

## **Designing Personalised, Authentic and Collaborative Learning with Mobile Devices: Confronting the Challenges of Remote Teaching During a Pandemic**

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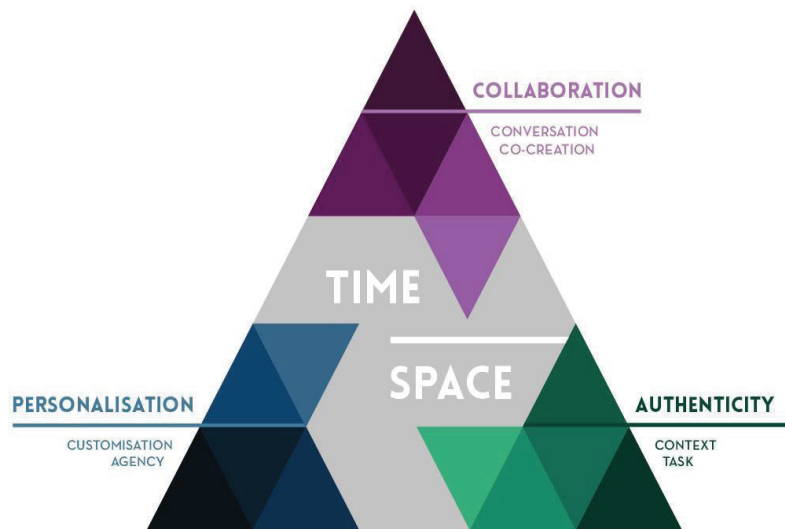
This article offers teachers a digital pedagogical framework, research-inspired and underpinned by socio-cultural theory, to guide the design of personalised, authentic and collaborative learning scenarios for students using mobile devices in remote learning settings during this pandemic. It provides a series of freely available online resources underpinned by our framework, including a mobile learning toolkit, a professional learning app, and robust, validated surveys for evaluating tasks. Finally, it presents a set of evidence-based principles for effective innovative teaching with mobile devices.

**Keywords:** Mobile Learning, Mobile Pedagogies, Innovative Digital Pedagogies, Mobile Pedagogical Framework, iPAC, Personalized Learning, Authentic Learning, Collaborative Learning

### **INTRODUCTION**

The current pandemic has been responsible for the loss of many opportunities. However, it has provided an unprecedented chance for students and teachers to embrace new opportunities for effective digital learning. Prior to the pandemic, the use of mobile devices (m-devices) was often demonised and banned in educational settings (Burden, Schuck, & Kearney, 2019). Now mobiles are the very devices that will provide access for many to learning that is only available online.

This article explains how m-devices such as smartphones, tablets and laptops may be used in remote or online educational settings to support effective, innovative technology-mediated learning. We use the term mobile learning (m-learning) to describe students' learning supported by their use of m-devices. We introduce a set of rigorous innovations, developed to support teachers' design of m-learning activities. These resources are underpinned by our socio-cultural framework, the iPAC Framework (Kearney, Schuck, Burden, & Aubusson, 2012), that articulates three key dimensions of m-learning: Personalisation, Authenticity and Collaboration (or 'PAC'). These dimensions each have two sub-dimensions (see Figure 1).



**Figure 1.** A mobile pedagogical framework: The iPAC Framework (reproduced with permission from Kearney, Burke, & Schuck, 2019, p.754).

The collaboration dimension (conversation and co-creation sub-dimensions) emphasises the technology-mediated opportunities for peer conversations and learners’ co-creation and sharing of content. The personalisation sub-dimensions, agency and customisation, highlight learners’ autonomy and potential ownership of the learning process, and the use of apps to individualise the learning experience, for example, using context-aware apps. The authenticity dimension (context and task) points to learners’ use of m-devices to create personally meaningful experiences, highlighting potential immersion in real-life, in-situ learning opportunities, and the mimicking of relevant, discipline-specific tasks and processes. At the core of the Framework is the ‘time-space’ domain, highlighting the malleable, multi-contextual nature of m-learning. Students may learn at unpredictable times and schedules, and across learner-generated spaces (Schuck, Kearney, & Burden, 2017), particularly during the current pandemic .

