

Conversely, Canning and Robinson (2021) found that for many students with additional learning needs, the invasion of school into that safe home space caused extra anxiety and a refusal to undertake schoolwork at home. Additionally, the change in routine to fit into a home environment can be unsettling, and the need to be onscreen for many sessions can also create sensory overload for some groups of young people. For example, support by outside agencies having to move to being provided virtually during lockdown, and no longer in a neutral space, has caused confusion for some

young people. In schools, the way in which teachers and school were only able to offer virtual support has removed the physically present contact that is often so successful in supporting learning. These considerations should be taken into account when planning for continued blended teaching and learning in Welsh schools.

Parents' skills and their ability to support remote learning is a further key factor in ensuring the equitable provision of remote learning, particularly for primary age children who do not have the independent learning or technical skills required to engage and self-regulate (Flack et al., 2020). WISERD's (2021) 'Life in Lockdown' study found that 70% of respondents reported their parents rarely or never helped them to complete tasks, which emphasises the inequality of adult support which remote learning can result in.

The Romani Arts commissioned report 'Moving for Change' (Jones, 2021) describes how there have been higher levels of disengagement during lockdown by children from traveller communities, partly because of a lack of devices and internet access, but also due to lower literacy rates of families and a culturally lower level of importance placed on traditional school-based education. Often, traveller communities struggle with consistent educational provision when moving location. Blended teaching and learning could facilitate this in the future, provided digital access could be secured along with the continued building of relationships between communities and education professionals.

The OECD (2020) recognise equity of provision as being paramount to the effectiveness of blended learning, along with parental support for the process. They advise that a hybrid model of suitable blended teaching and learning could be an effective way to support learners in the return to school. However, these findings indicate a need to better understand the differential impact of remote teaching and learning on different learner groups if blended teaching and learning is to be adopted more widely post-pandemic in Wales.

Chapman and Bell (2020) consider how we can best counter the reality of the lack of equity between socio-economic groups and how the more disadvantaged have been disproportionately affected by this pandemic. This is not a new phenomenon, but the pandemic has amplified our awareness of it and solutions such as the provision of digital access and organising extra support staff to help with the catch up and recovery programmes will assist in addressing equity-related issues.

The wellbeing of young people

The impacts of ERE have affected much broader issues than lost learning time alone. Van der Spoel et al. (2020) found that teachers were concerned about their students as they had lost opportunities to engage one-to-one. The literature shows a range of issues experienced by students from sleep issues to increased oppositional behaviour, all of which can negatively impact learning (Bond, 2020). Also significant in the literature was a sense of missing the social presence of schooling in general (Pietro and Madonna, 2020; Whittle et al., 2020). However, studies have also pointed to reduced anxiety and improved self-esteem for some students who usually experience school-related stress (Asbury et al., 2020; Bobo et al., 2020).

The shift to ERE has highlighted some of the risks of increased remote learning in terms of student wellbeing, which effective approaches to blended teaching and learning should be mindful of. In Wales, 42% of young people surveyed in the 'Coronavirus and Me' study (a survey of 2,000 students aged 7 to 18 years in May 2020) said that school closures had impacted them, and 72% said that not spending time with friends was a concern for them (Children's Commissioner for Wales, 2020). However, whilst 58% reported they felt safe, 40% reported feeling worried, which in turn will impact wellbeing. A follow-up survey conducted in January 2021 showed some notable differences in reported feelings, including a drop from 50% to 39% of 12-18 year olds feeling happy 'most of the time', and an increase from 14% to 20%

feeling worried 'most of the time' (Children's Commissioner for Wales, 2021). The 'Life in Lockdown' study (WISERD, 2021) reported that 90% of respondents miss their school friends and 46% missed their teachers.

In-school contact also remains essential for safeguarding many young people, as many issues only become apparent when noticed by educators who see pupils daily, and without some face-to-face time in school these could be missed (Pearce and Miller, 2020).

While these findings would be less relevant for blended teaching and learning (where there would be a mix of both face to face and remote learning) compared to ERE, the potential impact of changes in learning practices and mediums on the wellbeing and safeguarding of learners would still need to be a key consideration.

For example, the limited research on student voice has found that students feel they have more access to the support of their teachers when in school (Babinčáková and Bernard, 2020). Furthermore, some learners have felt overwhelmed by the amount of work set remotely during the pandemic (Popyk, 2020). This finding was further explored among learners in Wales in the 'Coronavirus and Me' study, which found that 51% of students felt confident with online learning and 25% lacked confidence; 54% worried about falling behind; and only 11% of 12-18 year olds said they had no concerns about their education (Commissioner for Wales, 2020). The same survey found challenges around digital access and the home environment to be the main areas reported in terms of barriers to learning.

These findings suggest that ensuring learners feel connected to teachers when learning remotely, and ensuring learners are given adequate support to adjust to remote learning methods are both important factors for effective blended learning and teaching approaches.

