ACADEMIC POSTER

SAMPLE

Gamified Numeracy and Student Engagement in a Low-SES Primary School

Postgraduate sample · Australian academic standard

Background

Numeracy achievement in Australia is patterned by socioeconomic background, with students in lower socioeconomic communities consistently scoring below national means on the numeracy assessments reported through ACARA. Engagement, meaning a student's behavioural, emotional and cognitive investment in learning, is a recognised lever for lifting achievement and is emphasised in the Australian Professional Standards for Teachers maintained by AITSL. Gamification, the use of game elements such as points, levels and immediate feedback in non-game settings, has attracted interest as a low-cost way to raise engagement, though evidence in primary numeracy and in disadvantaged settings is mixed.

Aim and Research Question

The study aimed to examine whether a gamified numeracy programme improved student engagement and short-term numeracy performance in a low socioeconomic primary school. The research question asked whether Year 4 students taught with gamified activities showed higher engagement and larger gains on number and place-value tasks than students taught with conventional worksheets.

Methods

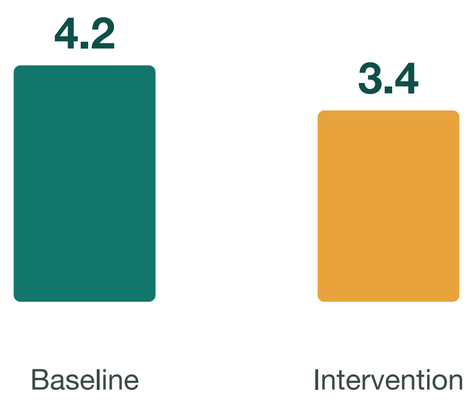
A quasi-experimental design compared two Year 4 classes in a single school located in a low socioeconomic area, identified using the ABS Socio-Economic Indexes for Areas.

- The intervention class (n = 26) used a gamified number programme with points, team levels and instant feedback across an eight-week term.
- The comparison class (n = 25) followed the same curriculum content using standard worksheets.
- Engagement was measured through a validated student self-report scale and structured classroom observation.
- Numeracy was assessed with a pre-test and post-test aligned to the Australian Curriculum number strand.

Gains were compared using analysis of covariance, controlling for pre-test scores. Parental consent and ethics approval were obtained.

Results

The gamified class reported higher engagement and achieved larger numeracy gains.



Measure	Gamified class	Comparison class
Engagement score (out of 5)	4.2	3.4
Mean numeracy gain (points)	12.6	7.9
On-task behaviour (observed)	88%	71%

- The adjusted difference in numeracy gain favoured the gamified class and was statistically significant (p = 0.02).
- Behavioural engagement showed the largest change, while emotional engagement rose more modestly.
- Teacher notes recorded higher participation from previously reluctant students.

Discussion

The results suggest that gamification can lift engagement and support short-term numeracy gains in a disadvantaged primary setting, consistent with motivation theory linking immediate feedback and achievable goals to persistence. The stronger effect on behavioural rather than emotional engagement indicates that visible mechanics drove participation more than a deeper shift in attitude. As a single-school study without randomisation, the findings may reflect teacher enthusiasm or novelty, and the eight-week window cannot show whether gains endure once the novelty fades.

Conclusion

A gamified numeracy programme was associated with higher engagement and greater short-term gains than conventional worksheets in a low socioeconomic primary classroom. Gamification appears to be a practical, low-cost strategy, though sustained benefit requires longer trials across multiple schools and attention to whether engagement translates into durable learning.

References

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