



FOURTH- QUARTER REPORT 2021 (Q4)

CoRE Learning Foundation



Prepared by: Suzy Urbaniak
CoRE Lead

CoRE

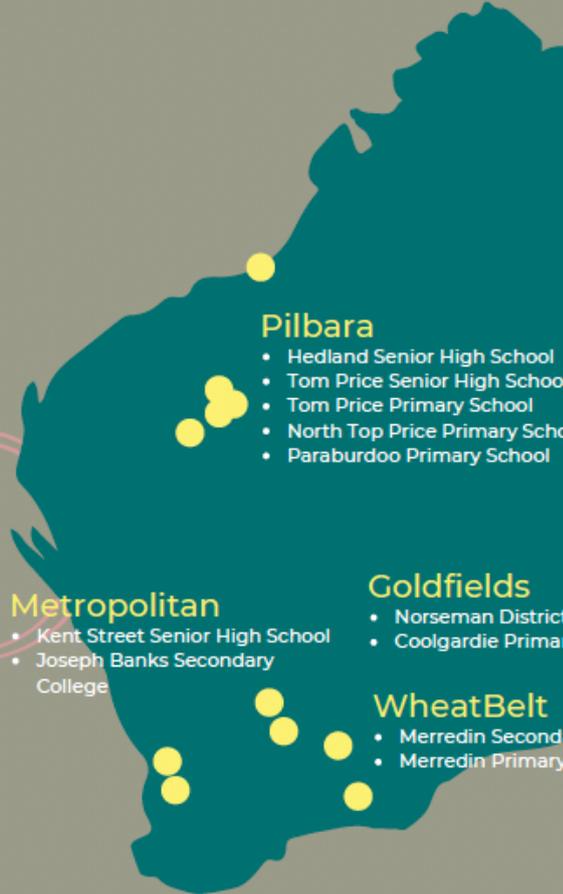
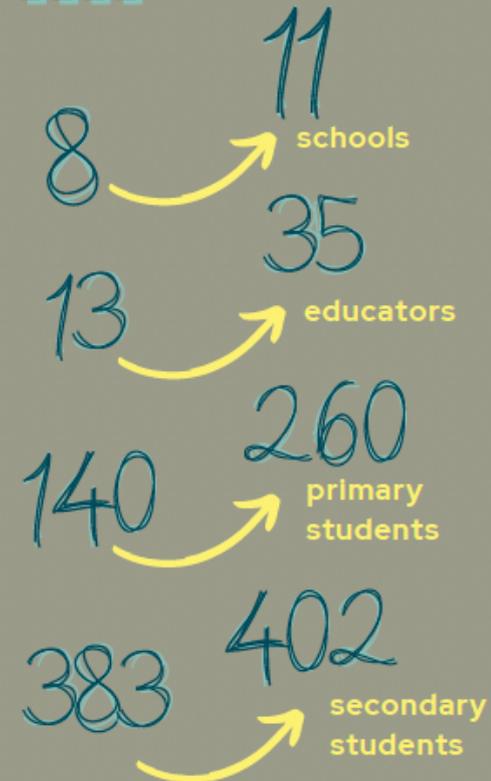


Full STEAM ahead

2021 in review



GROWTH



Suzy Urbaniak
CoRE Lead
Western Australian of the Year Finalist

Stephanie Ludekens
CoRE Educator
Kent Street Rising Star Award

Kathleen Booth
CoRE Lead Kent Street
Winner United Nations Association WA Division

SPONSORS

- CELESTIAL
- Chevron
- EUCALYPT
- IGO
- Perenti
- Ramelius Resources
- GARNET
- Australian Geoscience Council
- Australian Institute of Geoscientists



EVENTS

- Perth Mineral & Gems Show
- Diggers and Dealers
- Australian Earth Science Convention
- UWA Field Trip Microcredential
- WACCSSO keynote presentation

20 Field Trips

2 Resource Challenges

Chevron LNG Exploration Day

PARTNERS

- Discovery Capital Partners
- Questacon
- Western Areas Ltd
- HopgoodGanim
- Curtin University
- The Accounts Ladies
- WASMA
- WASM
- CORE Innovation Hub
- Gold Industry Group



GAMIFICATION



RESOURCE, RESPOND, RESCUE - Year 6



OLD AS DIRT - Year 8

35 schools

National program

70 registrations

#TheFutureClassroom
#TheRealClassroom
#FutureLeaders

Creating a critical mass of STEM-educated, lifelong learners, entering 4th industrial revolution industries.

