



RESPONSIBLE
METAVERSE
ALLIANCE

Educators *in* *the* Metaverse

Responsibly unlocking the educational
potential of immersive technologies

Discussion Paper

November 2023

ACKNOWLEDGEMENTS

RMA acknowledges the traditional owners of the lands we work from in Australia, and pay our respect to elders past and present. We thank Aboriginal and Torres Strait Islander people for their continued knowledge, wisdom and connection to the unceded lands and waters that we now raise our families and share in community on. Always was, and always will be, Aboriginal Land.

The RMA is an organisation built on collaboration with partners from many sectors and nations. In particular, we want to acknowledge those who have committed their time, expertise and wisdom to this work. In particular, the individuals who contributed and/or presented their work which sparked such valuable discussion at this think tank:

Speakers: **Dr Catriona Wallace**, Founder, Responsible Metaverse Alliance
 Mitch Buzza, Australian Representative, Educators in VR
 Dr Justin Ellis, Senior Lecturer in Criminology, The University of Newcastle

We also acknowledge the many other individuals and organisations who participated in and/or contributed to this think tank.

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KEY TERMS & ACRONYMS

A.I.	Artificial Intelligence. <i>Note: the role of A.I. in the Metaverse is quickly becoming ubiquitous and would require a focused report to cover all of the dimensions involved. Instead, we consider A.I. as having a role throughout all topics covered in this paper.</i>
Biometrics	The measurement and analysis of physical and behavioural characteristics. This can include capturing users’ involuntary and reactive physical behaviour, eye tracking, facial expressions, vocal inflections, and more; and has been shown to allow for the identification of a user’s gender, age, height and more.
EdTech	Education Technology. That is technology platforms, services, apps and tools developed specifically for use in education. There are companies that operate only as ‘EdTech’, while other major companies like Google, Microsoft and others have specific EdTech offerings alongside their other products.
HMD	Head-Mounted Displays have a small display optic or ‘screen’ in front of one or both eyes, worn on the head or as part of a helmet.
‘Immersive Technologies’	Typically refers to multi-sensory technologies. A collective term used to include Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR), Volumetric Video Capture, 360 Degree Video, Haptics.
Metaverse	“Persistent and immersive simulated worlds that are experienced in the first person by groups of simultaneous users who share a strong sense of mutual presence” description by Dr Louis Rosenberg, Chief Scientist at the Responsible Metaverse Alliance. Throughout this paper, we use the term ‘Metaverse’ to refer to ‘immersive technologies’ - see above.
S.E.N.	Special Educational Needs. A term used in some countries to refer to children with learning impairments that are seen as requiring additional support.
Telematics	Typically refers to data collected on a user’s location.
XR	eXtended Reality including augmented and virtual reality

INTRODUCTION

The potential for immersive technologies, including the Metaverse, to provide greater educational outcomes are obvious, from cultivating greater connection and situational immersion, gamified learning environments, multi-sensory learning spaces, or as a virtual sandbox for experimentation of all sorts. With roughly half a billion regular Metaverse users, 8 in 10 are aged 18 or under (Metaversed, 2022), and while gaming and entertainment currently dominate, the education sector currently makes up 12% of investments in Metaverse technologies, second only to the IT sector (Strouvens 2022). There is no question that the Metaverse will continue to grow in prominence, with Apple's Vision Pro set to turbocharge uptake from 2024, and the global market size expected to reach \$936.6 billion USD by 2030 - up from \$82.2 billion in 2023 (Grand View 2023).

While there is a plethora of evangelist-esque promotion on the potential benefits of these technologies in the classroom, the rapid development of other digital and online technologies over recent decades has also produced numerous lessons on the individual and social harms of rapidly developing digital products. Given this, educators, institutions, parents and young people themselves understandably have some hesitations about the impact of the Metaverse and its role in education. And so with the inevitable encroachment of these technologies into every aspect of young people's lives, it is clear that educators will play a significant role in keeping young people safe, whether in the context of education or as stewards and caregivers. And as young people rapidly increase their use in and outside the classroom setting, considerations for educators about the impacts of these technologies on students requires a perspective that is more expansive than thinking about products from the EdTech sector.

On the 18th of October 2023, the Responsible Metaverse Alliance and partners held an online Think Tank with a diverse group of educators and experts from 4 continents, to discuss the use of immersive technologies in education. The discussion was insightful and provided new insights into the opportunities and risks involved, and in particular the role of educators in ensuring young people can enjoy, learn and discover in the Metaverse safely.

