# The Field Trip That Needs No Bus: VR in the Malaysian Classroom

Hafiz Hanif

Faculty of Human Development, Sultan Idris Education University · ORCID 0000-0001-9943-6557

| | |
|---|---|
| CITE AS | Hanif, H. (2026, September 5). The Field Trip That Needs No Bus: VR in the Malaysian Classroom. Hack(edu).tech Chronicle. https://hackedu.tech/articles/the-field-trip-that-needs-no-bus-vr-in-the-malaysian-classroom |
| PUBLISHED | 5 September 2026 |
| DOI | 10.5281/zenodo.22316108 |
| LICENCE | CC-BY-4.0 |
| AVAILABLE AT | https://hackedu.tech/articles/the-field-trip-that-needs-no-bus-vr-in-the-malaysian-classroom |

ABSTRACT

Virtual reality promises the field trip that needs no bus, and the evidence partly delivers: modest, real learning gains concentrated where content is spatial, procedural, dangerous, or impossible, though immersion without design produces more presence and less learning. This article names the five walls behind dusty headsets, cost, curriculum-aligned content, classroom logistics, teacher readiness, and maintenance, then proposes a Malaysian solution: regional immersive learning hubs hosted by IPTs nationwide, where experts maintain equipment, train teachers, and co-create curriculum-aligned content.

KEYWORDS

Virtual Reality, Innovative Pedagogy

I have watched it dozens of times now, and it never gets old. A student puts on a headset, and somewhere behind their eyes a wall falls away. They are standing inside a beating heart. They are on the ocean floor off Sipadan. They are in Melaka in 1511, watching ships enter the harbour. The gasp is always the same, and so is the sentence that follows when the headset comes off:

> "Cikgu, macam betul-betul ada kat sana."

That sentence is the promise of virtual reality in education: the field trip that needs no bus, no permission slips, no fuel budget, and no risk. As someone who researches immersive learning and trains teachers in it, I am a believer. But I am a believer the way an engineer believes in bridges: conditionally, based on load testing. So let me tell you what the evidence actually says, why most school headsets nonetheless end up gathering dust in a locked cabinet, and what I think Malaysia should do about it, because we are, for once, unusually well-positioned to do something clever.

Start with the honest evidence. Meta-analyses find that immersive VR does improve learning performance overall, but the effect is modest rather than miraculous, and it varies enormously by subject, duration, and design (Wu et al. 2020). The broader simulation literature tells the same

story: virtual environments help, with the gains concentrated where the medium's strengths meet the content's needs (Merchant et al. 2014). And what are those strengths? The theory that best explains VR learning identifies two: presence, the feeling of being there, and agency, the feeling of doing rather than watching, which together drive interest, motivation, and embodied understanding (Makransky & Petersen 2021). VR earns its keep when the learning is spatial, procedural, dangerous, expensive, or impossible: the interior of a volcano, the scale of the solar system, a chemical plant accident you would never stage, a heart you cannot walk into by bus.

But the same research community produced a finding every school administrator should have laminated. When researchers added immersive VR to a science simulation, students reported far more presence, and learned measurably less, with brain-activity measures showing higher cognitive overload in the headset condition (Makransky et al. 2019). Immersion is stimulation, and stimulation unmanaged becomes distraction. The wow is real; the wow is not the learning. VR works when the experience is short, focused, and wrapped in ordinary teaching, briefing before, reflection after. It fails as a fairground ride with a syllabus code stapled on.

So the technology is genuinely valuable, under conditions. Why, then, do headsets bought with real allocations end up in cabinets? In my work with schools I keep meeting the same five walls, and they deserve to be named plainly.

- First, device cost. A classroom set for 34 students is a serious capital expense, and headsets are not blackboards; they age, they break, their batteries fade, and the refresh cycle comes faster than any school's procurement cycle.
- Second, and more fundamental, the content drought. Walk through the VR catalogues and you will find magnificent tours of Roman ruins and American biology labs, and almost nothing built for our national curriculum, in our language, with our contexts. Content is where the real cost hides: quality educational VR is expensive to develop, demanding 3D artists, programmers, instructional designers, and subject experts. Yes, AI tools are lowering that barrier, and I say this as someone building with them, but "lower" is not "low". Producing a curriculum-aligned VR experience remains far beyond what any teacher on a normal paygrade can pull off alone on weekends. We do not ask teachers to write their own textbooks from blank paper; we should not expect them to build their own virtual worlds.
- Third, classroom readiness. Forty-minute periods, thirty-four students, a handful of headsets, one power socket, motion sickness for some, spectacles for others, and hygiene questions nobody budgeted for. The timetable was not designed for immersion, and immersion does not negotiate with the timetable.
- Fourth, teacher readiness. A headset without pedagogy is a toy. Teachers need training not merely in operating the device but in orchestrating the lesson around it, and that training is rare, brief, and usually forgotten by the time the devices arrive.
- Fifth, support and maintenance. When the projector fails, someone eventually fixes it. When forty headsets need charging, updating, sanitising, and troubleshooting, who exactly is responsible? Most schools have no technical staff at all. Equipment without a caretaker is equipment on a countdown to the cabinet.