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QUARTERLY SUMMARY

• CoRE Schools

- Ten school visits for 2022 planning (Hedland, Ashburton School Alliance (ASA), Merredin, Joseph Banks and Norseman)
- Norseman CoRE 5/6 commenced
- Five field trips
 - Kent Street - Year 7 Yanchep, Year 8 Kalgoorlie - SuperPit & WASM, Year 9 South-West - Talison Greenbushes
 - Norseman - IGO Nova and Fraser Range Station
 - Merredin - Turquoise Coast and Tronox - Cooljarloo
- Showcases
 - ASA Showcase in Tom Price
 - Merredin Showcase and opening of the new CoRE Learning Space
 - Joseph Banks CoRE Parent Presentation
- Awards
 - Kathleen Booth (CoRE Metro Champion) - Special Mention at the United Nations Association of WA World Teachers' Day Award
 - Stephanie Ludekens (Kent Street CoRE Educator) - Kent Street Rising Star Teachers Award
 - Jake Bosich (Kent Street Class of 2021, CoRE Alumni) - Certificate of Merit in the 2021 West Australian Schools Curriculum and Standards Authority Awards
 - Portia Claudius (CoRE Alumni, Class of 2021) - AIG (Australian Institute of Geoscience) Award
 - North Tom Price Year 5/6 students First and Second Prize for Aboriginal Art at the Nameless Jarndunmunha Festival, Tom Price



From Sara Finn - Hola Hedland CoRE - "CoRE has provided a network of valuable partnerships for a multitude of reasons, including Upper School Moderation Partners, shared PL and bringing the state a little closer together."

QUARTERLY SUMMARY

- **CoRE Management Committee**

- Three new members
- Jett Coletti - CoRE's Gamification Officer
- CoRE Alumni Video Production

- **CoRE Explorer Schools**

- Lake Monger Primary
- Kalamunda Primary
- Ningham Primary Cell (Northern Wheatbelt)
 - Trayning Primary
 - Koorda Primary
 - Bencubbin Primary
 - Beacon Primary
 - Mukinbudin DHS
 - Nungarin Primary
- Australian Christian College, Hilbert WA

- **CoRE Sponsors and Partners**

- IGO Graduate Program and Nova Minesite Visit
- Perenti Sponsorship - Kent Street Mentoring and Birds of Prey Programs
- AROSE MOU
- Lisa Harvey Smith - Ambassador Proposal
- AIG Kent Street CoRE Award
- Talison Field Trip Support
- Tronox Field Trip Support



QUARTERLY SUMMARY

- **CoRE - MCA - BHP Gamification Initiative Pilot Program**

- Both games are collaborative, centred on enterprising 21st century STEM Skills to create greater Earth Science understanding and promote resources industry career pathways. They are an educational learning tool, designed to be assessable and reportable, aligning with Australian Curriculum requirements, delivered through educator support and leadership. They are not individually focused and don't reflect the familiar games available across the net.
- The Minecraft RRR (Resource, Respond, Rescue) Game is a hit with the primary schools. Uptake is good and feedback positive.
- The secondary OaD (Old as Dirt) game is experiencing a much slower uptake. It's a different concept, requiring a lot more understanding and acceptance. However, when played, it is very engaging, delivers on its STEM skills, and student/educator feedback is encouraging.
- The games are best received by educators familiar with Earth Science content and with those who are technically confident in utilising them as a learning tool.
- Correspondence with active schools, receiving feedback has been difficult
- Gamification Officer is engaged; interviewing for a Marketing Officer will commence in January 2022
- Secret Lab video Tutorials were produced.
- Testimonial Promotional Video is in production.
- Secret Lab (Game Designers) warranty period concluded
 - Two virtual seminars in collaboration with Secret Lab
 - Four Face-to-Face (in WA only (Covid)) tutorial sessions
 - Newton Primary
 - Kalgoorlie Primary
 - Kalgoorlie PEAC
 - Merredin Primary and Secondary
 - BHP Intern Gamification Session across three states and four separate rooms, playing OaD, collaborating with Secret Lab.



