

Pedagogical Approach

I modelled my approach to these lessons, where feasible, on Dan Finkel's recommendations for mathematics teaching (TEDx Talks, 2016). His five principles outline a pedagogical approach that promotes active learning, discovery, and open-minded discussion. These principles also warn against imparting facts and dismissing questions. He emphasises that mathematics is not a discipline of formulae to remember, but of discovery through exploring and play.

The principles are:

1. **Start with a question** (TEDx Talks, 3:20) – invite inquiry and discussion; engage students in finding answers, rather than being told to accept them
2. **Give time to struggle** (TEDx Talks, 4:58) – let students work for answers; they will rise to the challenge of thinking, learn courage to take risks in proposing answers, and develop tenacity in persevering to find solutions
3. **[Teachers are] not the answer key** (6:37) – “I don’t know; let’s find out” can be a longer, but much more engaging experience; “what do you think?” can lead to a discussion of why the student would suggest the answer – and it might lead to insight and pride of discovery and ownership
4. **Say ‘yes’ to ideas** (8:39) – not the same as saying, “you’re right”, but again, leads to engagement. Dismissing out of hand any ideas, right or wrong, disempowers students; considering an idea, even disproving it, is a sign of respect and more powerful than an unexplained “No”
5. **Play!** (12:17) – the power and joy of mathematics is not in following rules, but in discovering patterns and relationships; play and exploration can lead to new understanding and applications; in fact, that is how some of the greatest mathematical advances came about

The spirit of Finkel's talk, and his love of maths not just for numbers but for the adventure, brought to life the feeling I would like to see students find in mathematics, and which I embrace as a learner and want to convey as a teacher.

References

TEDx Talks. (2016, February 18). Dan Finkel: Five principles of extraordinary math teaching [Video]. YouTube.
<https://youtube.com/watch?v=ytVneQUA5-c>