



**Centre for
Information Technology in Education**
Faculty of Education, The University of Hong Kong

The Educational Myth of Metaverse

**How to Design an Effective and Safe Learning Space
with Metaverse for Students?**

Dr. Gary Wong, *PhD*

Director, Centre for Information Technology in Education

Assistant Professor, Faculty of Education, The University of Hong Kong

● **metaverse**
Search term

+ Compare

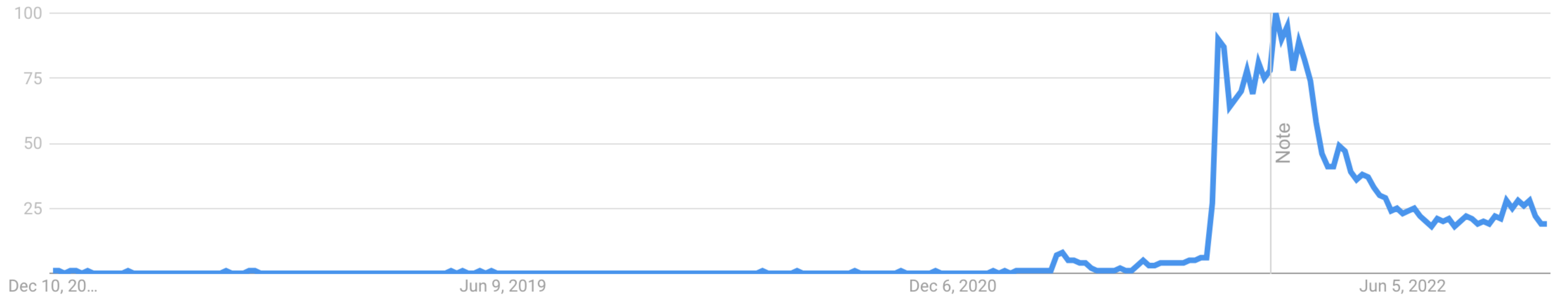
Worldwide ▼

Past 5 years ▼

All categories ▼

Web Search ▼

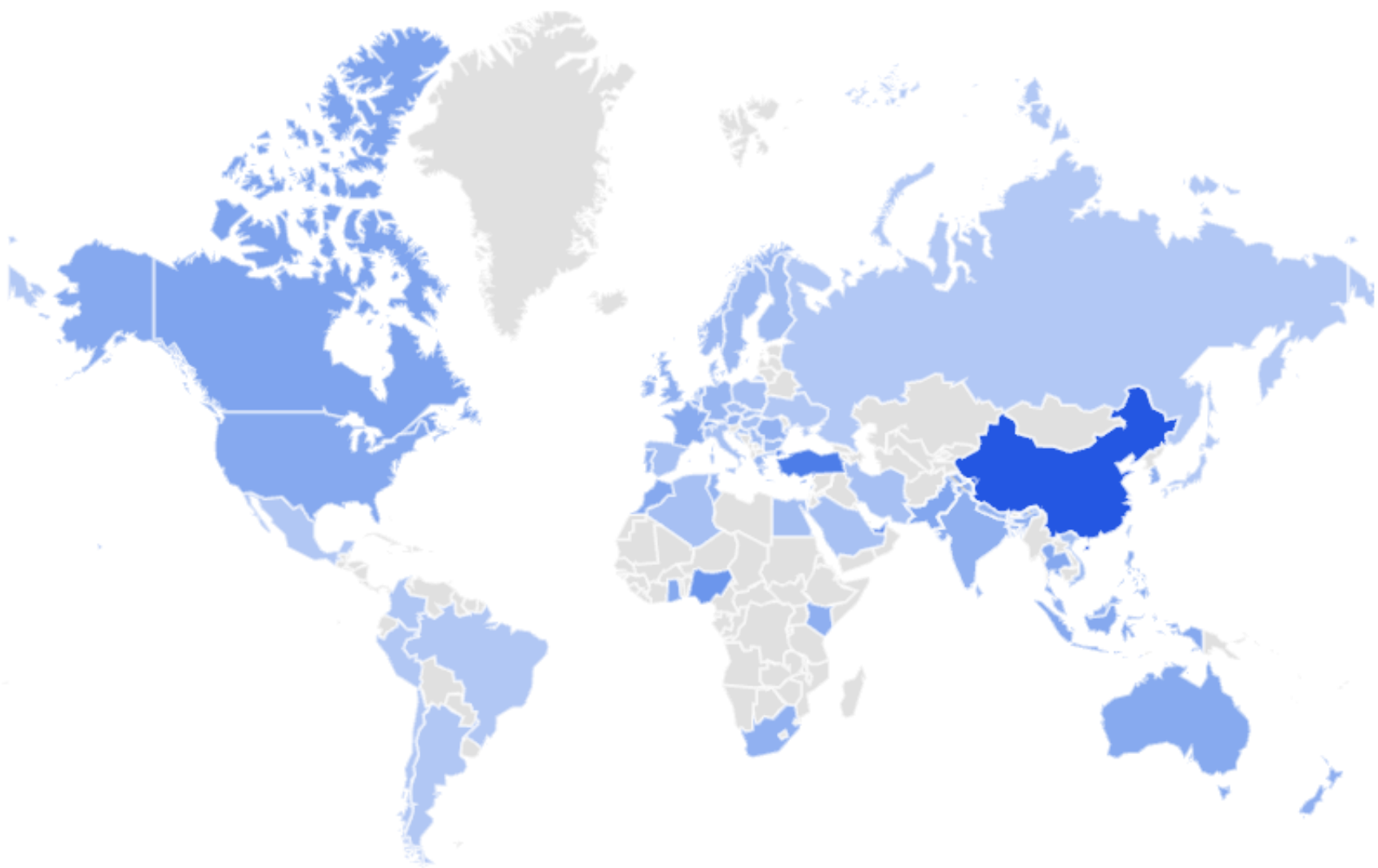
Interest over time ⓘ



Note

Interest by region 

Region    



1	China	100	
2	Singapore	77	
3	Turkey	67	
4	United Arab Emirates	57	
5	Cyprus	51	

☐ Include low search volume regions

< Showing 1-5 of 67 regions >

European business schools

+ Add to myFT

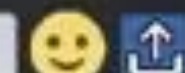
Business schools explore teaching in the metaverse

Institutions are venturing into virtual worlds — both as a subject and a learning tool

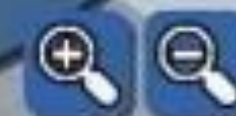
Seb Murray NOVEMBER 29 2022



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DANS LE MONDE

260 UTILISATEURS DA...

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- AgatheLOVY
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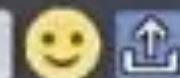
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Public

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Levez la main

Is Metaverse a future or a bubble?

Is there any **educational value** for students to engage in the Metaverse?

What are some of the **social issues** within the Metaverse as a learning space?

Is it **safe** or **risky** for students to
surf in the Metaverse?

REVIEW

Open Access

Is Metaverse in education a blessing or a curse: a combined content and bibliometric analysis



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Generation Type	Baby Boomer	Gen X	Gen Y/Millennials	Gen Z/iGeneration	Gen Alpha
Years range	1946–1964	1965–1980	1981–1994	1995–2010*	2010–2025*
Age range as in 2022	58–76	43–57	28–42	12–27	1–12
New Technology	Television	Computers	Internet	Smart phones	Virtual Reality/Augmented Reality
Learning style	Rote, hands-on**	Self-directed, mix traditional with technology**	Groups, lots of tests**	Groups, lots of tests, online, 'gamification'**	Online, blended, 'gamification'

Tlili, A., Huang, R., Shehata, B., Liu, D., Zhao, J., Metwally, A. H. S., ... & Burgos, D. (2022). Is Metaverse in education a blessing or a curse: a combined content and bibliometric analysis. *Smart Learning Environments*, 9(1), 1-31.