This discussion paper is the output of that conversation, subsequent submissions from participants, and desk research, and is intended to surface the key themes, and to articulate the various challenges and dynamics of the use of immersive technologies in educational settings. Some of the topics covered through this discussion include the many use-cases in educational settings, the risks posed to young people and educators, the lack of safety and design principles for Metaverse and EdTech products, and the real concern about commercial entities prioritising profit incentives over safety considerations.

Our primary intention is that this discussion paper can serve to generate input from the broader community of Metaverse stakeholders to further inform best practice and policy, and to establish a codified handbook for educators. The task of building and maintaining a safe Metaverse requires a multi-disciplinary and collaborative approach, and the responsibility of keeping users safe - particularly young people - currently falls unevenly across a number of stakeholders, each with a distinct role to play. We look forward to further collaboration with stakeholders of all kinds.

EDUCATION IN THE METAVERSE: OPPORTUNITIES

The Responsible Metaverse Alliance's mission is to foster the adoption of immersive technologies in ways that are safe for users and communities. In education, there are numerous opportunities for these technologies to improve the learning outcomes of young people and adults, and as mentioned, the education sector is currently the second largest investor in Metaverse technologies (Strouvens 2022). And while the IT sector is the largest investor, many of those companies already, or plan to soon, offer educational offerings for their Metaverse products. The opportunities are endless, and a plethora of use cases have shown the potential benefits for education purposes in the following ways:

- **Immersive Simulations and Virtual Laboratories;** E.g. as is used in aviation and medicine
- **Interactive Multi-Sensory Visualisations;** E.g. as is used for areas such as architecture and design
- **Cultural and Historical Immersion;** E.g. particularly prominent in the recreation of historical settings, or for immersion in cultural settings for language learning
- **Collaborative Learning and Remote Education;** E.g. providing greater connection with other users - often through the use of avatars - in ways that standard online learning cannot.

VR School presents the 'special learning affordances' of these technologies as having the capability to engage students more thoroughly and creatively to promote deep learning (Source: Erica Southgate):



Learners can train for, practice and have experiences in VR that are impractical, impossible or unsafe in real life, e.g. they can fly through a meteor field or fix a spaceship in zero gravity.



Networked virtual experiences allow learners from anywhere in the world to communicate, collaborate and problem solve, together.



VR can make learners feel as if they are really in situations or that they viewing the world through the eyes of others, and this can create empathy.



VR allows for the manipulation of size and scale e.g. a cell can be the size of a house or the learner can travel as a cell through the bloodstream of a body.



Learners can see, hear and manipulate information in VR that is not accessible in real life or to the human senses, e.g. they could follow a visualised animal scent trail or change the temperature of the ocean and observe the effects, all around them.



VR environments can provide a space to rehearse professional or social skills e.g. job interview skills or healthy decision-making in a peer group.



Spatial concepts are brought alive in VR as learners manipulate, interact and create in a 3D mode that is all around them.



Some VR environments are studios or 'sandboxes' for learners to playfully design, create and prototype: there is no need to access physical materials or worry about generating waste.

There is no shortage of businesses offering Metaverse technologies that can improve the learning outcomes of students across age groups, and there are numerous studies that have tested the potential benefits. Some have shown how virtual and augmented reality technologies have improved kindergarten children's learning of the English alphabet (Demitriadou et al. 2020), improving vocabulary and comprehension (Tobar-Munoz et al. 2017), reducing stress and anxiety to support completing learning activities (Che Dalim et al. 2019), and demonstrated significant potential in enabling greater interactive and collaborative learning between students (Liang et al. 2017 and Redondo et al. 2019). A Penn State University study showed that some applications saw students using immersive virtual reality accomplish a task more than twice as fast as their peers using traditional computer programs (Mester 2015).

There are countless case studies demonstrating the benefits across a wide range of use cases, disciplines and age groups, demonstrating that adoption in schools is already well underway. Below are just some examples from various primary and secondary schools.