CoRE Purpose - CoRE Alumni

- *To help our youth of today succeed in tomorrow's world.*
- *We are the conduit between today's classrooms and tomorrow's workforce, creating a link between students and industry, providing "real-world" learning for students to truly see what their future careers might look like in their context.*

CoRE Alumni - Class of 2021 (Kent Street - Lighthouse CoRE School)

Jake Bosich - Certificate of Merit in 2021 West Australian Schools Curriculum and Standards Authority Awards.

*"I can see how much CoRE has helped me as both a student and in everyday life. At first, the way of learning was very foreign and challenging. I had to adapt to working both individually and with others - through doing, experimenting, questioning, and most importantly, making mistakes. I realise now that the real benefit of CoRE isn't based on the content - it's how it has equipped me with skills and attitudes that transcend any discipline or industry and have set me up for lifelong learning. I've grown and learned a lot during my years in the program. **The field trips and industry exposure were the highlights for me, as they linked our classroom learning to real life.**"*

In 2022, Jake is taking a gap year and has lined up work as a geological field technician with De Grey Mining.



Figure 1: Above - Jake at the portal of Ramelius' Edna May Gold Mine during his Year 12 EES Yilgarn Field Trip. Bottom, Jake as a Year 10 student presenting CoRE Learning at the 2019 AMEC Conference.



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CoRE Alumni - Class of 2021 (Kent Street - Lighthouse CoRE School)

Portia Claudius - AIG (Australian Institute of Geoscientists) Award.

The Australian Institute of Geoscientists award acknowledges a student with outstanding achievement and aspirations to pursue a career within Geoscience.

Portia is an exemplary student who is passionate about understanding the unique relationships between geology and the environment. Her journey in geoscience education began when she joined the select entry CoRE (Centre of Resources Excellence) program five years ago as a Year 8 student. Since then, Portia has consistently demonstrated curiosity and commitment to her learning. Her strong work ethic and growth mindset ensure that she has continued to challenge and extend her understanding within the field. These qualities will guide Portia's success as she pursues a career pathway in Geology and Environmental Science through higher education next year. Congratulations Portia!



Figure 2: Above - Portia, as a Year 10 student presenting CoRE Learning at the 2019 AMEC Conference in Perth. Below - Portia receiving the 2021 AIG Award. She received the award from Steve Sugden, parent of CoRE Alumni Andrew - Class of 2012.

CoRE Purpose - CoRE Alumni Students and Educators

CoRE Alumni - Class of 2011 (Kent Street - Lighthouse CoRE School)

Aaron Meads - AIG Award 2011 - Rio Tinto - Drill and Blast Engineer (former Geologist)



"I spent most of my first years working in the East Pilbara for Resource Evaluation and with the Structural Geology and Exploration Mapping team. After four years of this, I then transitioned into a Mine Geology role at West Angelas. After a year, I moved into Drill and Blast Engineer, where I am currently still working.

The AIG award and the CoRE program allowed me to gain practical experience through multiple field trips and value-adding classwork, making leaving school into university and the workforce much more accessible."

CoRE Alumni - Class of 2014 (Kent Street - Lighthouse CoRE School)

Jayden Butterfill - AIG Award 2014 - FMG - Exploration Geologist



"While attending WASM in Kalgoorlie, I was fortunate enough to work part-time at a local mine in Kambalda. After graduating, I accepted a position as an exploration geologist with FMG and haven't looked back. My role has taken me all over WA and in recent times across Australia to work on multiple commodity projects. My career has been full of highlights, but if I had to narrow it down to just one, I think seeing projects progress from exploration through to production and seeing the result of countless years of hard work come to fruition would take top spot! I was fortunate to have excellent mentoring throughout my senior years in high school, which led me to apply for the BSc (Applied Geology). Winning the AIG award gave me a massive confidence boost that propelled me into my first year at university. I used the grant money to purchase my hand lens which I'm proud to say I still carry with me every day at work to this day!"

