ASCILITE 2026

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Collaboration, Creativity and Compassion in a Digital Society

Building a single classroom for app development: Peer video review as process evidence in a hybrid app development curriculum

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Hybrid classes that split face-to-face and online students across separate rooms, timetables and (often) separate expectations risk becoming two separate classrooms within one class, rather than a single cohort. This paper reports the conceptual framing, literature context, intervention design and methodology of a study examining whether an intentionally designed, video-centred hybrid model can knit a dispersed cohort back into a single classroom, and whether the evidence it generates can say something more useful about learning than a finished app ever could. The study is set in an app development class at a university, where on-campus and online students learn iOS app development side by side. Building on an existing model for merging cohorts through the deliberate use of technology, the intervention layers a new practice onto shared lecture capture: students record and upload short videos of their app prototypes and code walkthroughs for structured peer review. The activity is designed both to strengthen interaction across the hybrid cohort and to foreground students' thinking and development process, since every student contributes and reviews the same form of evidence regardless of study mode. Where a submitted app file is a product, a video walkthrough of how it was built and why is closer to a process, and in an era in which generative AI can produce a plausible product on demand, process is where the more trustworthy evidence of learning now sits. This concise paper sets out the problem, research questions, literature context, intervention design and methodology; findings will be reported once data collection is complete.

Keywords: Hybrid learning, single classroom, peer video review, process evidence, mobile app development, case study

Introduction

Contemporary IT and computing units are frequently taught to a single unit code but two effective classrooms: an on-campus cohort with synchronous access to staff and peers, and an online cohort accessing largely the same content asynchronously, with fewer opportunities to build camaraderie or ask a question in the moment. Video conferencing and lecture capture have made this arrangement workable, but workable is not the same as connected. This split can quietly disadvantage online and distance students on measures of belonging, participation and confidence, even where formal access to content is equitable.

A second, more recent problem compounds the first. Where hybrid units rely on a submitted app, report or code file as the primary evidence of learning, GenAI tools capable of producing a plausible working product on request make that evidence easier than ever to generate without the learning having taken place. A single classroom built only around shared access to a lecture recording says nothing about this problem. A classroom built around students explaining and demonstrating their own work to their peers begins to address both (Soon & Cowling, 2019).

Two research questions frame the study:

RQ1: How does an EchoVideo-mediated peer video review process support the construction of a single, connected classroom for on-campus and online students in a hybrid iOS development unit?
RQ2: What evidence of students' learning process, as distinct from their finished product, does peer video review of app development work make visible to students and staff?

Literature review

Peer review and peer assessment have a well-established place in higher education pedagogy, valued not only because they distribute feedback more widely than an instructor could manage alone, but because of the learning that happens in the act of reviewing itself. Foundational work found peer assessment to be of adequate reliability and validity across a wide range of applications, with formative effects on student achievement and attitudes as good as, or better than, teacher assessment alone (Topping, 1998). The benefits of producing a review may be as significant as receiving one: constructing feedback for a peer engages students in evaluative judgement, requires them to apply and justify criteria, and prompts a reflective turn back onto their own work (Nicol et al., 2014). In online peer assessment specifically, students' approaches to the task are shaped by psychological safety and trust as assessors, with students who feel safer giving and receiving feedback more likely to adopt deep rather than surface approaches (Cheng & Tsai, 2012).

Together, these findings suggest that peer review is not simply a feedback-delivery mechanism to be added onto a unit, but a social practice whose value depends on how deliberately the conditions for it, trust, safety and a shared sense of audience, are designed into the surrounding learning environment. That is precisely the design problem the single classroom literature addresses more broadly, and the two bodies of work are drawn together here.

Building a single classroom

Soon and Cowling (2019) investigated how teaching staff could use technology creatively to merge on-campus and distance cohorts of IT students into a single virtual classroom. Across two case studies, they found that video conferencing, recording and digital consultation, combined with a deliberate cultural shift in how sessions were framed to students, produced a cohort in which distance students reported feeling like genuine members of the class rather than an afterthought. From this work they developed a four-factor model for building a single cohort classroom: geography (understanding where students and staff actually are), timing (scheduling sessions at times that work across the cohort), synchronicity (ensuring participants can genuinely take part together, live, wherever they are), and culture (making explicit, from the outset, that shared sessions belong to everyone, not just those joining at a distance). The model is a useful diagnostic for any hybrid intervention: an initiative that does not attend to all four factors risks reproducing, rather than dissolving, the split between cohorts.