CASE STUDY

Ohio High School Uses Cutting-Edge VR for Anatomy Lessons

"An all-female Catholic high school in Ohio is trying to give its students a leg up in health sciences with immersive 3D virtual reality software that visualizes the human body at different scales and positions." (Paykamian 2023)

CASE STUDY

The Metaverse Is Already Here, K–12 Schools Are Using It for Education

"While social media and gaming giants are investing heavily in the space, educators are using the Metaverse for virtual field trips, STEM classes and physical education" (Rudra 2022)

CASE STUDY

Schools switching to virtual reality lessons

"History lessons are child's play for students at Aitken College in Melbourne. Rather than reading a textbook or Googling for information, teenage boys play an educational version of Assassin's Creed, the blockbuster action video game that has been adapted with historically accurate "worlds" based on the ancient civilisations of Rome, Egypt and Greece." (Bita 2022)

CASE STUDY

Virtual reality guides lessons on Aboriginal culture in innovative school program

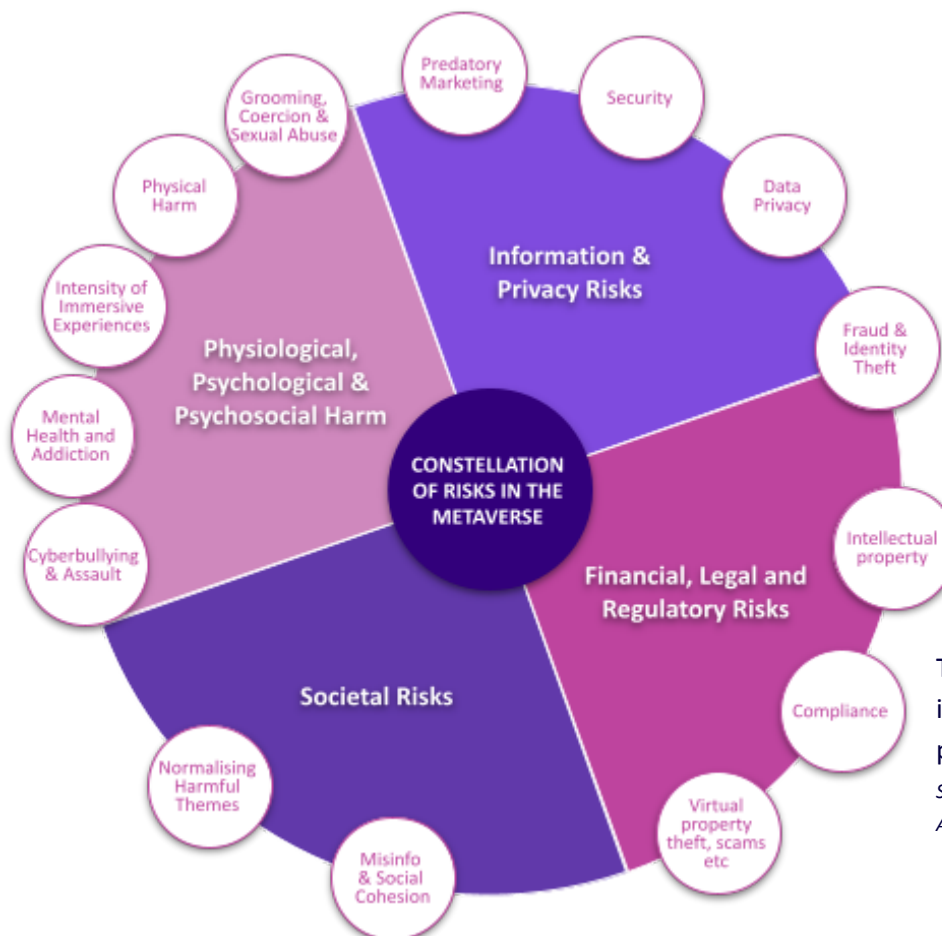
"Primary school children are learning about Aboriginal culture through the eyes of totem avatars in an innovative scheme aimed at improving Indigenous kids' self-esteem." (Hiatt 2023)

RISKS TO YOUNG PEOPLE IN THE METAVERSE

With countless ‘evangelist’ articles on the benefits of Metaverse technologies in education, many are well balanced while most neglect to discuss the well documented risks involved with the adoption in classrooms. These risks are well articulated in the academic literature, which highlights a significant distortion of the hype around the Metaverse in education. The perceived benefits must be balanced with the known risks such technologies pose to young people, and there is a need for greater understanding of the different levels of concern each warrants depending on the setting, content and user demographics.