CoRE Purpose - CoRE Alumni Students and Educators

CoRE Alumni students and educators give back to current CoRE students. During the Kent Street CoRE Year 8 Kalgoorlie field trip, Northern Star organised a presentation at the SuperPit, featuring two alumni.

- CoRE Alumni - Class of 2011 - Adrian Webb - Mining Engineer
- CoRE Alumni - Tom Price CoRE Educator - Oleg Kay - Geologist.

Both Adrian and Ollie spoke about their current roles within the industry and made mention of their Kent Street days (Adrian) and their role as a former CoRE educator (Ollie).

"You could tell Ollie is a teacher, he knew how to speak to the students!" - Adrian



Figure 3: Left - Former Tom Price CoRE Educator speaking to the Year 8 Kent Street CoRE students about a geology career and right - CoRE Alumni - Adrian describing his role as an open-pit mining engineer, as well as sharing his CoRE experiences at Kent Street.



CoRE Programs - Norseman CoRE IGO Graduate Program Nova Visit



Jeremy - having a go at some ERT skills.

Surveying and Drone usage. A highlight for the students.



Matching XRF drill core analysis with the Periodic Table. Gillian shows Hayden and Jojo the real-world connection.



A hike across Fraser Range and Station, Nullabor job diversity!



All dressed in PPE, ready for the tour.





CoRE Field Trips - Real World Connections & Resource Career Awareness

Merredin CoRE at Tronox's Cooljarloo Mine. The importance of industrial HMS, environmental stewardship, and regional job creation featured in this discussion.



Since 2012, Talison has supported Kent Street CoRE. Year 9 CoRE students were learning about the importance of Lithium as an elemental commodity essential to future technologies.



Kent Street Year 8 Kalgoorlie Field Trip. Always good to see how big the machines are!



Kent Street Year 7 Yanchep Field Trip. Understanding the geology of your local environment is fundamental in CoRE Learning!



Self-development, intra-personal skills are critical in CoRE field trips, building confidence to challenge learning.



Showcasing CoRE Learning



A massive turnout for the Merredin CoRE Showcase.



The RRR Minecraft Game was a huge hit.



The infamous Kent Street Year 7 Martian Muncher!



Joseph Banks Year 8 'Golden WA' PBL. An innovative adaptation of Monopoly.



ASA CoRE Showcase - Kieran describing the Karijini Field Trip.

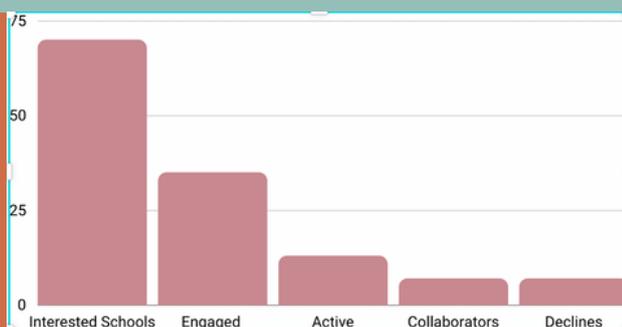


Paraburdoo CoRE students at the ASA Showcase.



Gamification Initiative Pilot

CoRE - MCA - BHP



- Engaged schools - 50%
- 37% of schools are active
- 20% of schools are collaborating in the pilot ecosystem
- 10% of schools have declined the pilot program

The Educator Support Platform tutorial and mentoring strategy have been communicated via six emails and two seminar correspondences. Seven schools or 20% of active schools have collaborated. Individual Educator Support Platform tutorials total six.

Some feedback from Sharon - Kalgoorlie, WA. Year 6 Minecraft RRR

*"Apart from my learning curbs and technical issues, it has been a huge success and students have engaged, stepped up and self-managed while working as a team to problem solve real-world issues. I was extremely overwhelmed when taking on the Minecraft/CoRE program as I had never played or taught Minecraft before. The program has been designed to allow students to self-navigate and run the program as a collective, developing collaboration, group work, and leadership in the students as they take on various roles within the group cohort. **The use of the program made a boring subject interesting and engaging to students and relevant to the world around them.** I look forward to expanding it in 2022."*

"It is just a matter of getting it going, giving the educators the confidence and then the games run by themselves." (CoRE Lead).