This emphasis on cultural and pedagogical intent over the technology itself echoes a broader "pedagogy before technology" position, which argues that educational purpose and learning design should drive the selection and configuration of a technology, rather than the reverse (Cowling & Birt, 2018). Applied to the present study, this means the starting point is not "what can Echo360's EchoVideo do?" but "what does a single, coherent classroom for hybrid app development students need?" with the platform's features selected accordingly.

Process, not just product, as evidence of learning

Following the significant change to the higher education assessment and feedback landscape with the introduction of LLM tools in 2022, Fawns et al. (2026) argued that assessment validity now depends on the type of evidence, or proxy, a task actually generates, introducing a "4Ps" framework distinguishing product, process, performance and practice. A submitted app or code file is a product: portable, easy to collect at scale, and, in a GenAI-saturated environment, increasingly weak as a proxy for the understanding it is meant to represent, since a plausible product can now be generated with minimal engagement from the student who submits it. Process and performance evidence, by contrast, capture how a piece of work came to be, and are harder to convincingly fabricate without having done the work. A short video in which a student walks through their own app, explains a design decision or debugs a problem live is process and performance evidence in this sense.

A recent systematic review of the GenAI-in-higher-education literature found a similar split in how stakeholders read the technology: administrators are most concerned about overreliance, declining student

skills and threats to academic integrity, while teachers and students are comparatively optimistic about GenAI's potential for personalised, adaptive support (Neupane et al., 2024). The same review confirms ChatGPT's dominance as the GenAI tool most commonly integrated into teaching and learning, precisely because it is so effective at producing polished content, code and text on demand. Read through the 4Ps lens, the administrators' concern is, in effect, a product-evidence concern: if the artefact a student submits can be substantially produced by the same tool that is meant to support their learning, the product tells an assessor less than it once did about what the student actually knows or can do. Closing that gap does not require abandoning GenAI-capable tools; it requires supplementing product evidence with the process and performance evidence that peer video review is designed to generate, and it is this reframing, rather than technology avoidance, that motivates the design of the intervention below.

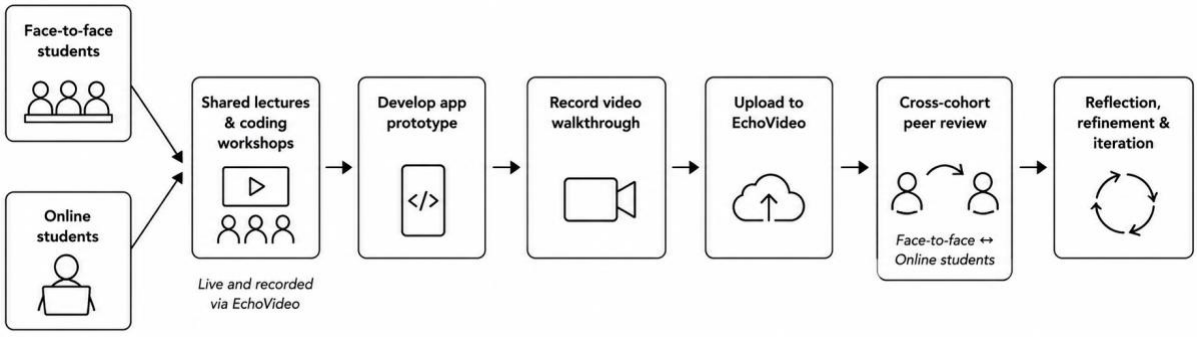
Prompting novice programmers to describe what they are attempting and what they have tried improves productivity, independence and metacognitive awareness (Loksa et al., 2016), and narrated screencasts predict test performance better than written work or silent screencasts, plausibly because silent recordings can be completed with GenAI assistance in a way that verbal explanation cannot (Wong et al., 2026). Prior work has treated such videos as submissions to be assessed. Here they become artefacts for peers across a hybrid cohort to review, serving both as process evidence and as a means of connecting the two halves of the class.

This paper treats the shift from viewing recorded content toward students producing their own reviewed videos as a shift from relying primarily on product evidence toward capturing process evidence directly within the single-classroom model.

The intervention

The study is set in an app development unit at a university, offered as a core component of an iOS app development program, with delivery planned for the second half of 2026. The unit enrols both face-to-face and online students in a single cohort, making it a natural setting in which to test whether a single classroom can be built around app development specifically, rather than around content delivery alone.