## INNOVATION

To assist the professional development of teachers and teacher educators wishing to create engaging m-learning experiences for students who are off-campus during this pandemic, we offer a set of rigorous resources underpinned by our iPAC Framework. These resources assist teachers seeking to modify their online practices from content-driven, presentational approaches, to ones that emphasise personalisation, authenticity and collaboration.

Firstly, an m-learning toolkit (Burden & Kearney, 2018) was developed during an EU-funded project, Mobilising and Transforming Teacher Educators’ Pedagogies (see <http://www.mobilelearningtoolkit.com>). It consists of interactive video cases and exemplar eBooks illustrating the use of m-devices in education, and a rubric for evaluating the value of apps in different contexts. Secondly, a professional learning app for educators was created in another EU-funded project: Designing and Evaluating Innovative Mobile Pedagogies (DEIMP). The app (see <http://www.deimpeu.com/app-io2.html>) supports educators to design and evaluate innovative m-learning episodes. A third resource is a set of pedagogical principles underpinning innovative m-learning practice (<http://www.deimpeu.com/principles-of-innovative-mobile-learning.html>). These evidence-based principles emerged from a meta-study of teachers’ mobile practices (Burden, Kearney, Schuck, & Hall, 2019). Although developed independently from our Framework, they aligned well with the iPAC dimensions (Kearney, Burden, & Schuck, 2020) and guide teachers’ m-learning practices. The final resource is a set of validat-

ed surveys for educators to evaluate their own m-learning activities (Kearney et al., 2019). These instruments are available via the iPAC website (<https://www.ipacmobilepedagogy.com>) and were extensively developed during an Australian project: Optimising Teaching and Learning with Mobile-Intensive Pedagogies. There are teacher and student versions to enable multiple perspectives, and a new survey for teachers of students with disabilities will soon be available.

## RESULTS

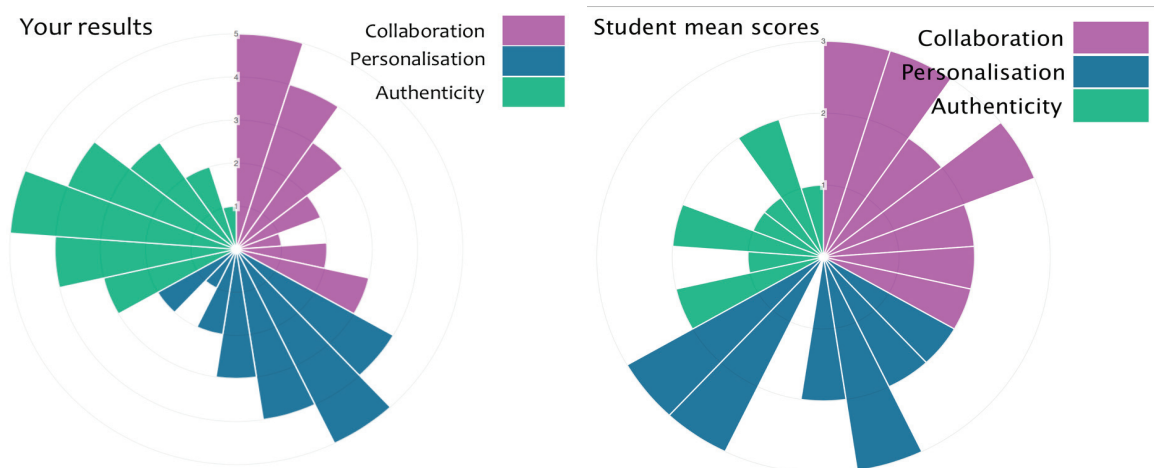
Our resources have been tested extensively by teachers and teacher educators across four continents and their impact on users was instrumental in a recent international e-Learning award. Evidence collected for this award and other impact assessments, indicate how the resources have encouraged users across several countries to reassess their preconceptions about the use of m-devices for teaching. In terms of the current crisis, this is significant because it reveals how the resources have inspired teachers to view m-devices as tools to enable their students to make greater choices and take more responsibility for their own learning. Reports from users reveal how they have appropriated m-devices to enable students to learn beyond formal school boundaries (spatial and temporal), a necessity in the current pandemic. One small example would be the work of teachers in Colombia who are using the iPAC Framework to model good practice for their students who often have limited access to technology. Using online authoring tools to collaborate remotely in the construction of e-Books, the work of these teachers and others like them, illustrate how the resources could be used to support more creative and collaborative learning experiences for students.

