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HOW DOES THE REMOVAL OF 3 DIFFERENTIATED CHILLI CHALLENGES IMPACT CHILDREN'S MOTIVATION AND CONFIDENCE WITH THEIR LEARNING?

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Introduction

At Arcadia British School (ABS), children are provided with chilli challenge questions in all subjects. In Year 4, children choose independent tasks based on their confidence level. Whilst this approach differentiates tasks, it can cap what children produce and limit their potential. In my class, some have developed a fixed mindset, especially in maths and pupils now view themselves as a "warm student" as opposed to a student who just chooses a warm activity for a certain lesson. My belief is that children should all complete the same activity, however receive scaffolded support to achieve that learning objective based on their own individual needs. This would not only ensure that I am better able to facilitate their needs within a given lesson, but it would also allow for the Kagan Seating Plan (mixed attaining table pairs) to operate as effectively as possible.

Literature Review

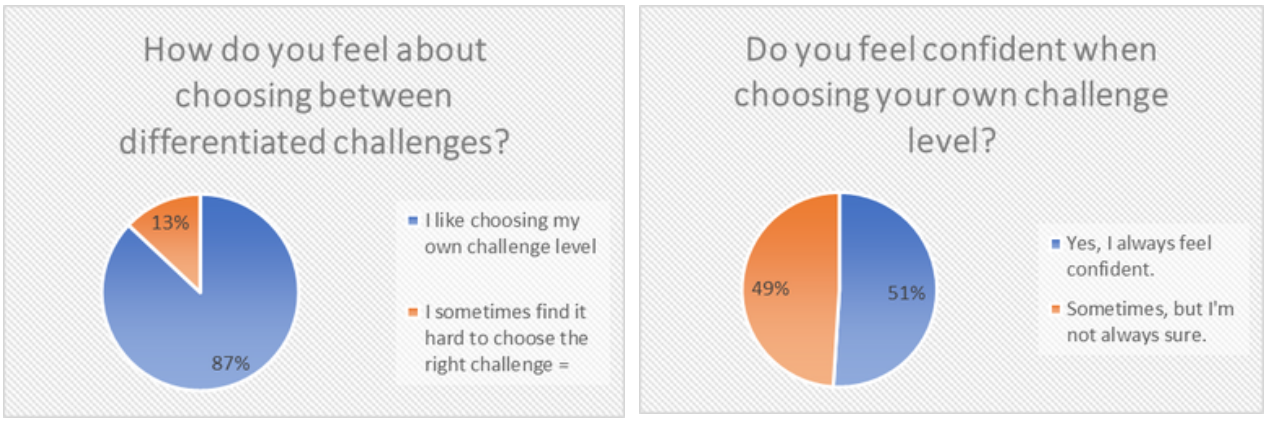
Research does suggest that differentiation can be time-consuming and challenging to plan and execute effectively (Hall, Strangman & Meyer, 2003). Although planning is routine, its impact must be scrutinised if it becomes time-intensive. Research also indicates that poor implementation of differentiation may widen achievement gaps, especially if some students are given "easier" tasks without appropriate challenge (William, 2011).

Step 1 - Baseline Survey

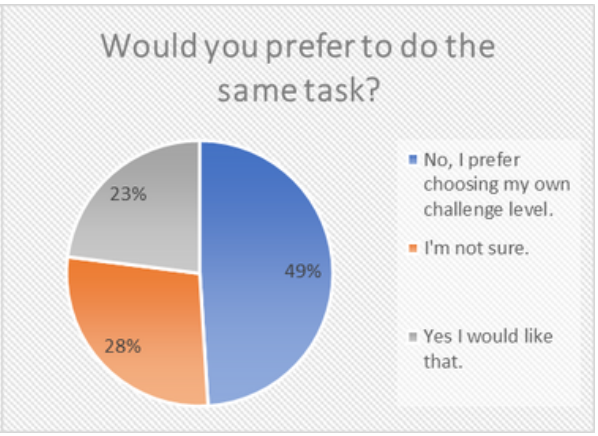
Prior to planning two weeks of scaffolded activities, I completed a survey with two different classes in Year 4 to better understand their views on the differentiated tasks which they are currently completing in lessons.