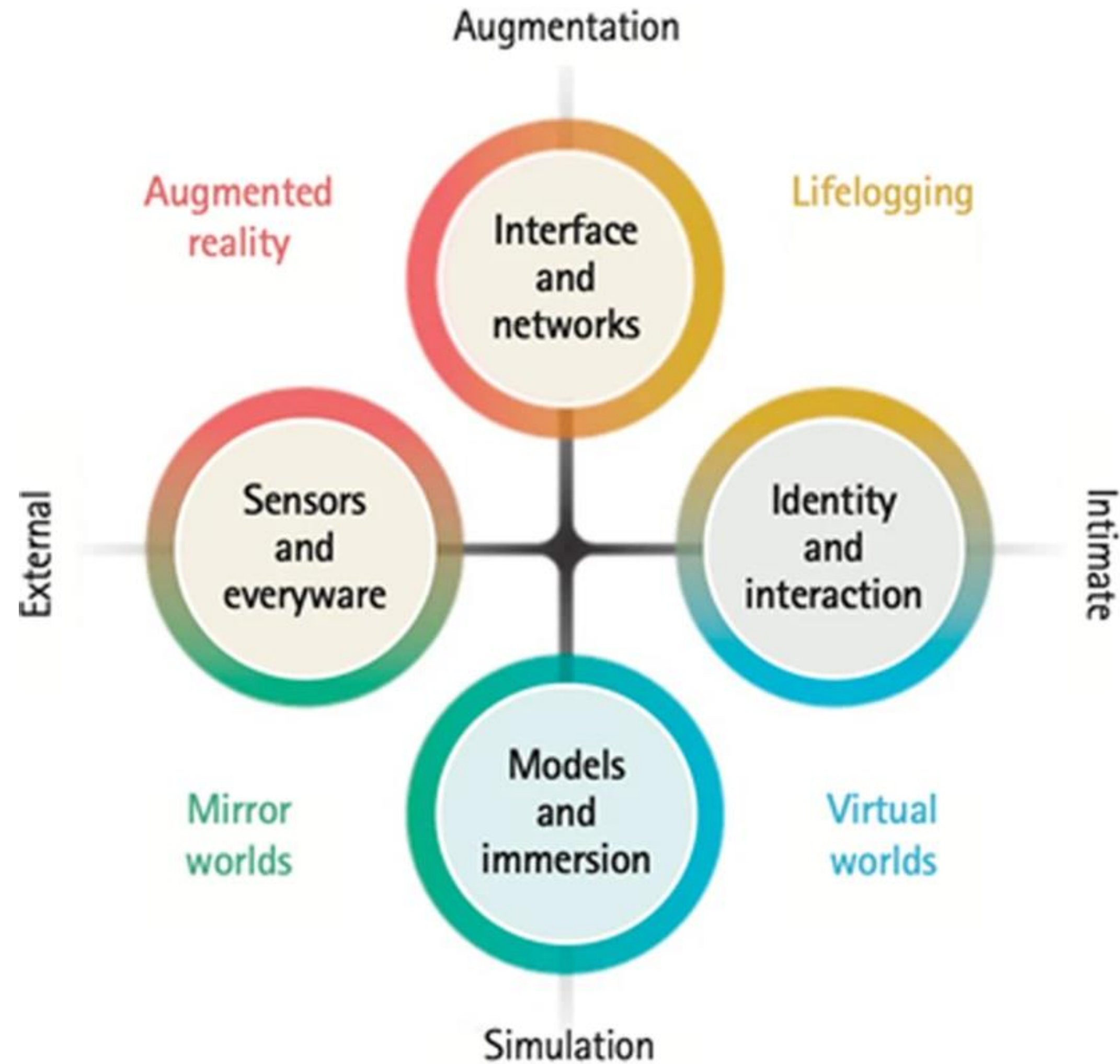
Is Metaverse in education really new??

- Livingstone in (2006) discussed how to combine Metaverse through the use of a virtual world called **“Second Life”** with learning management systems to enhance the learning process (Kemp & Livingstone, 2006).
- In 2006, a summit at the **Stanford Research Institute International** was held to draw a roadmap for the future of the Metaverse technology. Academics from different domains, technology architects, entrepreneurs, and futurists took part to **envision and forecast a 10 years plan about how the internet would look in the future** (Metaverse Roadmap Summit, 2006).
- Collins (2008), focusing on virtuality dimension, argued that the Metaverse can be the **next space where individuals can meet and socially interact** requiring higher education to be proactive for using it teaching and learning purposes.

