

Caroline Chisholm School (CCS)

Canberra, Australia



Empowering formative assessment and data driven teaching and learning interventions in Science at CCS



Caroline Chisholm is a P-Y10 public school located in Chisholm (South Canberra).

Using EP since
08.2019

EP users
(Students)
269

EP users
(Teachers)
8

About

Caroline Chisholm School is a P-10 public school that provides diverse programs ranging from Ignite and Challenge classes for high achieving students to our Special Education Services, all underpinned by research based, high quality teaching practices.

Our online learning journey

CCS started working with Google Applications For Education, and Google Classroom in 2016.

In 2019, CCS Science trialed Education Perfect and have purchased a licence for our Year 7 and 8 students.

Why Education Perfect (EP)

Education Perfect (EP) is a complementary digital learning and instructional tool that will facilitate the Science PLT to accomplish a number of school strategies and actions in accordance with the Caroline Chisholm School Action Plan 2020. This document outlines a rationale for subscription to this learning platform.

In accordance with Strategic Priority 1: "All students will achieve high quality learning outcomes." The Science PLT supports a blended learning model (practical, digital and tactile) structured around the [e5-model](#) of pedagogical instruction. We **do not** seek this digital tool to **replace quality classroom pedagogy**; rather we advocate for subscription to this platform as it **enables us to be more agile, adaptive and accomplished in our evidence-based, differentiated instruction and interventions.**

1.1 Increasing Scientific and Transcurricular Literacy

Improving student literacy is a core focus of teaching and learning at CCS. EP facilitates increased Scientific Content Literacy, as well as foundational literacy skills in a number of ways. Explicit instruction of the cognitive and literary requirements are provided, with grammatical goals (Figure 1.1.1) and exemplars and key-words provided for students to critically reflect on, to improve the depth and quality of their responses (Figure 1.1.2).

This explicit cognitive verb/process instruction and provision of exemplars is transformative for student literacy focus, feedback and development within their Science learning.

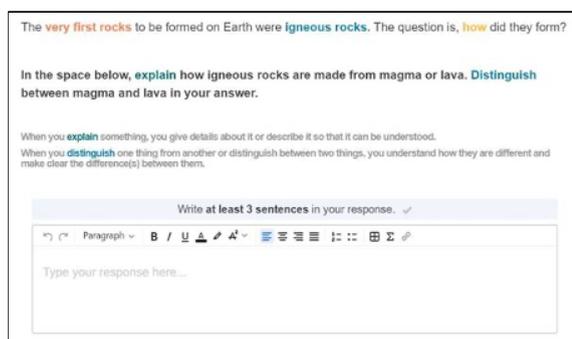


Figure 1.1.1: Example explicit cognitive requirement extended response.

1.2 Feedback

The EP platform facilitates a number of evidence-based feedback mechanisms. Teacher:student, student self-reflection, and anonymous peer:peer. There are also options for automatic reporting of student's percentages as well as the algorithmic identification of student ZPD and automatic assignment of tasks to improve student mastery of concepts and skills.

The platform highlights extended student responses that fail to meet the quality writing criteria, (spelling, vocabulary and grammar) for targeted feedback, and upon student self-reflection, releases exemplar responses with the option to edit and resubmit work.

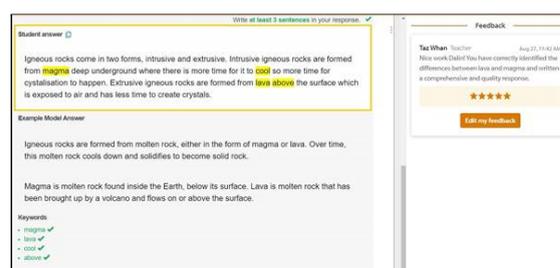


Figure 1.1.2: Example response with exemplar and key words. Note that a number of keywords have been used and the top grammatic goal 'Write at least 3 sentences in your response' condition has been accomplished. This response does not get automatically flagged as required for feedback/review.

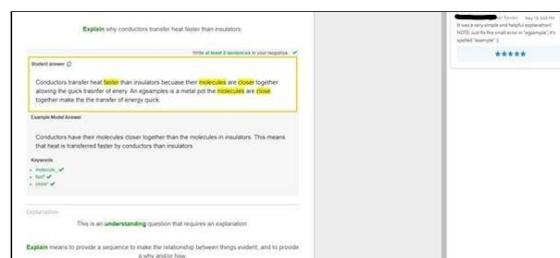


Figure 1.2.1: Example peer-peer feedback. Note that this is anonymous to the students involved. They are even able to give each other anonymous feedback on the anonymous feedback they themselves received.