Notice that none of these five walls is about whether VR works. They are about whether schools can carry it, and the honest answer, for most, is not alone. Which brings me to the proposal I have been carrying around, and it rests on an asset Malaysia already owns.

We have institutions of higher learning distributed across every state: universities, polytechnics, teacher education institutes. Many already have VR equipment, technical staff, and researchers, my own university among them. So instead of scattering headsets thinly across thousands of schools, where every one of the five walls stands, concentrate them: let our IPTs host regional immersive learning labs that schools within their vicinity visit, the way schools already visit science centres and museums. The bus, ironically, returns, but now it carries students to a properly staffed facility rather than carrying the facility's problems into the school.

Look at how many walls fall at once. Cost: one well-equipped lab serves dozens of schools, with utilisation rates no single school could achieve. Maintenance: the lab has technicians and lecturers whose job it is. Teacher readiness: every school visit doubles as professional development, with university staff modelling how to wrap pedagogy around immersion. And the content drought, the deepest wall, becomes the most exciting opportunity: IPT experts can develop VR materials aligned to the national curriculum, in Bahasa Melayu, informed by the feedback of every visiting teacher and the usage data of every session, and co-create new materials with the very teachers who know what their classrooms need. The lab becomes a living research site, and the nation slowly accumulates what it currently lacks entirely: a homegrown, curriculum-mapped library of immersive learning experiences.

This is not fantasy. A recent randomised controlled trial in Selangor tested a virtual reality-integrated social-emotional learning module, designed specifically for Malaysian adolescents within local social and cultural dynamics, across four secondary schools, and found improvements in emotional regulation alongside reductions in depression and anxiety scores that were sustained at six-month follow-up (Baharuddin et al. 2025). Locally designed, culturally grounded, school-delivered VR, rigorously evaluated, in our own backyard. The capability exists. What is missing is the connective tissue between where the expertise lives and where the students are, and the regional hub model is precisely that tissue. It even fits the mandate: universities are already required to serve their communities. I struggle to think of a community service more aligned with our century than this one.

Let me end where my columns always end, because the principle does not change with the technology. VR is a tool, and a spectacular one, for the specific things it does well. It will not replace the teacher, the textbook, or the humble field trip to the actual sungai behind the school, which remains free and smells like a real river. The question was never whether the technology can transport our students. It can; I have watched a thousand gasps prove it.

The question is whether we will build the system that carries the technology. The field trip may need no bus. Getting there still needs a driver.

## References

Baharuddin, A. N. A. P., Nik Jaafar, N. R., Ibrahim, N., Ahmad Badayai, A. R., Mohd Salleh Sahimi, H., Mohamad Kamal, N. A., Ismail, N. H., Salwana, E., Abdullah, M. P., & Zamzuri, M. ‘Ammar I. A. (2025). The effectiveness of the REAL™, a school-based, virtual reality-integrated social emotional learning intervention to promote mental health for early Malaysian adolescents. SSM - Mental Health, 8, 100494. https://doi.org/10.1016/j.ssmmh.2025.100494

Makransky, G., & Petersen, G. B. (2021). The Cognitive Affective Model of Immersive Learning (CAMIL): a Theoretical Research-Based Model of Learning in Immersive Virtual Reality. Educational Psychology Review, 33(3), 937–958. https://doi.org/10.1007/s10648-020-09586-2

Makransky, G., Terkildsen, T. S., & Mayer, R. E. (2019). Adding immersive virtual reality to a science lab simulation causes more presence but less learning. Learning and Instruction, 60, 225–236. https://doi.org/10.1016/j.learninstruc.2017.12.007

Merchant, Z., Goetz, E. T., Cifuentes, L., Keeney-Kennicutt, W., & Davis, T. J. (2014). Effectiveness of virtual reality-based instruction on students’ learning outcomes in K-12 and higher education: A meta-analysis. Computers & Education, 70, 29–40. https://doi.org/10.1016/j.compedu.2013.07.033

Wu, B., Yu, X., & Gu, X. (2020). Effectiveness of immersive virtual reality using head-mounted displays on learning performance: A meta-analysis. British Journal of Educational Technology, 51(6), 1991–2005. https://doi.org/10.1111/bjet.13023