Gamification School engagement for the August - December 2021 period. Seventy schools were emailed the Letter of Agreement (LoA) indicating their desire to register as a Gamification Pilot School.

By December 2021, thirty-five schools returned their LoAs indicating their intent to engage; thirteen of these schools are active, and of these thirteen schools, only seven are actively collaborating and corresponding.

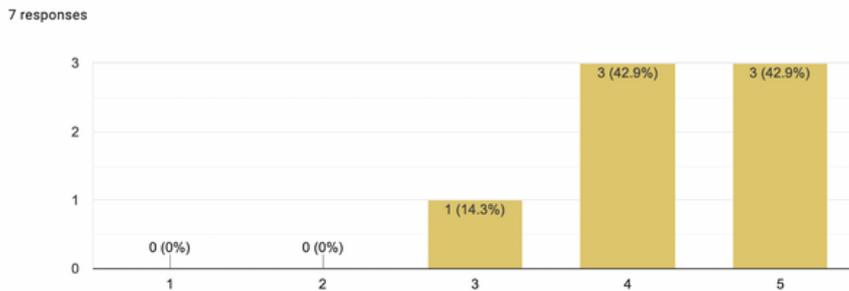
Feedback from educators (particularly the Eastern States) which attribute to the lower than expected uptake, includes:

- Covid burn-out
- Correspondence to Earth Science reporting period
- Need more Earth Science knowledge
- Too much other work

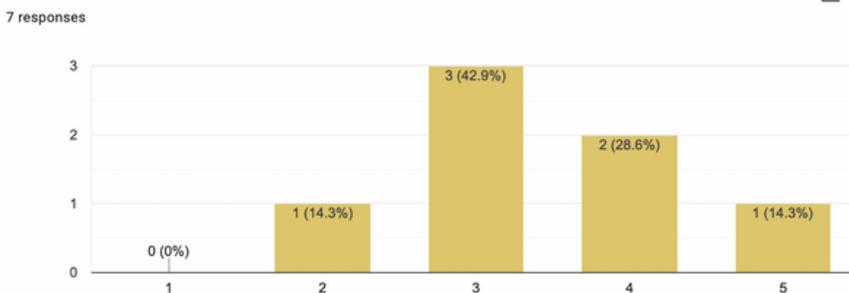


Gamification Initiative Pilot - Educator Survey (Aug - Dec 2021)

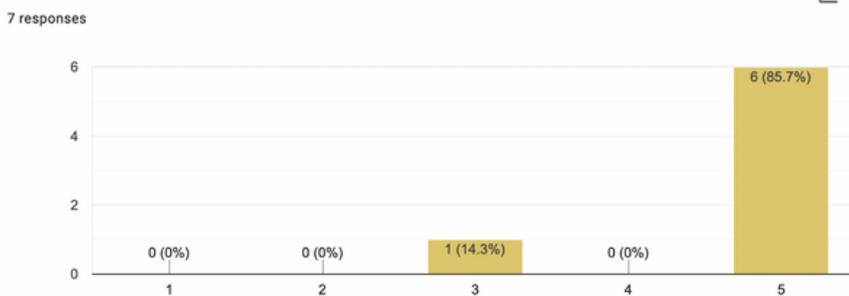
I understand the key concepts presented in the Earth Science curriculum?



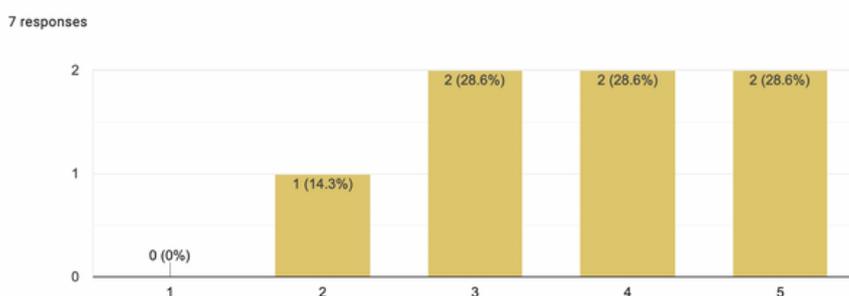
I use games as a learning tool in my classroom.