1.3 Common Formative Assessment practices and protocols (RTI)

EP facilitates rapid delivery and analysis of Common Formative Assessments (CFAs), and enables some rudimentary/baseline interventions. There are a number of advantages of this platform over the existing alternatives (hardcopy CFA implements, Google forms, etc). The well-drafted bespoke questions, written at different cognitive levels, with supporting analytical tools, makes it more apparent and rapid for staff to identify the specific knowledge or skill level of students. This inturn frees staff to focus on developing novel tools for targeted support, extensions and interventions, rather than focussing on drafting questions, developing CFA instruments and wrangling data.

Furthermore, as the platform provides a number of analytical tools to interrogate data (Figures 1.3.1 and 1.3.2), this provides a robust platform for evidence-based PLT discussions about student growth, teaching strategies, and Responses to Intervention.

From a PLT perspective, the power and utility of this platform to promote CFA delivery and response is well evidenced by the fact that staff teaching Science with limited Pedagogical Content Knowledge (PCK) have been able to lead the creations and deployment of CFAs across a year level. Throughout Term 4, we intend to build on this success and have these PLT members lead data and RTI discussions at PLT meetings.

1.4 Digital Teaching and Learning accountability

Digital platforms are not a substitute for quality pedagogy and professional practice; they present pedagogical challenges to ensure that students are focussed on their learning. Education Perfect provides a monitoring window (Figure 1.4.1) for use in formative and formal tasks. This enables teachers to remotely (without looking over the shoulders of students) measure student engagement, and can be displayed on the smartboard to enable students and peers to self-regulate.



Figure 1.3.1: Example formative assessment class analysis data. Note that this is not truly Pre-Post test data as topics/questions accreted over the instructional period. However, this analysis reveals trends in student learning and enables teachers to intervene rapidly to positive and negative performance trajectories.

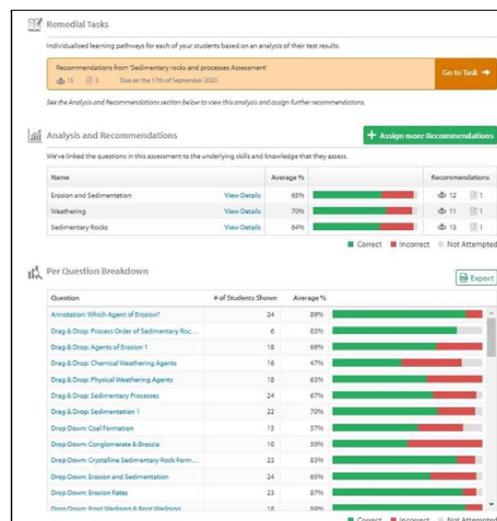


Figure 1.3.2: Example assessment analysis. This analysis reveals concept and content issues encountered by students and highlights areas and cohorts of students that would benefit from extension and interventions. Note that the program has a function to automatically recommend mastery-tasks to students that do not meet the selected performance criteria of the assessment.

In order to determine appropriate academic and behavioural interventions, accurate determination of whether students fail to complete quality work because they are a "can't" or a "won't" student (the old *skill vs will* chestnut), is often highly vexatious using tactile and appropriated digital implements. Education Perfect enables teachers to rapidly identify the effort students put into tasks, track work completion (difficult to do with bookwork, worksheets and isolated google docs/forms) and the accuracy with which they are accomplished (Figures 1.4.2 and 1.4.3)]

Furthermore, greater teacher accountability and collegiality is promoted through the use of this platform, as it promotes moderation, transparent feedback, and readily accessible student achievement data between classes. These data are then used as foci for collaborative and critical pedagogical reflection to inform CFAs, and associated RTI planning and delivery.

