Portfolio Evidence: Crowdsourcing Lesson Plan Extract

Subject: AP Computer Science Principles
Topic: Crowdsourcing
Class: KS4, 14 students
Focus: Reflective Practice

This lesson plan is included as evidence of reflective practice. It shows how I planned a lesson using prior knowledge, active learning, formative assessment and misconception checking, and then reflected on the impact of those choices after the lesson.
The lesson evaluation identifies what supported student understanding, especially the use of a live crowdsourcing demonstration before formal explanation. It also identifies a specific area for development: participation during collaborative Padlet work was not fully balanced.
My next steps show how reflection informed future planning. I identified the need to assign clearer group roles and include a mid-task checkpoint to make individual understanding more visible during group activities.

<table>
<tr><td>Learning Context</td><td colspan="2">Students have previously studied distributed computing, including how multiple computers can work together to solve a problem by sharing tasks and processing power. Students are familiar with the idea that systems can be more powerful when work is distributed across many components.
This lesson extends the idea of collaboration from machines working together to people working together at scale. It introduces crowdsourcing as a form of large-scale human participation in problem-solving, directly supporting AP CSP Big Idea 5 and preparing students to analyse real-world computing innovations and their societal impact.</td></tr>
<tr><td rowspan="2">Aims for learning</td><td>Learning Objectives:</td><td>Evidence of Learning:</td></tr>
<tr><td>By the end of the lesson, students will be able to:
• Develop an understanding of crowdsourcing as a method of large-scale problem solving involving many participants
• Learn how people participate in problem-solving processes at scale, including different types of contributions (data, money, computing power, ideas)
• Understand the key characteristics and limitations of crowdsourcing, including issues of accuracy, bias, and reliability
Apply knowledge of IOC-1.E to analyse real-world examples of crowdsourcing.</td><td>By the end of the lesson, students will be able to:
• Explain crowdsourcing in their own words, including how it differs from small-group teamwork
• Identify who contributes and what is contributed in a real-world crowdsourcing system
• Analyse a real crowdsourcing example by answering structured questions about the problem being solved and the role of participants
• Correctly respond to formative assessment questions (Plickers and exit ticket) demonstrating understanding of crowdsourcing and its limitations
• Link an example of crowdsourcing to IOC-1.E, showing how computing systems enable large-scale human collaboration.</td></tr>
<tr><td>Anticipated misconceptions and planned</td><td colspan="2">• Crowdsourcing is only done by experts or professionals
Addressed by explicitly discussing citizen science examples and highlighting that many contributors are non-experts.
• Crowdsourcing is always accurate or unbiased</td></tr>
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responses	Addressed through teacher explanation and questioning that emphasise how crowd data can include errors, bias, or misinformation, linking to prior learning on bias. • **Crowdsourcing is only about free labour** Addressed by showing that crowdsourcing can involve different types of contributions such as funding, data, ideas, or problem-solving, often with incentives. • **Crowdsourcing is the same as teamwork in a small group** Addressed by contrasting small-group collaboration with large-scale, distributed participation supported by computing systems.
Adaptive and inclusive teaching	• Visual supports (images, video, live data) reduce language and cognitive load • Structured prompts on Padlet support less confident and EAL students • Pair or small-group work allows peer support and discussion • Extension is provided by asking higher-attaining students to consider **limitations and ethical implications** of crowdsourcing • Anonymous response tools (Plickers, Microsoft Forms) encourage participation from quieter students • Teacher circulates to provide targeted questioning and scaffolding as needed

Element	**Time**	**What is the learning focus?** What will students be learning – linked to Learning Objectives.	**What will be happening in the classroom?** Outline specific actions you need to take as a teacher as well as what students will be doing.	**How will I check they are learning (formative assessment)?** What strategies will you use?	**Resources / Environment / Classroom Management**
Start of Lesson Routine (creating a climate for learning)	5 min	Activate prior knowledge and establish focus	*[Reflection focus: activating prior knowledge]* *Students recalled distributed computing before learning crowdsourcing, helping them connect machine collaboration to human collaboration at scale.* **Learning:** Students recall key ideas about distributed computing and prepare to link prior learning to a new concept. **Teacher:** Uses Plickers to pose MCQ recall questions on distributed computing. Sets expectations and transitions to today's topic with the bridging question: *"If computers can work together to solve problems, what might humans contribute when working together?"* **Students:** Answer MCQs using Plickers cards; think and respond to the bridging question.	- Whole-class MCQ responses via Plickers - Verbal responses to bridging question - Teacher listens for correct links between computers and humans working at scale	- Plickers cards - Slides displayed clearly - Calm entry routine, whole-class participation encouraged
Introduction	5 min	Introducing crowdsourcing as a concept	*[Reflection focus: concrete experience before explanation]* *The live demo allowed students to experience crowdsourcing before receiving the formal definition.* **Learning:** Students understand the lesson objective and experience a simple example of crowdsourcing.	- Observation of participation in Microsoft Forms - Targeted questioning: "What problem was solved?" "Did one person solve it?"	- Microsoft Forms - Projected live results - Clear instructions; students work silently during voting