I regularly use digital technology in my classroom.



I can connect Earth Science Curriculum to real-world applications and experiences for students.



Even though only seven educators have responded to the Gamification Survey, a pattern is appearing which may explain, to some degree, the slower than anticipated uptake of the game. An additional and essential data point is that 86% of the respondents are primary school educators—some inferences derived from this observation include:

1. Minecraft is established throughout the greater community, and its familiarity provides confidence to its users.
2. The interdisciplinary nature of primary compared to secondary education, making it more conducive to its implementation.

Essentially, these respondents who have actively engaged in the games are:

1. confident with Earth Science content,
2. are happy to and regular users of digital technologies as a learning tool.

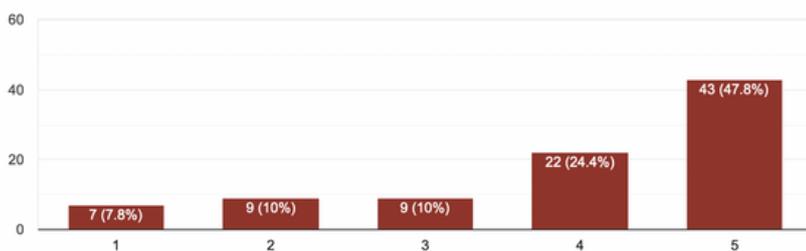
Furthermore, the educators indicate that they can connect Earth Science with real-world applications. This connection is pertinent to the game's design purpose. The games contexts are expressed through resource industry careers. Emergency Response Personnel for the Minecraft RRR game based on a fictitious gold-copper mine located in the Northern Territory and a diverse array of exploration, mining and logistic careers associated with the Iron Ore value chain for the Year 8 Old as Dirt Game.



Gamification Initiative Pilot - Student Survey (Aug - Dec 2021)

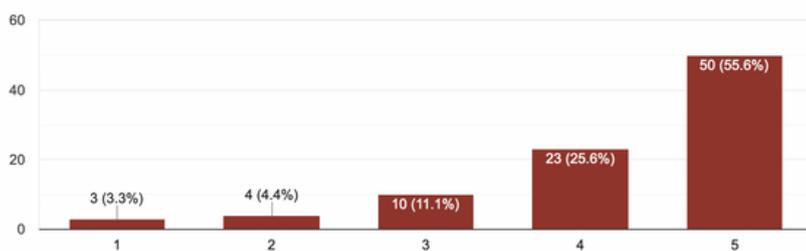
I play computer games outside of the classroom.

90 responses



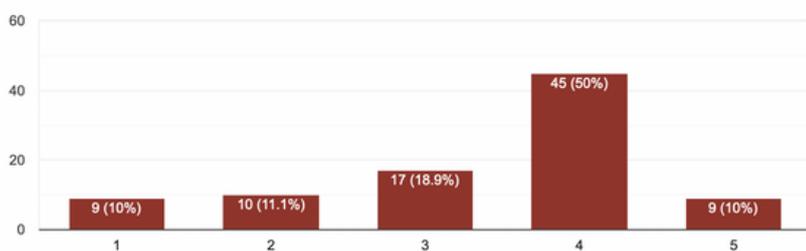
I enjoy being able to use computer games in the classroom to learn new topics.

90 responses



I understand what Geology and Earth Sciences is?

90 responses



Ninety students partook in the first gamification survey for August - December 2021. 84% of them are of primary school age (years 4 - 6). These students would have engaged in the Minecraft RRR.

Data indicates that the students love using technology to learn during school and their leisure time. This observation reinforces the importance of game skilling as an integral learning tool for future generations. To watch the students engage, understand and apply their skills to enable, direct and operate the game is eye-opening. Furthermore, as these are collaborative games, as opposed to those that they are more familiar with, the students are flexible and adaptive. With ease and without many roadblocks, they communicate with their peers, organise strategies and objectives, and meet deadlines to present their research and outcomes.