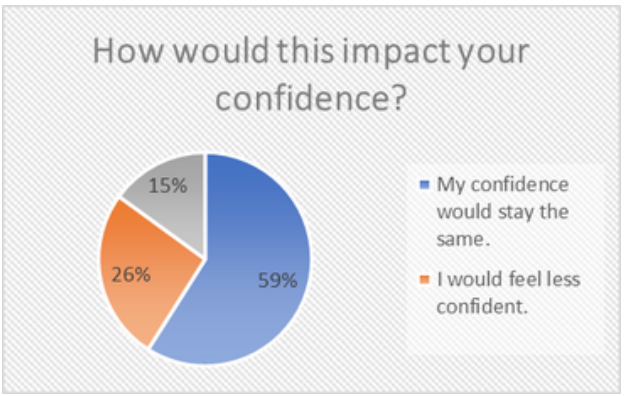
Looking at this survey data carefully, 90% of children admitted that they at least sometimes choose an easier independent task due to tiredness (see **Figure 1**). Willis (2010) on Brain-Based Learning highlights the role of mental energy in decision-making, noting that tired students may struggle with selecting appropriately challenging tasks. Therefore, while adding an easier option to children's learning might provide lower attaining children with activities they can more easily access, children could simply choose an easier option when tired and be working inside their own comfort zone.

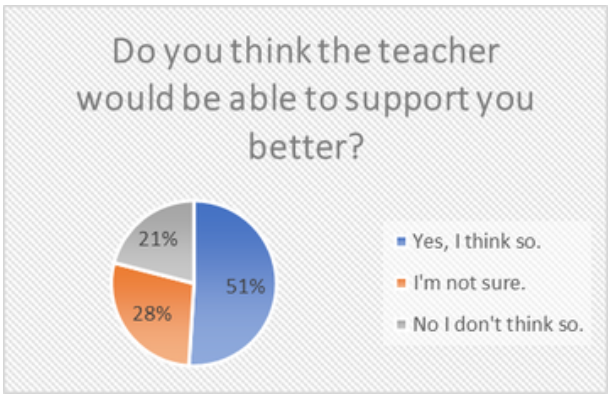
Figure 1
Baseline Student Survey

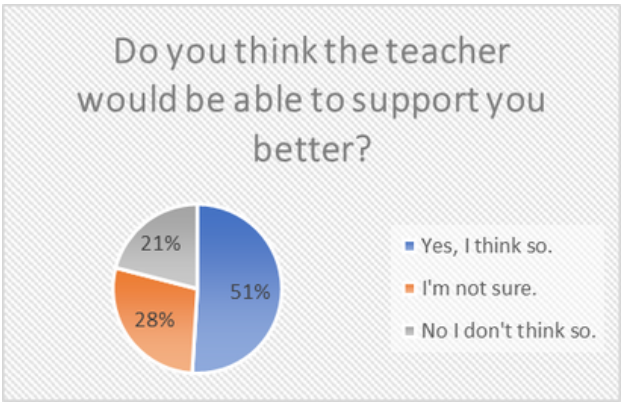


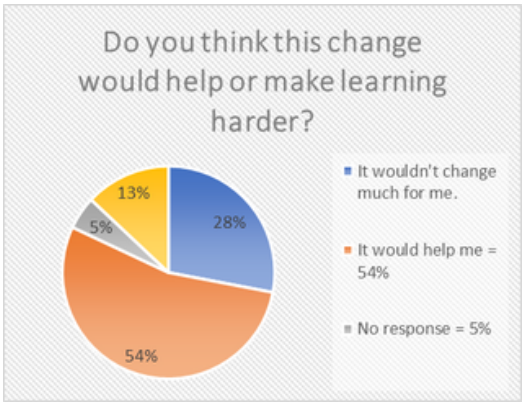

How do these challenges affect your confidence in your learning?
They help me feel confident because I can choose what suits me.
Sometimes they make me feel unsure
6%
20%
74%

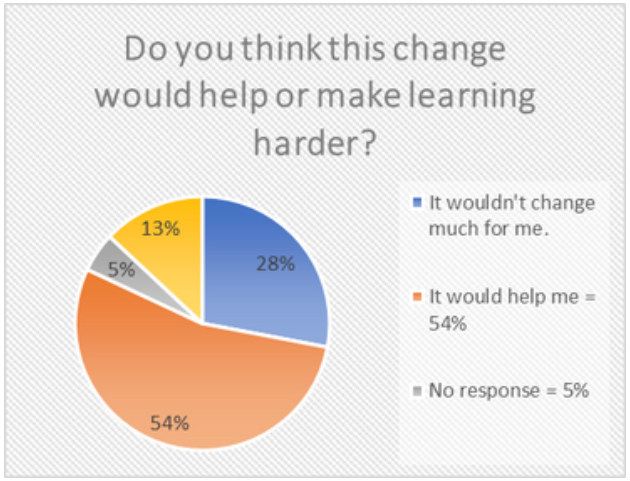

Would you prefer to do the same task?
No, I prefer choosing my own challenge level.
I'm not sure.
Yes I would like that.
23%
49%
28%