The Welsh Government's 'Stay Safe. Stay Learning: Continuity of learning policy statement' acknowledges the challenges to young people's health and wellbeing presented by the pandemic (Welsh Government, 2020b). The statement outlines a framework to

headteachers, teachers and teaching assistants on supporting wellbeing, built around the Five Ways to Wellbeing model, which is used by the NHS and MIND (Aked et al., 2008). The key actions identified by the model relate to social relationships, physical activity, awareness, learning and giving – namely:

1. Connect
2. Be active
3. Notice
4. Keep learning
5. Giving

Whilst disseminated by the Welsh Government as wellbeing advice during the Coronavirus pandemic specifically, the Five Ways to Wellbeing model was developed based on evidence relating to contributing factors to wellbeing generally. It should therefore be incorporated into the development of the Curriculum for Wales, with whole school importance, to ensure young people's wellbeing is at the core of the new curriculum and education practices going forward.

Insights and recommendations

There are a number of insights that can be drawn both from the emerging landscape of the impact of the Coronavirus pandemic on teaching and learning, and established research on effective blended teaching and learning approaches. Lessons learned from the evidence on both blended teaching and learning and ERE are needed to inform the post-pandemic response within education. These include:

- ERE is substantively different to blended teaching and learning, with a unique set of challenges and opportunities for learning. While there are some indications that ERE is associated with both gains (developing digital pedagogy, skills and knowledge; new ways to engage in learning; etc.) and losses (negative impacts on wellbeing and social development; lower curriculum engagement; inequality; etc.), specific data on teaching and learning experiences and outcomes in Wales is required to create a national response

through a Welsh Policy on ERE for any similar future crisis.

- Digital equity in terms of devices and connectivity, and investment in infrastructure and technical support for schools, teachers and families is needed. Access to suitable devices is essential for all and socio-economic factors should not be a barrier to educational opportunities offered by blended teaching and learning. The National Digital Agenda includes high speed broadband for the nation and a continued commitment to digital investment which puts Wales at the forefront of preventing a lack of digital equity from being a barrier to full blended learning.
- Blended teaching and learning presents opportunities for learners of all ages, but further research is needed at the compulsory schooling level, especially with primary school children, to better understand experience across three key stakeholders: teachers, students and parents/carers.
- Learners need support to develop age-appropriate independent learning skills. This is one of the recommendations in the Recruit, Recover and Raise Standards Agenda and can be further developed in the Curriculum for Wales.
- Some specific mainstream schooling learner groups may particularly benefit from blended teaching and learning, such as young carers and those with additional learning needs, as well as students from traveller communities; but further research would be necessary to consider curriculum design and impact for these groups. In line with this, the Recruit, Recover and Raise Standards agenda emphasises the importance of planning for specific learner groups.
- Blended teaching and learning needs to be underpinned by Universal Design for Learning principles, providing opportunities for students to take ownership of their learning using approaches such as project-based learning; engaging in collaborative learning; as well as both synchronous and asynchronous activities. The development of

the Curriculum for Wales in schools should consider these principles.

- Teacher professional development covering blended teaching and learning competencies will form an essential part of the significant investment required to develop a nuanced response to ongoing challenges presented by ERE. It will also be key for ensuring the potential continued development of blended teaching and learning in Welsh schools post-pandemic is effective. This should build on and aim to increase uptake of existing resources, such as Hwb's '**Remote asynchronous learning design**' resource. The Schools as Learning Organisations Model for reform emphasises professional learning and should be used as an integral part of this development journey.
- The impact of remote learning on student wellbeing should be considered in addition to its effects on learning. The Five Ways to Wellbeing Model should be incorporated into the development of the Curriculum for Wales, with whole school importance, to ensure young people's wellbeing is at the core of the new curriculum and education practices going forward.

Annex 1: Methods

This rapid review of the literature was undertaken in January 2021. Searches of the literature since 2017 through Google Scholar with the terms 'effective blended learning' and 'UK' found 411 results which have been selectively used, by scanning the titles and abstracts for relevant school-based contexts.

Further searches found 16 articles with the search terms 'remote learning during Covid-19' and 'UK', published since 2020. Of these, seven focused on further or higher education and one was irrelevant to education. Of the remaining eight studies, one was a review of children with mental health concerns across seven different countries, and seven were focused on primary/secondary education but from an international perspective.

Another search for 'blended learning during Covid-19', filtered for publications from 2020 onwards, found seven results, of which two were not in English, and the remaining five were focused on higher education. Finally, a search for 'Covid-19 education' and 'UK' and 'children' filtered since 2020 found 305 results, which were scanned for relevance. Further research in progress was made available to the authors during the course of this writing.

This review also includes recent reviews and reports by organisations including the Education Endowment Foundation (2020), Home Learning UK (2020), NFER (2020) and the OECD (2020).

Annex 2: Limitations

Prior to the pandemic, few studies had examined remote learning in school-aged education. Systematic reviews often combine evidence from compulsory education, further education, and higher education. These studies also focus on planned-for remote learning. This means that while there may be significant potential overlap, particularly for older school students, careful consideration is required in assessing relevance to school contexts.

The rapid nature of this review means that it provides a narrative summary of findings and does not attempt comparisons between approaches or statistical analysis. There are significant gaps in our understanding and caution is needed when considering transferability from pre-pandemic research to pandemic and post-pandemic education contexts.

Out of necessity the review was completed within a limited timeframe (nine days) and therefore a complete systematic review of the literature on blended teaching and learning was not possible. Thus, recent systematic reviews and reports were prioritised.

These limitations notwithstanding, this report aims to summarise evidence to support decision-making in the Recruit, Recover, Raise Standards programme.

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