A diagram of the 4 types of Metaverse according to Metaverse Roadmap Summit (Kye et al., 2021) (CC BY 4.0)

Tlili, A., Huang, R., Shehata, B., Liu, D., Zhao, J., Metwally, A. H. S., ... & Burgos, D. (2022). Is Metaverse in education a blessing or a curse: a combined content and bibliometric analysis. *Smart Learning Environments*, 9(1), 1-31.

the technology focuses on the users' external environment by displaying information about the surroundings and how to control them.



uses technology that focuses on the identity and behaviour of individuals or objects by creating inner worlds of avatars or digital profiles where users have agency in the digital environment

generates and manipulates models of the existing physical environment and creates virtual interactions and experiences

The Internet as an Educational Innovation: Lessons from Experience with Computer Implementation

Betty Collis
Contributing Editor

Introduction: Will the Cycle Repeat Itself?

For over a decade, countries and regions around the world have pursued various initiatives to stimulate and support the use of computers in their educational systems. These initiatives have taken many different forms in different countries, some focusing on strategic support for hardware- and software-related programs, some on strategies more directly focused on curricular and instructional aspects of computers, some (fewer) on strategies for the school manager, and others (many) on different approaches to teacher education and support. Regardless of the focus or scope of the initiative, it appears that one type of result consistently occurs: a result that acknowledges *the teacher as the key figure in the eventual success or lack of success of any computers-in-education initiative*.

The wave of social and technological developments that stimulated interest in computers in schools in the late 1970s and early 1980s appears to now be paralleled by a similar surge of interest in educational aspects of the Internet. Throughout the world, the use of wide-area network capabilities for communication and access to new forms of information engagement is stimulating a wave of initiatives with respect to telecommunications in schools, particularly telecommunications via the Internet and applications such as e-mail and the World Wide Web (WWW). I will argue that this wave can be seen as an iteration of the “computers in education” wave of 10 to 15 years earlier.

Betty Collis is with the Faculty of Educational Science and Technology at the University of Twente, The Netherlands (e-mail: collis@edte.utwente.nl).

What did we learn from the first wave? To what extent can we expect the patterns and results of the first wave to reappear in a second wave, this time focused on the computer network rather than just the computer? What might we do more efficiently and effectively the second time around in terms of responding to a computer-related innovation at the strategic and policy-related levels?

These are the questions addressed in this reflection. The conclusions that will be drawn are:

- In critical ways, the “Internet in education” is a second iteration of the “computers in education” phenomenon of the 1980s.
- In many critical ways, we can expect the same sorts of implementation results; however, the unique characteristics of the World Wide Web, coupled with differences in society compared to a decade earlier, suggest that certain breakthroughs in implementation success will occur in this second wave.
- The experiences of the field and of decision-makers with respect to computers in education in the 1980s present an interesting legacy with respect to the Internet in education, in some aspects positive and in others a burden. *We will do well to learn from experience.*

Sketching the Iteration: From Computers in Education to Computer Network Applications in Education

In the 1960s, research initiatives began relating to the use of computers for educational purposes, and the study of computer science (called by different names in different countries) became established as academic and professional domains. By the 1970s there was already considerable experience with the development of computer-based learning systems; for example, the PLATO environment was used in The Netherlands to create a complex mainframe-based system to support the learning of statistics at the university level that is still in use today (in an evolved version, of course).

With regard to teachers and schools, however, the breakthrough came via the impetus of a social and technological phenomenon: *the personal computer*. In 1979 and 1980 in particular, an explosive synergy occurred: The personal computer afforded personal control, allowing the individual to work independently of mainframe computers. Society saw this as a revolutionary, romantic, and powerful new opportunity; education was pushed by the same energies. Computers could revolutionize education, could even revolutionize the process of cognitive development of the child, and in more practical terms, could bring new competitive possibilities to schools.

- Introduction: Will the Cycle Repeat Itself?
- 1970s to 1980s: Computer in Education
- 1990s to 2000s: The Internet and Education

*“The experiences of the field and of decision-makers with respect to computers in education in the 1980s present an interesting legacy with respect to the Internet in education, in some aspects positive and in others a burden, **We will do well to learn from experience.**”* (Collis, 1996, p. 21)

Collis, B. (1996). The Internet as an educational innovation: Lessons from experience with computer implementation. *Educational technology*, 36(6), 21-30.