Students also indicate that they have an awareness of geology and Earth Science. Anecdotally, this is supported through conversations with the students, as many of them have relatives who work in the industry.

"You use the research to learn what to do and how to engage the best strategy. It was fun 'failing' a few times to find the right mitigation."
 Jesse (Newton Primary School)

The students have got it. They enjoy learning through the games. Let us make educators more confident to use this tool as an assessable and reportable task.



Gamification Initiative Pilot - BHP Intern Session

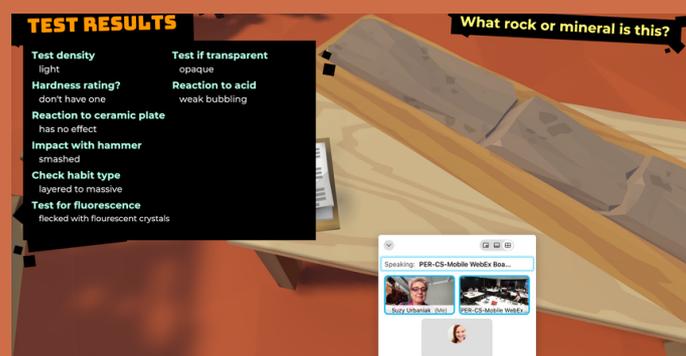
Across three Australian States, virtually set in four rooms, engaging sixty-four BHP Interns, CoRE hosted a Gamification Session in collaboration with Secret Lab.

With two rooms in Perth, one in Brisbane and the other in Adelaide, Uncover and Coring and Exploring (CaE) from the Year 8 Old as Dirt (OaD) Game were played.

Jett had his team going, completing a 100% round of Coring and Exploring in 33 seconds. A record for many to beat. The engagement was strong, the interns employed their enterprising skills such as leadership and negotiation, and there were many laughs and cheers of success to celebrate correct answers. Paris from Secret Lab commented - *"Once they warmed up with Uncover, they did well, and after a practice round of CaE, they got into it, and we did three full games of CaE."*

Fifty-two of the interns completed a survey to obtain information about their primary and secondary Earth Science exposure and their awareness of resource industry careers. They were also asked, retrospectively, if by engaging with the games, would the games have been a useful learning tool to provide them with the appropriate information to support interest for careers in the resource industry. Essentially, we (CoRE) wanted to affirm that the games are a beneficial tool to meet the abovementioned objectives. See Appendix 1. This work is yet to be finalised. However, it demonstrates that during the interns primary and secondary education, Earth Science was non-existent to limited. They would have appreciated a greater awareness of the diversity of resources industry-related careers. Furthermore, they indicated that the games are a progressive and beneficial learning tool.

Figure 4: Running Coring and Exploring with eighteen interns in BHP's Perth office. Teams collaborated to work out the correct answer for the rock or mineral.





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Supporting CoRE for their 2nd year





Appendix 1 - BHP Intern Game Survey

The CLF designs integrated STEM projects based on Earth Science to promote careers in the resources sector.



During your primary and secondary education did you engage in real-world, purposeful Earth Science learning?

Yes - 13

No - 33

Did this learning create resource industry career awareness for you?

Yes

No

Therefore, what would you have liked to have experienced?

- I had a pretty good opportunity in learning these things in hs and yes i did
- I did some study into basic environmental science in high school and it gave me a little bit of insight into this activity
- There was abit of content covered in lower highschool and it sort of helped with making a career choice
- I had the opportunity to explore the rock cycle and earthquakes/tectonic plates in both primary and secondary school, but very briefly and at a shallow level. During schooling I had a chance to visit Murdoch University on a mining excursion for my engineering class in Year 10 which piqued my interest in the resources industry.

- Not many opportunities
- I only had earth science subjects in grade 8 so I did not have much knowledge at all.
- Not exactly
- Somewhat
- It didn't influence my resources degree choice
- not much experience during my high school. Just a little information on the mantle, crust and convection currents from what i can remember.
- did quite a lot in high school, but would have been good to be more aware of mining and the processes involved in that;
- No I did not have an option to undertake geosciences alone. We did learn about the basics of rocks i.e. sedimentary... However, I did have options to participate in the resources sector through QMEA so I was able to explore my options in the resources sector.
- I did not have much experience in primary school in the resource sector, I would have appreciated more exposure such as through games like this.

