

Blended learning

Further reading and research

Knowledge gained from the gathering body of literature evidence on 'blended learning' can help us to clarify how 'blended learning' can be a positive methodology to support, transform and improve learning and teaching. This short summation of a selection of the literature below highlights a variety of useful research perspectives to support taking forward blended learning within Curriculum for Excellence in Scotland.

Blended learning is a defined concept that has supported a community of practice. The most commonly accepted definition of blended learning is of a planned and systematic approach to combining modes of learning in which technology and/or online resources are combined with face-to-face in-class teaching. The technology may include audio, video or paper-based learning systems. The learner usually has control over time, place, pace and, in some cases, learning path. Blended learning includes all the planned learning which is connected to provide an integrated learning experience.

Prevalence of online learning

Over the past decade the use of online learning, including blended learning approaches has rapidly increased and this has further accelerated in response to Coronavirus (COVID-19). Much of this growth in online learning has been in tertiary education however there have been notable increases in use in the education of school age children in China, USA and Canada. Tracking the extent of growth of blended learning is difficult due to ambiguity over the definition.

This growth has been driven by increasing device accessibility and software compatibility between devices and a belief in its potential for greater flexibility as well as providing higher levels of interactivity, social networking and collaboration.

Research into the benefits of blended learning

Meta-analyses have shown that high-quality blended learning has a similar impact to face-to-face teaching. When only online learning was examined the impact was lower than blended learning.

Individual studies such as an evaluation of the Australian eKids Framework, a project that has been supporting blended learning for remote and rural learners for the past decade, reported significantly better educational outcomes from blended learning compared to classroom or online delivery.

It should be noted that blended learning has been a focus for practitioner enquiry and data and information around its use is available. However there is relatively little empirical research into the impact of blended learning on school age children. Where it does exist, it is normally contextualised to specific local circumstances. The majority of the research into online learning is in further and higher education contexts. Therefore, findings may be more applicable to older children and young people. Much of the research has been around the potential of blended learning to

improve outcomes and models of blended learning. Research in schools in the US is largely around forms of blended learning that involve computer based instruction systems that supplement face-to-face teaching. There are very few studies on the use of blended learning in early years/lower primary school settings.

According to the US Department of Education (Means, Toyama, Murphy, Bakia, and Jones, 2009), a blend of classroom and web-based teaching and learning offers access to the widest range of learning and methodology for developing student skills and expertise as learners (Cleveland-Innes, 2017). Many findings on blended learning show an increase in learners' ability to learn collaboratively, think creatively, study independently and tailor their own learning experiences to meet their individual needs. In their guidebook 'Guide to Blended learning' information is provided about some of the technology tools that can be used to support in-person delivery in a seamless, blended way. Through careful, thoughtful blending and with consideration for technological skill levels and internet access, learning for anyone can now take place with greater flexibility and convenience.

Creating communities of inquiry in blended learning is developing to be one of the most researched pedagogical approaches in universities. In 2000, Garrison, Anderson and Archer published a theoretical framework developed to structure the process of learning in an online or blended environment. The Community of Inquiry (CoI), a model of inquiry-based teaching and learning, is based on the work of John Dewey and constructivist views of experiential learning. The original Garrison, Anderson and Archer (2000) article cited below, explaining this framework has been cited in the scholarly literature over 4,000 times.

Models of blended learning

Below are eight sample configurations of blended learning activities, offered by O'Connell (2016). They support teachers to consider these examples of blended learning that can be shaped to fit any teaching and learning situation.

1. Blended face-to-face class is based in the classroom, although a significant amount of classroom time has been replaced by online activities. Classroom time is required for this model, while online activities are used to supplement the in-person classes; readings, quizzes or other assessments are done online at home. This model allows children and young people to share more high-value instructional time because class time is used for higher-order learning activities such as discussions and group projects.

2. Blended online class: This is sometimes referred to as the "online driver model," this type of class is the inverse of the blended face-to-face class. The class is mostly conducted online, but there are some required in-person activities such as lectures or labs.

3. The flipped classroom: The flipped classroom reverses the traditional class structure of listening in class and completing homework activities at home. Students in flipped classes watch a short video online and come into the classroom to complete activities such as group work, projects or other exercises. The flipped

classroom model can be seen as a sub-model of the blended face-to-face or blended online class.

Flipped Learning Network (2015):

‘A pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter.’

4. The rotation model: In this model, students in a course rotate between various types of learning. There are various sub-models: station rotation, lab rotation and individual rotation.

5. The self-blend model: While many of the blended learning models on this list are at the course level, self-blending is a programme-level model and is familiar already to many college students. Learners using this model take online courses in addition to their traditional face-to-face teaching.

6. The blended MOOC: The blended MOOC is a form of flipped classroom using in person class meetings to supplement a massive open online course. Students access MOOC materials, perhaps from another institution or instructor if the course is openly accessible.