Push Factors	Computers in Education 1979/1980	The Internet and Education, 1996/1997
Technological Breakthrough	–the microcomputer	–public access to the Internet and the WWW
Social Response	–we must have a computer, in our homes, in our schools...	–we must be able to get on the Internet, in our homes, in our schools...
Social Vision	–personal computers will revolutionize society and will create powerful new opportunities for those who can handle them	–the information highway will revolutionize society and will create powerful new opportunities for those who can handle it
Commercial Push	–a vast new market for goods and services	–a vast new market for goods and services
Social Expectation	–schools must not be left behind; all students must be computer-literate	–schools must not be left behind; all students must have “driving licenses for the information highway”

Push Factors	Computers in Education 1979/1980	The Internet and Education, 1996/1997
Pioneers show the promise	–both in theory and practice, there are impressive ideas and examples of how the computer can enrich and re-engineer education	–both in theory and practice, there are impressive ideas and examples of how the WWW and other network environments can enrich and re-engineer education
Educational decision-makers must and do respond	–every school must get computers; funding must be found; new initiatives are needed; policy and strategy are needed...	–every school must get on the Internet ; funding must be found; new initiatives are needed; policy and strategy are needed...
The overall movement is unstoppable	–computers are pervasive throughout society	–interconnectivity via computer networks is pervasive throughout society

透過人工實境的新平台來優化語文教育 (計劃編號: 2016/0318)

Enhancing Language Education with
Artificial Reality Neo-Platform (eLEARN
1.0)