How would this impact your confidence?
My confidence would stay the same.
I would feel less confident.
15%
26%
59%


Do you think the teacher would be able to support you better?
Yes, I think so.
I'm not sure.
No I don't think so.
21%
28%
51%


Do you think the teacher would be able to support you better?
Yes, I think so.
I'm not sure.
No I don't think so.
21%
28%
51%


Do you think this change would help or make learning harder?
It wouldn't change much for me.
It would help me = 54%
No response = 5%
13%
5%
28%
54%


Do you think this change would help or make learning harder?
It wouldn't change much for me.
It would help me = 54%
No response = 5%
13%
5%
28%
54%


How often do you choose easier challenges due to tiredness?
Sometimes.
Rarely. = 15%
Always. = 15%
10
10
15
15
50

Step 2 - The Intervention

In the two lessons of scaffolded activities in science, children were working on the topic of electricity (first lesson testing out insulators and conductors and the second lesson on different types of appliances). In some classes, all students completed a shared task with scaffolded support. Some of the questions were as follows:

- What were the constants/variables in our experiment?
- What happened when we inserted conductors/insulators into our experiment? (Include the words "open"/"incomplete").

For the independent task, Miss Murden and I asked an adult to observe three children in each class. All children were provided with sentence starters to help formulate their sentences and so they were only focusing on their conclusions rather than the grammatical structure of the sentences. According to Steve Graham's research on Cognitive Load and Executive Function (2006), providing sentence starters is a highly effective instructional strategy because it supports students in managing the multiple demands of writing.

Higher attainers received a word bank of key vocabulary to use. Everyone in the class then had a "deep" question to complete, without anyone knowing it was a "deep" (challenging) extension question, but with peer support I believed all children could access this learning. Gillies (2016) identified cooperative learning as a highly important way for children to learn. She emphasised that cooperative learning involves students working collaboratively.

Approach A: Collaborative coaching

Phase 1: Demonstrate Fluency
Pupils tested a range of materials to determine if they are conductors or insulators. Higher attainers who confidently completed the testing table with accurate results and reasoning moved to a coaching role.

Phase 2: Peer Coaching Deployment
These pupils were assigned to groups needing support. Their roles:

- Model scientific reasoning using sentence stems like:
  - "I think this is a conductor because it lets the electricity through."
  - "This didn't work, so I believe it's an insulator."

- Prompt peers to use structured talk frames rather than supplying answers.
  - "What did you notice when we tested the metal spoon?"
  - "Can you explain your thinking using 'because'?"

Phase 3: Reflection and Metacognition
After the activity, coaches and peers reflected on their findings:

- Coaches may say: "Helping others made me realise how materials behave differently with electricity."
- Peers may use: "I understand that plastic is an insulator because…"

Why it worked: Despite time restraints preventing a survey, children were more motivated to support others' learning.

Approach B: Scaffolded talk and sentence stems
Approach: Provided structured talk frames for all children to develop scientific language to explain their reasoning.

During the group discussions the following stem sentences were used:

- Prediction stem:
  - "I think _ _ _ will be a conductor/insulator because _ _ _."
  - Example: "I think the spoon will be a conductor because it is made of metal."

- Evaluation/Reasoning stem:
  - "I believe ___ is the best material for a wire because ___."
  - Example: "I believe copper is the best material for a wire because it conducts electricity."

Why it worked: It worked because it improved the following:

1. Vocabulary Development: Reinforced key terms such as conductor, insulator and electricity.
2. Language Scaffolding: Especially supported ELL and lower attainers to express their understanding.
3. Deeper Reasoning: Encouraged higher attainers to justify choices and engage in scientific discourse.

Approach C: Tiered questioning

Approach: Presented the same core task, but asked questions that vary in depth to scaffold or stretch understanding.

Classroom Example (Science - Y4 Electricity): "What do these objects tell us about how electricity works?" was the base question.

Scaffolds:

- Support: "What is this object? Does it conduct electricity?"
- Core: "What does this object tell us about materials that conduct electricity?"
- Extension: "Why might our understanding of whether a material conducts electricity change over time?"

Why it worked: Everyone was being taught the same content, but there was scope for deeper thinking through questioning.