It is valuable to articulate the universe of risks that these technologies pose to young people, and while this list is certainly non-exhaustive, it is intended to serve as a starting point to better inform educators, parents and young people. While young people enjoy additional savviness as digital natives compared to older generations, it is well established that young people are more at risk of many of these harms. We have broken these risks down into the following categories:

1. **Physiological, Psychological & Psychosocial Harm**
2. **Information & Privacy Risks**
3. **Societal Risks**
4. **Financial, Legal and Regulatory Risks**



The constellation of harms in the Metaverse for young people and educators.

Source: Responsible Metaverse Alliance 2023

RISK CATEGORY 1:**PHYSIOLOGICAL, PSYCHOLOGICAL & PSYCHOSOCIAL HARM**

This area is typically the most present to parents and educators as there are many inherent features of immersive technologies that either enhance well-known risks of digital technologies, however the Metaverse also poses entirely new potential harms to young people.

1.1 MENTAL HEALTH & ADDICTION

Nearly all technologies are exciting to young people, and with immersive experiences often designed by companies that operate on a business model of increasing usage, addictive design features are common. The impacts of addiction to immersive technologies can be profound on the development of young people, and with high usage outside the classroom, educational use is usually increasing the total number of hours a young person spends in virtual worlds.

“In regard to issues of addiction, that’s certainly a factor when some of our kids are coming into the lunchtime clubs. We survey them on entry, and found out that they are actually spending 8 to 10 hours outside of school time online in various formats. So offering online activities at school is actually feeding their addiction, even in our controlled environment. So that creates really interesting questions: how do we monitor that internally? Do we turn XYZ off? Do we communicate with parents differently? I’m not really sure how to deal with that at the moment.”

- Participant quote

While there is no broadly accepted definition of what constitutes tech addiction, there is significant research in excessive use correlating to increased social isolation, mental health issues including suicide ideation, and impediments to young people’s social development (Bawa 2022). A significant and well documented impact of excessive use is the interruption of sleep, which can have compounding effects to diet, health, and mood.

“How much time is too much time? And is that a generic thing, or is that a personal thing? How does that relate to the neural development of an adolescent”

- Participant quote

1.2 INTENSITY OF IMMERSIVE EXPERIENCES

The immersive nature of Metaverse experiences is often underestimated, with even seemingly benign use of educational content posing risks to the user. One example provided by participants was on the effect of a close up virtual reality experience of a hummingbird proving to cause anxiety and intense

responses from students. It is important that young people are provided the ability to effectively navigate immersive experiences to put distance between themselves and high intensity or emotional content.

1.3 CYBERBULLYING & ASSAULT

Cyberbullying is a well established and unfortunate feature of the internet in young people’s lives, and the Metaverse has already proven to increase the intensity of such behaviours through intense virtual assaults, particularly on women and girls.

1.4 GROOMING, COERCION & SEXUAL ABUSE

Online grooming and child sexual exploitation is rampant online, and the Metaverse creates new opportunities for predators to take advantage of increased access through public virtual spaces, anonymity through the use of avatars, and virtual assault (including physical and verbal). A recent report outlined these risks to young people that are increasing in prevalence:

1. **Online grooming**, including tactics such as catfishing and sextortion is on the rise – numbers of instances recorded by policy jumped by 70% in the last three years
2. **CSAM (Child Sexual Abuse Material)** continues its exponential growth – reports of child sexual abuse online have risen from 1.1 million in 2014 to 29.3 million in 2020 covering over 84 million CSAM images and videos
3. **Self-generated images are increasing** – web pages containing self-generated images increased by 168% from 68 thousand in 2020 to 182 thousand in 2021

(Bracket Foundation 2022)

1.5 PHYSICAL HARM

Metaverse use poses a number of threats to the physical safety of users. From the weight of head-mounted displays (HMDs) that cause discomfort and strain to the face and neck, to well reported cases of ‘cybersickness’ causing eye-fatigue and migraine-level headaches particularly in young people. There are also risks from collisions with the physical environment like tables and chairs in a classroom.

“We had to limit the use to year 5 and up, and this was before there was much research on younger kids having access. We did that in regard to vertigo, as a number of younger kids had almost migraine level headaches. So we’ve now stopped younger kids using it all together.

- Participant quote

RISK CATEGORY 2:

INFORMATION & PRIVACY RISKS

With increased use of avatars and anonymity, along with an exponential lift in users’ data collection (e.g. biometrics and telematics) the Metaverse poses risks to confidentiality, privacy and data integrity.