## IMPLICATIONS

Our resources will guide teachers' design of digital learning activities during this pandemic. They can support educators' consideration of the 'signature mobile pedagogies' of personalisation, authenticity and collaboration, and of how they can be exploited in a range of more flexible 'time-space' arrangements, including less-scheduled timetables and a range of physical and virtual spaces in which students are learning during the crisis. For example, one of the challenges of moving learning off-campus is finding new ways to promote collaborative group work, interactions with peers and teachers, and opportunities for students to share and co-create. Use of m-devices can alleviate isolation and solitary learning, and promote learning conversations with peers and experts well beyond the class, and possibly across geographical borders. Students' m-learning can potentially make activities more creative and participative, for example, co-writing and performing a virtual music ensemble, or collaboratively solving a real-life science problem.

We offer video vignettes in both our m-learning toolkit and professional learning app to provide guidance. For example, vignettes in the Collaboration section of the matrix in our m-learning toolkit: <http://www.mobilelearningtoolkit.com/video.html>. The right column of this matrix includes illustrative examples for teacher education contexts. One video (<https://bit.ly/teacherPLN>) explores the rich collaborative m-learning opportunities available through pre-service teachers' professional learning network activities (Kearney & Maher, 2019). Additional cases are available on the DEIMP website ([https://innovedu.com/deimp\\_new/recommended\\_videos.html](https://innovedu.com/deimp_new/recommended_videos.html)), illustrating our principles for innovative m-learning (Burden et al., 2019). Some cases depict tasks enacted in school campus settings but could easily be re-designed for remote settings during the pandemic. For example, this elementary school challenge task (<https://bit.ly/dronetask>) illustrates co-design and authentic learning principles. It could be used as a stimulus for teachers to create a re-designed task for home (or backyard) settings, adopting video-conferencing tools for peer conversations and cloud-based platforms to facilitate exchange of ideas, peer consensus and negotiation of solutions.

Teachers can take advantage of both the teacher and student versions of our validated survey tools to evaluate their use of iPAC pedagogies in remote task designs. Teachers receive an automatically generated report upon submission of their responses, showing how specific approaches have been adopted (see Figure 2). The report includes links to pertinent professional learning resources. If the student version of the survey is completed, a supplementary chart is generated allowing teachers to compare their report with students' perceptions.



**Figure 2.** Visual polar charts of teacher and student results are generated in reports from the iPAC survey instruments. [Reproduced with permission from Burden & Kearney, 2018, p.93].

## FUTURE RESEARCH

Despite the rhetoric around learner-generated contexts in the professional m-learning commentary, there has been minimal consideration of less formal, learner-controlled settings in teachers' m-learning task designs (Kearney, Burden & Rai, 2015; Kearney et al., 2020). This is unsurprising, given the generally scheduled nature of school timetables and conventional formal classroom settings that dominate teachers' and students' school environments. However, the current remote teaching situation is an opportunity to re-consider digital pedagogies in the home and other out-of-school learning environments.

Early reports indicate the default position for busy teachers transitioning to m-learning task designs during the pandemic is to emphasise content-driven, presentational teaching approaches (e.g., Karp & McGowan, 2020), typically involving use of video-conferencing (e.g., Basilaia & Kvavadze, 2020; Zhou, Wu, Zhou, & Li, 2020). These more didactic approaches are understandable given the minimal preparation time that teachers were given before moving to a remote teaching situation.

An urgent research direction is therefore to capture the range of exemplary m-learning practices adopted during and after the current pandemic, and to identify a wider range of pedagogies, using the iPAC framework as a lens to analyse data. We recommend use of our validated surveys to interrogate this phenomenon. Data will highlight innovative m-learning practices, including task descriptions and apps that are aligned with more generative, authentic approaches. In teacher education contexts, multiple use of the survey over a period of time will capture how pre-service teachers are developing their mobile digital pedagogies. Findings will be showcased on the iPAC website.

In summary, this paper presents a variety of robust resources to assist teachers and teacher educators during this challenging period. These resources are underpinned by the iPAC Framework, a research-inspired, digital pedagogical framework that emphasises a socio-cultural perspective of learning (Kearney et al., 2012). They should be useful in this time of remote learning where m-devices are likely to be the educational technology of choice for many students.

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