Step 3 – Teacher Observation Data

Table 1
Class 404 Observation

Year 4		ENGAGEMENT					
		BEHAVIOUR		INDEPENDENCE		LEARNING OUTPUT	
		Displays off-task behaviour during teacher input and/or independent work *i.e: Not facing the teacher / board / learning task / off-topic chatting / using wrong app on iPad*		Asks teacher for clarification/support with learning		Amount of work produced by the child	
		Differentiation - Science one lesson	Scaffolding - Science one lesson	Differentiation - Science one lesson	Scaffolding - Science on lesson	Differentiation - English one lesson on descriptive writing	Scaffolding - English one lesson
Student A (404 - LA)	Male	6	3	3	1	4 lines of writing	6 lines of writing
Student B (404 - MA)	Female	5	2	1	0	5 lines of writing	6 lines of writing
Student C (404 - HA)	Male	3	1	0	0	8 lines of writing	9 lines of writing
	TOTAL:	14	6	4	1	17 lines	21 lines

Table 2
Class 402 with Differentation

402 with differentiation

Student Name	On-task ✅	Asked for Help ❓	Used Partner 👥	Attempted Challenge 💡	Gave Up Quickly ⚠️	Seemed Confident 😊	Seemed Unsure 😕
Student A (402- LA)	×	✓	✓	×	✓	×	✓
Student B (402 - MA)	×	✓	×	✓	✓	×	✓
Student C (402 - HA)	✓	×	✓	✓	×	✓	×

Table 3
Class 402 with Scaffolding

402 with scaffolding

Student Name	On-task ✅	Asked for Help ❓	Used Partner 👥	Attempted Challenge 💡	Gave Up Quickly ⚠️	Seemed Confident 😊	Seemed Unsure 😕
Student A (402- LA)	✓	✓	✓	✓	✓	×	×
Student B (402 - MA)	✓	×	✓	✓	×	✓	×
Student C (402 - HA)	✓	×	✓	✓	×	✓	×

This evidence suggests that scaffolding provides a structured, supportive environment that promotes focus, independence, collaboration and a willingness to attempt challenging tasks (see **Tables 1, 2**, and **3**). While it works effectively for most students, it should be carefully adjusted for lower-attaining learners who may still struggle with confidence and perseverance. Overall, scaffolding appears to be a more effective strategy than differentiation alone for fostering positive learning behaviours.

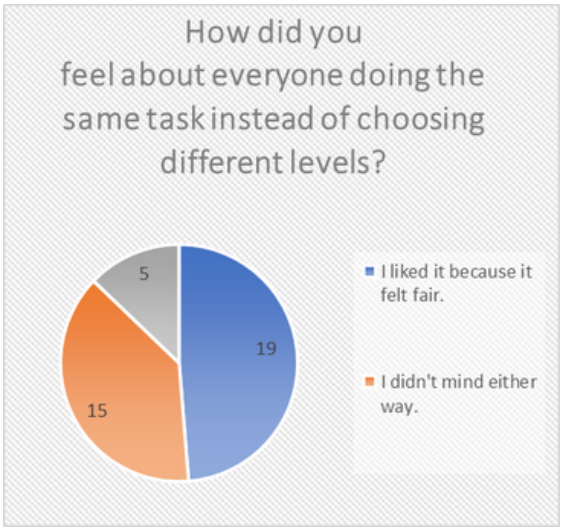
Step 4 - Post-intervention Student Survey

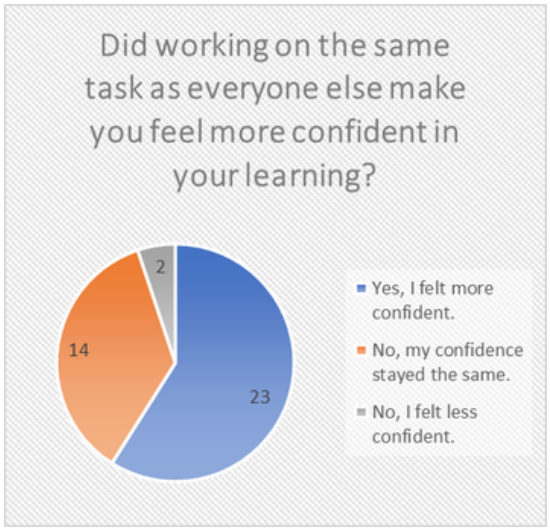
We then completed a survey with these classes and here were their results. (see **Figure 2**)