2.1 SECURITY

The use of most of these products involves the collection, processing, and storage of large amounts of personal data which could lead to data breaches, cyber-attacks and malware infections. With a number of participants sharing experiences of their virtual classrooms being bombarded by unauthorised external users.

2.2 DATA PRIVACY

Beyond the security risks, the collection of personal data poses significant risks to privacy and compromising personal data, which can enable other harms, including grooming and exploitation of young people. The sheer amount of personal and biometric data collected also enables large tech companies to de-anonymise large data sets to identify individuals using shared educational accounts.

2.3 FRAUD & IDENTITY THEFT

The increasing prevalence of sophisticated deep and 'shallow' fakes, particularly with the aid of Artificial Intelligence, presents new frontiers for identity theft. Reenacting someone's image and voice, opens up a range of financial crimes and personal harms in the Metaverse.

2.4 PREDATORY MARKETING & MICROTARGETING

The use of micro-targeted advertising by technology companies is well documented and poses significant threats to young people who are particularly susceptible to advertising targeting them based on their interests, emotional states and demographics.

RISK CATEGORY 3:

SOCIETAL HARMS

The online work has seen the atomisation of media through algorithmically-curated personalisation of content that has shown to tear at the social fabric, causing polarisation and undermining social cohesion, as well as radicalising users into hateful ideologies and conspiracy.

3.1 DESENSITISATION & NORMALISATION OF HARMFUL THEMES

With a lack of regulation of harmful content and hate speech online already an issue - along with the algorithmic-incentivisation for sensational and outrageous content - the immersive nature of the Metaverse creates a greater likelihood for users to be served content that can lead to radicalisation. Continual exposure to such content has been shown to normalise harmful narratives and/or desensitise users to extreme ideologies. This is particularly an issue in relation to incels, toxic masculinities, and terrorism.

3.2 MISINFORMATION & SOCIAL COHESION

The Metaverse will likely exacerbate existing impacts on social norms, values and cohesion of communities through the spread of mis- and disinformation. This poses well-documented threats that could impact all layers of society, from the school community through the integrity of democracy.

RISK CATEGORY 4:

FINANCIAL, LEGAL & REGULATORY RISKS

There are a number of risks in this category, many of which intersect with other risk areas. The following pose risks to both individuals (educators and young people) as well as institutions.

4.1 LEGAL & REGULATORY RISKS

There is a wide range of evolving Legal and regulatory risks for young people and educators using immersive technologies. A lack of knowledge of changing regulatory requirements, or a lack of proper

governance within educational institutions could lead to legal uncertainties or liabilities. These could result in disputes or lawsuits involving intellectual property, trademarks, copyright infringement, contractual disputes, and more.

4.2 FINANCIAL RISKS

As is seen across the online space, there are a significant amount of financial risks for users and institutions, ranging from virtual property theft, scams etc that could lead to monetary losses. Further, without proper oversight, students and young people may have access to unregulated virtual markets in the form of virtual real estate, virtual goods, virtual currencies and more. All of which pose risks through a lack of regulation, as well as market and price volatility, taxation issues, market crashes etc.

THE ROLE OF EDUCATORS

It is clear that the role of educators in ensuring the safe use of Metaverse technologies is significant, both as guardians of their students' safety, but also as users of the technology themselves. Participants demonstrated a clear recognition of both awareness of their responsibility in this regard, as well as the gaps in their knowledge and available resources and guidelines to support them.

"I'm an educator. And so my questions would be: Do I need the technology? What is the learning outcome? And on balance is the loss of privacy through the accumulation of student data worth it?"

- Participant quote

This responsibility falls somewhat disproportionately on educators, as they are left to mitigate the harms caused by a vacuum of regulation and accountability for developers and technology companies. Not only are educators required to consider the personal circumstances of their students with harms varying in severity between individual students, but they also need to consider the amount of time students use these technologies outside of the classroom, as well as important privacy considerations at both the individual and institutional level.