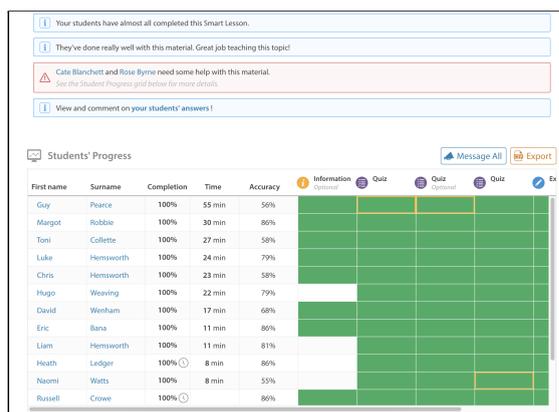


Figure 1.4.2: Example progress monitoring. It is readily apparent from this data, which students applied greater investments of effort. The combination of this data, with the accuracy of comprehension questions (not to mention the extended response - higher order thinking responses) enables identification of those students requiring behavioural interventions from those requiring greater academic support and extension.

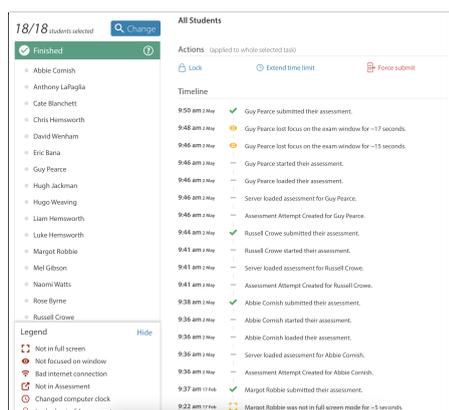


Figure 1.4.1: Example assessment monitoring. This promotes digital accountability and reduces task avoidance as teachers and students (when displayed for the class to witness) are clearly able to troubleshoot student focus and engagement barriers. Note that the program automatically recommends homework to students that do not meet the selected performance criteria.



Figure 1.4.3: Example task completion monitoring. Note that this can be done across a year cohort to facilitate common pacing and greater CFA and thus RTI targeting.

“EP presents significant value over alternative blended teaching and learning approaches”

Taz Whan
Head of Science
Caroline Chisholm School

1.5 Pedagogical Content Knowledge, Sequencing and Content and Modal Differentiation.

Of the current members of the Science PLT, 25% have a formal degree in Science, 50% have taught more than one line of Science previously and the majority do not identify as a 'Science Teacher'. This means that the required pedagogical content knowledge of new-to-Science staff to refine and reform current lesson, unit and assessment (both formative and summative) documents and pedagogies is often absent. The resource library (both digital and practical) of Education Perfect has substantially improved staff comfort in sequencing, delivering and differentiating content for learners. A single student subscription enables that student to access curriculum aligned, cognitively and modally differentiated learning resources from Years 5-12, across the general capabilities (e.g. Literacy and Numeracy), cross curricular priorities (Aboriginal and Torres Strait Islander Perspectives) and the three strands (Science Understanding, Science Inquiry, and Science as a Human Endeavour) of Science.

2.0 Value Proposition

The Science PLT believes that EP presents significant value over alternative blended teaching and learning approaches.

As a reliance on digital learning tools is not recommended or advocated, it is anticipated that the printing of physical learning materials will continue to be a requirement for teaching and learning Science at CCS. However, given that our data shows that ~75% of students have demonstrated quality and regular engagement with the EP learning platform over the trial period, we conservatively estimate that we will be able to save ~\$1,000/pa. This calculation is based on line-averaged printing data of the Science PLT over the past month (notwithstanding excursion and other administrative printing requirements), extrapolated across a year with an assumed 20% reduction in printing virtue of the EP platform (conservative estimate) and removing ~50% off the estimated saving in a further attempt to provide a conservative saving.

The Science PLT does not view EP as a replacement for quality teaching and learning resource development, delivery or analysis. It does, however, streamline the process of these tasks which enables teachers to focus their time on responding more agilely to student needs, providing timely and targeted feedback, further differentiating their practice, and increasing their pedagogical content knowledge. Although it is difficult to quantify the human resourcing that Education Perfect enables to be redeployed away from mechanical teaching tasks and invested in creative and targeted pedagogy, even an incredibly modest productivity improvement for staff would translate to very significant dividends to student learning and strategic PLT accomplishments.

Impact

- Robust, and rigorous diagnosis of students' zone of proximal development
- Targeted teaching and improved differentiation for all ability levels
- Professional discussions targeted on student engagement and learning, rather than resource creation and logistics.

Education Perfect

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