			Teacher: Shares the learning objective: *"Explain how people participate in problem-solving processes at scale."* Runs a **live crowdsourcing demo** using Microsoft Forms (image-based voting) and displays aggregated results. **Students:** Individually submit responses; observe how many responses are combined into one result.		
Main body of lesson	25 min	Understanding crowdsourcing, addressing misconceptions, and analysing real examples	*[Reflection focus: collaborative learning]* *Students analysed real examples of crowdsourcing, but the lesson evaluation showed that group roles needed to be clearer to balance participation.* **Learning:** Students learn what crowdsourcing is, what it is **not**, and how it works in real-world contexts, linked to IOC-1.E. **Teacher:** • Shows a short video explaining crowdsourcing. • Provides a **brief explanation** of crowdsourcing and explicitly addresses **misconceptions**. • Introduces Padlet task and models one example question. **Students:** • Watch the video. • Work in pairs/small groups to explore real crowdsourcing websites. • Post answers on Padlet responding to: 1) What problem is being solved? 2) Who contributes? 3) What does each person contribute? 4) Which IOC-1.E statement does this match?	- Teacher questioning during explanation - Monitoring Padlet responses for accuracy and depth - Mid-lesson clarification if misconceptions reappear	- Video clip - Padlet (shared wall) - Pre-selected websites - Group seating supports discussion
Plenary	5 min	Checking understanding and consolidating learning	*[Reflection focus: evidence of understanding]* *The hinge question and exit ticket provided evidence of whether students could distinguish crowdsourcing from common misconceptions.* **Learning:** Students consolidate understanding of crowdsourcing and reflect on learning. **Teacher:** Uses one **hinge MCQ** with Plickers to check understanding of crowdsourcing vs misconceptions. Summarises key points and revisits learning objective **Students:** Answer hinge question; complete **exit ticket**	- Hinge question via Plickers - Exit ticket responses on Exam.net - Teacher checks if students can define crowdsourcing and identify contribution types	- Plickers cards - Exam.net - Clear end-of-lesson routine; quiet individual work

			on Exam.net (3 questions).		

Lesson evaluation
The lesson was well organised and maintained a good pace, keeping students consistently engaged throughout the different phases of the lesson. The learning objectives were largely met. The initial recall questions successfully activated prior knowledge and involved all students, with the majority responding correctly. The live crowdsourcing demo was particularly effective. All students contributed willingly, showing high levels of engagement and curiosity. This activity helped students concretely understand how crowdsourcing works in practice, rather than only at a conceptual level. During the Padlet activity, some collaboration was evident, although participation was uneven, with a small number of students contributing more than others. This highlighted an area for me for improvement in structuring group roles more explicitly to ensure balanced contribution. The hinge question showed that most students had understood the core concept. A small number of students initially selected incorrect answers; however, follow-up questioning helped them correct their understanding. Overall, students made clear progress during the lesson. This was evidenced through accurate recall responses, active participation in the crowdsourcing task, and improved explanations during questioning and discussion.
What I learned and next steps
This lesson reinforced the importance of activating prior knowledge before introducing a related but more complex concept. The connection between distributed computing and crowdsourcing helped students understand that collaboration can happen at both machine and human scale. The lesson also showed the value of using a live demonstration before formal explanation. The MS Forms activity gave students a concrete experience of crowdsourcing, which made the later definition more meaningful. For future teaching, I would improve the structure of the Padlet group task by assigning clearer roles, such as researcher, recorder, speaker and checker. This would help ensure more balanced participation and provide stronger evidence of individual understanding during collaborative work. I would also strengthen formative assessment during the group activity by including a short mid-task checkpoint, allowing me to identify misconceptions before the plenary.