It was clear from our participants that there is an urgent need for greater support in enhancing the role of educators in the development of regulation, platform design, and content design and curation. The key themes surfaced in relation to the role of Educators, include:

- 1. Resistance to 'digital essentialism'.** With increasing pressure from students, institutions and society to stay up to date with their knowledge and usage of transformative technologies like the Metaverse, educators are often left without the space or ability to raise key questions like: do my students need this technology? What are the learning outcomes of its use? Are the benefits tested and harms researched? Is usage worth the loss of privacy and data?
- 2. Educational use of the Metaverse is unique.** It was acknowledged that requirements will be different to other use cases and that existing guidelines for general Metaverse or digital technologies are often inadequate for the educational context. Educators are faced with the

increased need for safety considerations of young people, while balancing personal and institutional responsibility.

3. 'Do No Harm' and service provider responsibility

and accountability. The 'do no harm' principle is key for educators in all facets of their work, and particularly so in this context. But this principle is seemingly absent in the approach taken by developers and content creators. One participant talked about the choice in Metaverse technology providers as "choosing your poison", with educators left to operate at the whim of technology companies who have lost public trust in regard to safety, transparency and accountability. This lack of accountability makes it difficult for educators to assess foreseeable risks, a responsibility that should sit with companies, regulators and policymakers.

"the people actually working with these emerging technologies are the ones who are more aware of the risks. And most don't anticipate the negative possibilities until they actually happen to their kids"

- Participant quote

4. Adapting and tailoring use, set up and lesson planning for different age groups,

which needs to go beyond broad groupings of primary, secondary and tertiary to consider narrower age groups, while also taking on cultural considerations of diverse classrooms.

5. Knowledge and awareness of educators and parents.

As caregivers, educators feel a responsibility to provide education for parents as well, who are typically unaware of the impacts of Metaverse technologies. This lack of awareness is often present amongst educators themselves, creating a vacuum of trusted information sources, and educators being left to conduct their own research into the harms with limited resources and capacities - often having to learn 'on the fly' as risks are experienced.

6. Content.

With a dire lack of regulation in this space, and the proliferation of harmful and age-inappropriate content online, educators are required to vet all aspects of virtual environments and content.

"Is it really is up to us as educators, academics, teachers to drive this forward? And are the companies going to listen? Well, I would say not. We know what's happening with addiction, with TikTok, with all the bad things that have happened on Youtube and Twitter over the past few years. You know it's not been a good sell for bringing these companies into education. So it's up to us for how we get involved directly."

- Participant quote

RECOMMENDATIONS

Approaching the use of the Metaverse in educational settings requires a balanced approach between unlocking the opportunities the technology presents for better student outcomes, while acknowledging and mitigating the risks involved. Currently there is a significant imbalance in the current discourse and sector, where there exists countless platforms and tools being promoted to educators, with minimal resources on how to use them safely in the classroom.

There is clearly a need for more resources, guidance and support for educators in their role safeguarding young people from the potential harms of the Metaverse. Below we have developed a set of recommendations across policy and regulation, education and awareness for consideration.

RECOMMENDATION 1:

SAFEGUARDING RESOURCES FOR EDUCATORS

While there is a need for government and regulator-led investment in the development of resources and guidelines for educational use that is informed by students and educators, we have compiled a list of safeguarding recommendations in using immersive technologies in classroom settings across the following five categories:



A. APPROPRIATENESS

The allure of immersive technologies can be strong with many push and pull factors informing your decision to adopt its use. Below are some key prompts for consideration in assessing the appropriateness of such technologies for you and your students, if you are unsure of the answers to any of these questions, you should reconsider adoption:

- Is the use of these technologies necessary?
- Will it be beneficial to their learning?
- What are the expected learning outcomes?
- Can these be achieved without causing harm? Are you making trade-offs between potential learning outcomes and harms?
- Are you aware or have you identified all pre-existing conditions of your students that could be impacted by the use of these technologies? E.g. epilepsy, vertigo, PTSD, anxiety and depression, migraines.

B. PRACTICE & APPROACH

This is to assess your knowledge of the risks, and level of experience on the platforms and tools. It is highly recommended that you conduct an assessment of student emotional readiness.

Your preparedness:

- Do you fully understand what the experiences will involve?
- Are you competent in navigating the platforms?
- Are you able to easily access students in the virtual world to provide support if necessary?
- Has the virtual learning environment been adapted to accommodate students with ‘special educational needs’ (SEN)? E.g. Autism, ADHD, learning disabilities
- Do you have the resources to adequately manage a class of 20-30 students in the virtual space? E.g. Can you ensure equity of access and safety?