The project is informed by Echo360's "EchoSystem" philosophy of connected teaching, learning and evidence, with a focus on a leaner, technology-light intervention built around the core EchoVideo platform and its native student video upload and peer-viewing functionality.



Weekly lectures and coding workshops continue to be streamed and recorded via EchoVideo, forming the shared instructional backbone consistent with the geography, timing and synchronicity factors of Soon and Cowling's (2019) single classroom model. The new element then sits on top of this: at set milestones across the semester, students record and upload a short video of their own work in progress, for example, a walkthrough of a working prototype, an explanation of a design decision, or a demonstration of a bug being diagnosed and fixed, directly to the unit's EchoVideo space. Peers, drawn from both the face-to-face and online parts of the cohort, are then assigned videos to watch and respond to with structured feedback, creating a review activity that runs entirely inside the shared video environment rather than in a separate tool.

This design addresses Soon and Cowling's (2019) "culture" factor directly: students are not merely watching the same recordings; they are producing content for, and giving feedback to, one another. Table 1 maps the intervention onto the four-factor model.

Table 1.
Mapping the intervention onto the single classroom model (adapted from Soon & Cowling, 2019)

Factor	How the intervention addresses it
Geography	All lectures and workshops recorded and streamed via EchoVideo regardless of the student's location; peer video uploads are accessible from any device.
Timing	Peer video upload and review milestones are scheduled across the semester rather than tied to a single class time, allowing asynchronous participation.
Synchronicity	Live workshops remain available to join synchronously; asynchronous video review preserves genuine two-way participation for students who cannot attend live.
Culture	Peer review pairs on-campus and online students explicitly, so that giving and receiving feedback is a normal part of belonging to the unit, not an accommodation for distance students.

Methodology

The study adopts a design-based research (DBR) approach, in which the intervention is iteratively analysed, designed, implemented and evaluated across successive cohorts, with each cycle's findings feeding directly into the refinement of the next iteration (Reeves, 2006), extending our related work applying design-based methodologies to AI-related questions in education (Koh et al., 2024). The cohort described here forms the first such cycle, examined using an interpretive case study design consistent with the approach Soon and Cowling (2019) used to study creative technology use in hybrid IT teaching. The whole cohort forms a single case, with the peer video review intervention as the unit of analysis. A pre- and post-semester survey will assess students' sense of belonging, perceived equity of participation between on-campus and online students, engagement, and confidence in iOS development skills. These perception measures will be triangulated with Echo360 analytics, including video view and rewatch patterns, peer video upload and review completion rates, and comment activity, alongside performance on the unit's authentic app development assessment tasks. Ethics approval will be sought prior to data collection. All students complete the activities as part of the unit's normal learning design, and the use of their data for research purposes requires separate informed consent. Students may withdraw that consent without affecting their grades or standing in the unit.

Qualitative survey responses and peer review comments will be analysed thematically to address RQ1, focusing on students' own accounts of belonging and participation across cohorts. Analysis of the peer video content itself, specifically what students choose to show and explain when demonstrating their own work, will address RQ2, characterising the kinds of process and performance evidence this activity surfaces that a submitted app file alone would not. Analysis of the videos will also consider whether signals of real-time speech planning, such as hesitations and self-corrections (Clark & Fox Tree, 2002), help distinguish spontaneous explanation from rehearsed performance. As a concise paper, this report focuses on the problem, research questions, literature context, intervention design and methodology of the study; the survey, analytics and assessment findings are reported once data collection is complete.

Conclusion

This concise paper has set out the problem, research questions, literature context, intervention design and methodology for a study of peer video review as a mechanism for building a single classroom in a hybrid iOS development unit. The intervention described here is the first iteration of the redesigned, EchoVideo-centred approach, following a deliberate narrowing of scope from a wider suite of Echo360's EchoSystem tools to a leaner model built on core video upload and review functionality; the cohort, survey and analytics data to be collected in 2026 will inform how this design is refined for subsequent offerings of the unit.

It is worth naming what would make this genuinely worthwhile. If peer video review can close the belonging gap between on-campus and online students while generating richer, harder-to-fabricate evidence of how a student actually built their app, it would offer hybrid programs a single mechanism for solving two pressing problems in contemporary technology education at once: cohort fragmentation, and the erosion of trust in what a submitted artefact can tell us about learning. That is a bigger prize than either problem solved alone, and it is the prize this project is aimed at. Video walkthroughs are not cheat-proof, but they bring the evidence closer to the student's own thinking than a submitted file can.

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