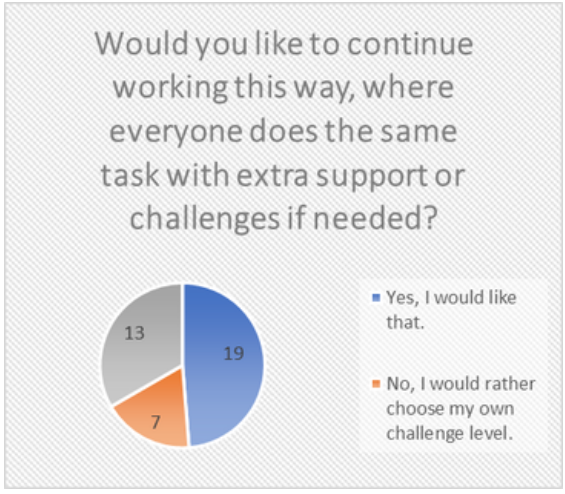
1. The majority of students said: "*It felt good because we were all working together*."Pupils responded positively to the unified, scaffolded approach, which fostered a sense of togetherness. Shared tasks helped them feel more connected and valued. This supports Vygotsky's (1978) theory that social interaction within the Zone of Proximal Development (ZPD) enhances learning.
2. More students reported feeling "more confident" and "more comfortable" under a scaffolded approach, with only two feeling less confident. Uniform scaffolding reduced pressure and anxiety, as pupils were not singled out or labelled by level. This equal access encouraged all learners to progress together. Bandura's (1997) theory highlights the benefits of observing peers, modelling strategies and receiving encouragement – key elements in building confident and self-efficacy.
3. Most students said the scaffolded work was "just right," with only five finding it "too easy" and three "too hard".

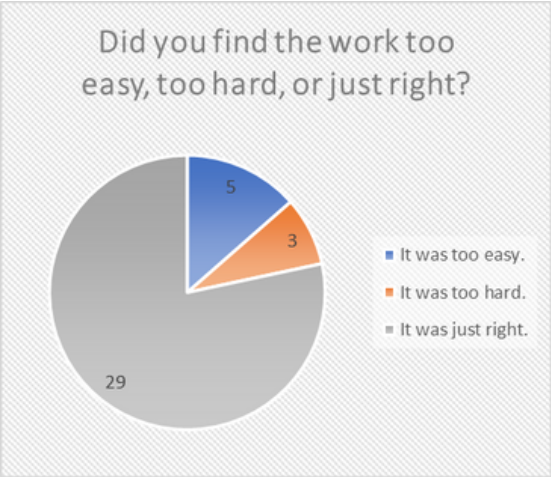
Scaffolding achieved a balance – challenging yet accessible – avoiding issues seen with rigid differentiation. Tasks matched learners' ZPD, supporting guided progress without being overwhelming or overly simple.

Figure 2
Post-Intervention Student Survey









What Next?

In Class:

1. Embed Regular Collaborative Learning Opportunities:
   - Why: Students thrived when working together, as it promoted a sense of unity and peer-supported learning.
   - How: Plan weekly partner or small group tasks with scaffolded roles (e.g. "explainer," "recorder," "checker") to build interdependence and reinforce key skills.
2. Use Ongoing Formative Assessment to Adjust Scaffolds:
   - Why: Most students felt the challenge level was “just right,” suggesting well-matched scaffolding supports.
   - How: Incorporate quick checks (e.g. exit tickets, mini whiteboards, peer review) to tailor scaffolds dynamically. Adjust prompts, visuals, or sentence stems based on live feedback.

Next Steps for Whole School Development:

1. Develop a Shared Scaffolded Planning Framework Across Year Groups:
   - Why: Consistency in approach led to greater student confidence and reduced anxiety.
   - How: Create a simple planning proforma folder (modelled examples, sentence starters, one “stretch & master” extension task instead of “basic, deep & advancing”) to ensure equity and continuity across classrooms and shared ideas.
2. Deliver CPD on Effective Scaffolding Strategies:
   - Why: Staff should be confident in designing and adjusting scaffolds to meet varied learner needs with questioning, scaffolded talk and collaborative coaching.
   - How: Provide practical workshops on peer-led sessions that model real examples of scaffolded lessons and include time for teachers to co-plan and share resources.

References

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.
Gillies, R. M. (2016). *Cooperative learning: Developments in research and practice*. Nova Science Publishers.
Graham, S. (2006). *Writing next: Effective strategies to improve writing of adolescents in middle and high schools*. Alliance for Excellent Education.
Hall, T., Strangman, N., & Meyer, A. (2003). *Differentiated instruction and implications for UDL implementation*. National Center on Accessing the General Curriculum.
Vygotsky, L. S. (2012). *Mind in society: The development of higher psychological processes*. Harvard University Press. (Original work published 1978)
William, D. (2011). *Embedded formative assessment*. Solution Tree Press.
Willis, J. (2010). *Learning to love math: Teaching strategies that change student attitudes and get results*. ASCD