Your students / young people:

- Do they understand what the experiences will involve?
- Do they know how to navigate the platforms? E.g. do they feel in control and able to return to the safety of the physical world at any point
- Do they have access to support in the virtual world? And do they know how to access it?
- What is their level of readiness to engage with potentially emotionally triggering content?
- Do they have an understanding of boundaries within the physical world, and how these translate differently to the virtual world? E.g. expectations of behaviour, respecting personal space, cultural boundaries etc

C. PHYSICAL SAFETY & PSYCHOLOGICAL WELLBEING

There are a number of physical safety considerations that need to be addressed, including through planning, implementation and follow-up. Consider the following:

- Is the physical space in which students will be using virtual technologies safe? E.g. clearing tables, chairs to reduce the likelihood of students colliding with each other and objects?
- Are the head-mounted displays (HMDs) fitted well to avoid causing discomfort or pain? E.g. in the neck or leaving marks on the face?
- Are there controlled time limits on usage for students and educators? This includes lesson planning and testing, reducing potential for overuse, and being cognisant of their use outside of the classroom.

D. PRIVACY

This section is to provide guiding questions on the privacy implications:

- Are you aware of the privacy and data considerations involved in the use?
- Are students and parents aware of these considerations?
- Are the HMDs secured (ideally not connected to wifi) to prevent students downloading miscellaneous apps unrelated to education?
- Is the virtual space secure to prevent unauthorised access?

“We need to be aware of all of the data that’s being collected about us, as ‘digital twins’, existing all over the world in different databases that can be used to predict our behaviour. And so we are asking our students to have a digital twin created of them”

- Participant quote

E. CONTENT

Inherent to the Metaverse is exposure to new immersive experiences, however with the industry still in its infancy, there is a lack of regulation and oversight over the content being created for young people.

- Have you screened / assessed the content and experience to ensure it is fit for educational purposes? Including whether the immersive nature is at the right intensity, and whether it is age appropriate?
- Is the platform connected to the internet and open to unsolicited content, advertising etc?

ADDITIONAL RESOURCES FOR EDUCATORS

Despite there being a significant need for relevant and up-to-date resources for educators, there are a number of existing resources that can serve to support educators.

1. VR SCHOOL

The VR School Study is premised on the open sharing of research resources, infographics, guides and reports designed to facilitate the use of the technology in schools and build the evidence-base to enhance student engagement and learning outcomes. The research is conducted with real teachers and students in diverse primary (elementary) and secondary school communities. And we connect our findings with industry so that impact is assured.

VR School has compiled a list of resources here: <https://vrschoolresearch.wordpress.com/resources>

2. eSAFETY COMMISSION

Australia's eSafety Commissioner helps Australians experiencing online bullying or abuse, provides a number of online safety programs and resources, guidance on safety by design, as well as free training. They provide a number of resources including best practice frameworks, toolkits for schools and universities, classroom resources, a video library, and guidance for early years.

Learn more here: <https://www.esafety.gov.au/educators>

RECOMMENDATION 2:

SAFETY, PRIVACY & HUMAN RIGHTS BY DESIGN

Mitigating harmful impacts of the Metaverse on young people will be heavily influenced by how safe the environments and products are designed. There is currently no assurance for users that Metaverse and AI products are going to be built with the necessary guardrails, controls or restrictions that can ensure user safety. This poses a significant threat with the potential to accelerate and amplify the harms, particularly as the technology is increasingly deployed at scale.

To ensure Metaverse products and platforms are designed with user safety in mind, developers need established guidelines and standards for how to do that effectively. While there are clear needs for the inclusion of particular safety features like built-in reporting and support mechanisms for users, the necessary design frameworks and guidelines should encapsulate the entire development process, from contracting through to deployment.

Another key component of safety by design is for companies to provide transparency for educators, users and regulators on the individuals involved in making design decisions, and the considerations and factors that inform them. This helps ensure accountability for those decisions with senior management, while also providing appropriate incentives for developers and designers to create safe and age-appropriate products.

The recent white paper from Standards Australia - and authored by RMA and XRSI, outlines proposed industry standards to prevent targeted influence and manipulation in the Metaverse, which include the right to: i) experiential authenticity; ii) emotional privacy; iii) behavioural privacy; and iv) human agency. The paper outlines additional areas for standards development in Australia that are also applicable in other jurisdictions that include focusing on Responsible AI aspects of Metaverse platforms and extending the Responsible AI framework and Child Safety Standards.