- more interaction between industry and schools through various programs and opportunities
- More exposure to the mining industry and careers within
- I didn't have an experience like this but I would have benefitted from it.
- I didn't have this experience but would've loved it as it seems to be a better way to get students interactive and more engaged in the classroom
- We didn't and it would've been enjoyable to have more STEM related subjects.
- I think that more exposure from a young age will be very useful, especially through games like these
- The wide variety of jobs available to those in the resource sector
- I would have liked to see a representation of geosciences during careers day and their heavy involvement in the resource industry
- I would've liked to definitely have a greater exposure to the different kind of pathways that lead into the resource industry.
- An overview of the mining industry would have been helpful. Australia's economy is heavily dependent on the resources that are mined and exported and the industry is a massive opportunity and pathway available to young people but isn't really spoken about as part of the current schooling curriculum.
- I think that my highschool experience did not do anything to aid in my career choices as i did not learn as much about this stuff in highschool. I think it would be nice to learn more about this in highschool
- I had almost no exposure from my school to earth sciences, although i did do research on my own because of my Dad. I would have liked to experience the diversity of roles present in the mining industry, as trying to find a career pathway in high school, year 10, was extremely difficult. Knowing about the careers would've helped a lot.
- I did not get these opportunities in my primary and secondary schooling. As a young student, I would have liked this experience as it would have helped increase my awareness of the resources industry
- I would like to have been made more aware of the resources industry and the various roles involved.
- Although I did not have the opportunity to have this sort of activity in my schooling I believe it is very helpful.
- Didnt get exposed to the options available in mining for degree qualified professionals
- There was pretty much no exposure or mention of the resources industry at school and it wasn't really considered a good career option post-school. I would have liked games like this, as well as hearing from career stories of people in the industry (not just engineers but geologists, people in business etc.)
- During schooling, there was a much greater emphasis on 'studies' rather than realizing other aspects of what 'should' be taught. Those of us who did pick units such as Literature and History may have been slightly introduced to the idea of such ideologies however, I believe that it is essential for students (regardless of their desired degree) to learn about the fundamentals of our planet and our impact on it.





Appendix 1 - BHP Intern Game Survey

The CLF designs integrated STEM projects based on Earth Science to promote careers in the resources sector.



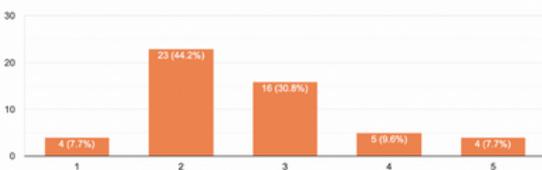
During your primary and secondary education did you engage in real-world, purposeful Earth Science learning?

No

Therefore, what would you have liked to have experienced?

What degree of Earth Science education did you experience during your primary and secondary schooling?

52 responses



- I would have liked the opportunity to simply experience it, whether that be by the resource industry personnel coming to school to run activities or something similar to allow students to engage and experience what the resource industry really means.
- The full picture of what a geoscientist does needs to be addressed more in high school, that it's not just about rocks, it's about what the rocks tell us about historical land movements and other natural occurrences in the environment. More application of geology might make students realise how important of a job it is
- Possibly how the individual resources are mined/rehabilitation
- I think it would be great for young people to get more exposure/insight into the industry.
- Classes to inform on these issues and awareness around the resource industry
- Absolutely. Not having an Earth science course in school, it would be nice to have more exposure to the resource sector to make more informed career choices.
- None during schooling - the game would've been very useful to becoming more aware of the resources industry
- Fun games. Especially Uncover, which I think did a good job of high lighting the diversity of things that happen in our industry. Coring was fun too and I enjoyed being asked to actually chat in the room with my colleagues. Will be fantastic for schools. paris was hilarious and Suzy is clearly so passionate.
- No opportunities for me. Glad to be here today though. Stuff like this is good.