7. Flexible-mode courses: Flexible-mode courses offer all instruction in person and online and learners themselves choose how to take their course. This can allow students the flexibility to choose with their teacher how they will attend classes: online or in person. (Beatly, 2016).

8. Enriched virtual model: Learners progress on a programme of largely online learning with required face to face sessions with a teacher. These sessions are infrequent (unlike flipped learning).

Characteristics that may impact on the effectiveness of blended learning

The quality of teaching is the most important factor: Facets of effective teaching must underpin the approach. This may include linking to relevant prior knowledge, scaffolding new learning, clear explanations, exemplars, support to stimulate active processing, checking understanding, formative and summative assessment and feedback. A holistic view encompassing all aspects and modes of learning must be taken when planning.

Access to technology: Lack of access to technology, particularly for disadvantaged pupils, is identified as a key barrier to the success of blended learning approaches. Consequently learning materials should be provided in a range of formats. Online learning should be available on a variety of devices to include smart phones and games consoles as well as desktop/laptop computers and tablets to improve access. Multi device platforms should be considered when constructing online learning e.g. a spreadsheet task presents particular issues when viewed on a smartphone.

Design of blended learning: When considering the design of blended learning it is important to clarify the overall pedagogical approach. A holistic view encompassing all aspects and modes of learning must be taken when planning.

Synchronous/asynchronous: While synchronous activity may allow real-time teaching, collaboration and connectedness it is dependent on access to functioning technology. Asynchronous activity is not as dependent on technology and offers a higher level of flexibility concerning mode, place, pace and path.

Synchronous (real-time) blended learning, e.g. learners in a classroom using a device, has a higher level of engagement but this decreases when synchronous learning is used at home. When learning remotely, asynchronous activity has a higher level of engagement.

Synchronous learning activities are undertaken in real time with a teacher/peers. Asynchronous learning activities are undertaken without supervision from a teacher.

Change of learning environment: In comparison to online learning, blended learning maintains a degree of familiarity to classroom learning. The range of blended learning models can be seen as a continuum in which flipped learning and enriched learning have a greater degree of self-supported learning of new concepts with an increased cognitive load. While a model of face-face learning plus remote consolidation has lower demand.

Support independent working: Supporting pupils to work independently can improve learning outcomes. There is a range of strategies that will support learners to develop the skill of working independently. Developing the meta-cognitive skills of learners will support them in overcoming difficulties when working remotely. Wider evidence related to metacognition and self-regulation suggests that disadvantaged pupils are likely to particularly benefit from explicit support.

Use a variety of approaches: Approaches to blended learning have different strengths and weaknesses. An evidence-based approach should be used to support this selection. For example, games have been successful in modern language teaching. Quizzes may be useful for motivating learners but should be combined with other assessment approaches.

Planned interactions: The quality and extent of peer-peer and teacher-pupil interactions is a vital factor in the success of blended learning. These planned interactions in a learning community develop group cohesion, mutual support and facilitate learning. For example, peer marking has been shown to support this. These interactions should be planned holistically for both in school and remote learning. Different ages and stages will require a range of approaches.

Parental engagement: Use a range of existing and new approaches to develop the engagement of parents in their children's learning. Consider the needs of carers, including other adults (e.g. grandparents) who may be supporting learning.

Professional learning: Pedagogy should underpin the professional learning of teachers in use of technology and implementation of blended learning approaches.

Professional learning should:

- empower teachers to critically evaluate and identify blended approaches that can meet learners needs
- develop confidence in using technology
- increase understanding of how technology can meet learners needs
- develop teachers technological, pedagogical and content knowledge involving an interaction between knowledge and skills in use of technology, content (curriculum) and pedagogy
- develop teachers awareness of the social, emotional and behavioural aspects of blended learning and develop their capacity to support learners
- follow the key principles and features of the Model of Professional Learning that will build capacity and promote collaborative practices.
- challenge and develop thinking, knowledge, skills and understanding
- be underpinned by developing skills of enquiry and criticality
- be interactive, reflective and involve learning with and from others.

Blended learning in the early years

While there are very few studies on the use of blended learning in early years/lower primary school settings there are examples of practice in these settings. These include blended learning projects that made extensive and enhanced use of ICT, use of blended rotations and examples of practice that are currently being used to support learning at home that may form models for blended learning activities.

Blended learning is a concept that applies to all ages and stages. Many elements combine to make up blended learning. The principles, challenges and potential benefits of blended learning remain the same at every level. It is the use of appropriate learning outcomes for the correct age and stage that provides every child, young person and student with quality blended learning including very personalised learning opportunities. Whatever the age and stage of the child, a careful high quality blended approach can ensure that maximum learning is provided through the provision of holistic learning at the appropriate level for the learner.

In 'Blended learning: A synthesis of research findings in Victorian education 2006-2011' the Victorian Department of Education and Early Childhood Development (2012) reported on a series of projects between 2006 and 2011 that involved pupils at all stages including primary and early years.