"At the end of the day companies are there to make money. They just want to sell boxes. So these big companies that make these games we're adopting, are they really genuinely interested in the well being of its users? Are they really interested in education and learning outcomes and the kind of pedagogies that we can inform them about? I have my doubts"

- Participant quote

Going beyond Safety-by-Design, there is also a need to ensure the human rights of users also avoids being a conversation after harm is committed, which can be mitigated by furthering the development and thinking

of human-rights-by-design. Both of these approaches are practically absent in the current approach to the development of these products.

RECOMMENDATION 3:

POLICY & REGULATION

Accountability for the adoption of safety-by-design principles requires governments to pass legislation, and for regulators to craft new codes and standards, that enforce their uptake and ensure that is done so in line with the best interests of users, educators and the broader public. There is a clear need for governments to avoid reactionary policymaking after harms have occurred, and to instead build on the learnings from harms already being experienced online:

3.1 STANDARDS ON EXCESSIVE USE

There is a need for establishing consistent and shared standards of acceptable amount of usage that is appropriate for different age groups. This will allow educators and parents to better identify problematic overuse and addiction of immersive technologies.

3.2 DEFINITIONS

There is a need for establishing consistent and shared definitions of ‘hate speech’ and ‘harassment’ - which are already inadequate for addressing online hate speech - and in particular should include other forms of ‘expression’ like touching, use of symbols etc in order to make them applicable to potential actions in the Metaverse.

3.3 RESEARCH

A huge gap exists in the publicly funded research into the benefits and harms of Metaverse technologies. In order to ensure impartiality and accountability to the public interest, governments should fund more research in this space, for example research that quantifies the current use of immersive technologies in education. This would be a sensible starting point and gap to address that could inform better approaches to use in classrooms, as well as policy and regulation.

3.4 SAFETY BY DESIGN

The safety by design framework consists of three core elements: service provider responsibility, user empowerment, and autonomy. Mandating safety by design in regulation is key, and should be based on the child’s best interest principle, a useful feature in Common Law and already being deployed in this space through legislation like the UK’s Age Appropriate Design Code, which has since been replicated in other jurisdictions.

3.5 PLATFORM ACCOUNTABILITY

Regulation needs to consider the platforms and companies that enable or facilitate harms to young people - even if done so inadvertently. This involves ensuring service providers take

responsibility and disclose foreseeable risks; while having transparency mandated on risks occurring and for users around the privacy settings of VR and Metaverse devices.

3.6 EDUCATION, AWARENESS AND DIGITAL LITERACY

Many people, including educators, parents and young people, lack familiarity with virtual and augmented reality technologies. And while responsibility should primarily sit with companies, platforms and regulators, success there will be greatly strengthened through increased user awareness of the harms, their rights and pathways to support and redress.

“Don’t think that Google Facebook, Meta, whoever - pick your poison - won’t unbundle data for identification down to the individual user. It’s gonna take regulation to stop it, and we’re 5 years away from that. So be careful. What is the price [of using these technologies]? We don’t know that price. It took us 30 years to work out the price of social media”

- Participant quote

CONCLUDING REMARKS AND NEXT STEPS

It is clear that we are not prepared to unleash immersive technologies in the classroom, and to do so would be a failure in our collective responsibility to young people, but also a denial of the lessons from recent history. There is a disconcerting lack of established safeguards and regulation to ensure that young people can safely use the Metaverse inside or outside the classroom. The responsibility for this currently falls disproportionately and unjustly on our educators, leaving a clear call to action for developers and the sector to take safety-by-design considerations into the design of the products, and more urgently on policymakers to pass regulation that guarantees the accountability of those companies. It is also clear that governments need to invest in greater resourcing and education for educators, parents and young people on the potential harms and appropriate uses of these technologies. The challenge is significant.

We hope that this Discussion Paper will stimulate further discussion and mobilisation towards some of the recommendations made above. We invite all stakeholders to engage in this conversation, contribute to resources and support for educators, and to call on policymakers to ensure the Metaverse meets the promise of these technologies to improve lives and strengthen communities.

Relevant resources

[Standards Australia Metaverse White Paper](#) - May 2023

[Policing in the Metaverse Think Tank 1 Discussion Paper](#) - June 2023

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