Referring to Bonk and Graham (2006) they found that the following features were present:

- a shift from teacher-centred to student-centred instruction in which students become active and interactive learners (this applied to the entire course, including face-to-face contact sessions)
- increased in interaction between student-teacher, student-student, student content, and student-outside resources.
- integrated formative and summative assessment mechanisms for students and teachers.

Evans et al (2014) reported on the use of technology to personalise learning in a blended rotation approach. Elementary pupils worked in small groups with a teacher while the other pupils worked at computer stations. There is widespread use of this form of blended learning in the US with the majority involving older pupils. They noted two key differences between younger and older students when it comes to blended learning relating to guidance and structure when using online tools and a requirement for developmentally appropriate online programs. In addition they used programmes with a high degree of auditory, visual, and kinaesthetic stimulus.

There are a number of online resources that are currently being used to support learning at home for early years/stages. These examples of practice that are currently being used to support learning at home may form models for blended learning activities. For example, Newark City Schools (2020) has a blended learning landing page with materials produced by staff members for students to continue their learning online and at home. These include activities for learners at all stages including pre-school and kindergarten.

Benefits and challenges of creating blending courses and programmes

(Digital Chalk, 2014): list the benefits and challenges of creating blending courses and programmes in any educational establishment:

The benefits could include:

- **opportunities for collaborative learning:** Online learning spaces could offer greater, more engaging collaboration experiences between students and teachers. These opportunities include collaborative tools such as online forum discussions, wikis, blogs, chat, etc. Through these tools, collaborative connections are available in or out of the online classroom
- **improved accessibility:** Access to classroom and online materials and communication provides convenience and learning skill development
- **communication improvement:** Teachers can reach part-time or full-time students through a variety of communication channels. Staff can choose from email, chat, news, forums, assignment spaces, etc
- **assessment strategies:** Student evaluations of both formative and summative feedback could when appropriate, be more detailed and frequent through online reporting structures.

But of course in every system there are challenges again referenced by (Digital Chalk, 2014).

These may include :

- **technological requirements:** Technological requirements include hardware, software and internet access with appropriate bandwidth. These resource requirements can create systematic lack of access.
- **IT knowledge and skill:** Digital literacy, preparation for use of technological tools is required. Lack of such knowledge and skill is a significant barrier to access in the first place and quality learning experiences thereafter. Access to technical support is a related and significant requirement.
- **lack of self-pacing and self-direction:** Online learning both requires and encourages learner independence and management. Students come to online

learning with varying degrees of learning competence; supporting such learning self-management should be part of all online learning experiences.

Summary

The above findings suggest that care will be needed going forward and proper provision of training and the provision of quality digital resources will need to be put in place to ensure the implementation of a 'blended learning' system is successful.

McGinnis (2005) suggests a number of areas to note in the learning strategies within blended learning. These include ensuring that instructional materials and delivery of messages must be consistent and teaching materials provided must always be improved and updated when relevant to do so. Careful consideration should be given to the allocation of time and important tutorial time should be used for those specifically who require additional help.

As stated by Azis YM, Suharyati H and Susanti S, (2020 p.466-474),

“In order for blended learning to be successful, the percentage of time that is split with the percentage of online learning and face-to-face learning has to be appropriate. This is necessary because if the percentage of online learning is too large this will cause the student to ask questions and discuss difficulties, resulting in decreased motivation to learn. Vice versa, if the percentage of learning face-to-face given is too much this will cause the students to have total dependence on teachers, thus making the students unable to learn independently”.

We have seen from the research referenced above that there is a plethora of research into what blended learning is. What is less available according to Smythe (2017, p. 854) is:

“the means to evaluate the effectiveness of blended learning which is frequently lacking since there are a relatively limited range of tools and methods that support staff in designing blended learning curricula”.

This next period in Scottish education will undoubtedly be able to support future research on the implementation and success of blended learning. As the present literature on 'blended learning' develops, and in particular the detailed report referenced above on 'blended learning' by the [Commonwealth of Learning : Guide to Blended Learning](#), there is strong justification to support Scottish teachers in developing this way of working going forward in August 2020. This detailed publication is an important addition to the literature available on 'blended learning' and undoubtedly surfaces important findings to be considered going forward. (Martha Cleveland-Innes with Dan Wilton, 2018).

Lastly, in addition to the above 'Guide to Blended Learning' the Commonwealth of Learning has also put out literature on blended learners to support children, young people and students. This is particularly pertinent during the Coronavirus (COVID-19) lockdown period. It includes clear and helpful guidelines for all learners including encouraging them to develop skills to learn online and become

self-directed learners by accessing appropriate digital tools and short courses. Young people are also encouraged to engage in group learning activities online and remain connected with their peer groups. They should also develop a study schedule to manage time effectively. This paper also advises learners where possible to stay connected with teachers and other students regularly through the telephone, social media and a learning management systems.

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