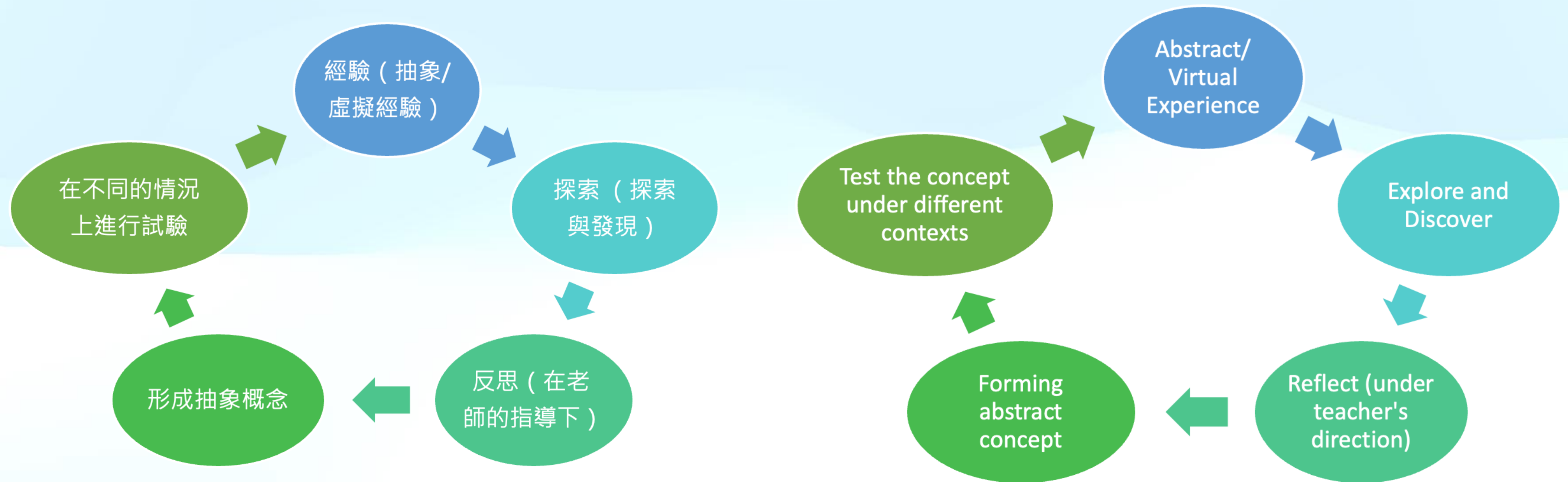
QEF Approved Funding:
HK\$3,444,200.00

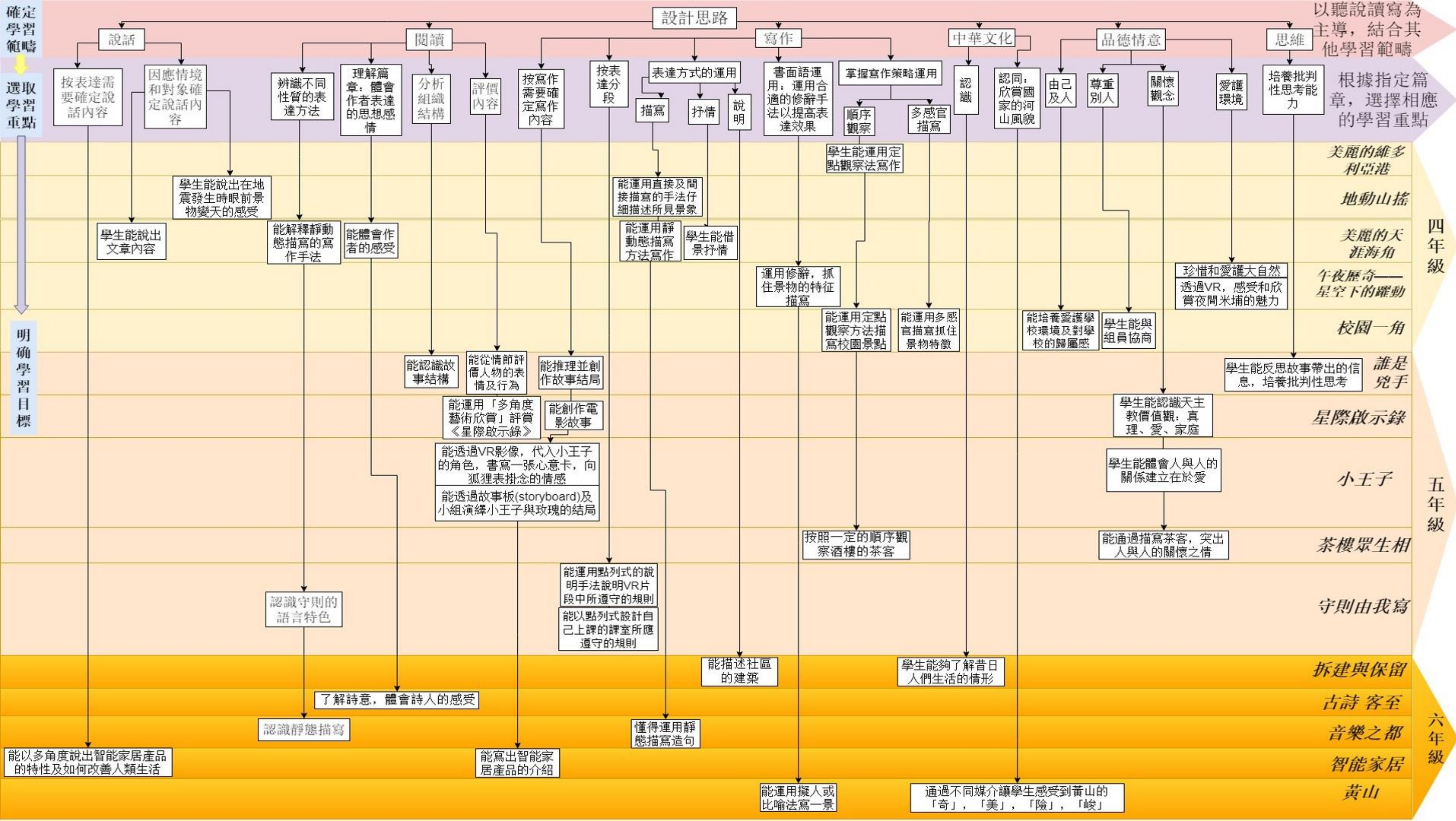
From 2017 to 2020, this project
invited teachers from **17 local
primary schools** to jointly design
**15 sets of Chinese language
teaching plans** with our VR
learning platform.





虛擬實境探索學習模型 (Exploratory Learning Model with Virtual Reality)







茶樓眾生相

教學科目	中文科
教學課題	人物描寫—茶樓眾生相
教學對象	五年級
學習目標	1. 學生能按照一定的順序觀察酒樓的茶客； 2. 學生能在文中加入人物的心理描寫、神態描寫； 3. 學生能透過描寫茶客，突出人與人之間的關愛之情。
教學時長	100 分鐘
教學資源	eLEARN平台、課件

A dimly lit room with a round table covered in a white tablecloth. Several people are seated around the table, and a large white object, possibly a lamp or a piece of furniture, is visible on the right side. The overall atmosphere is quiet and intimate.

茶樓衆生相

同家人飲茶

100%

Acceptance level of the Chinese language teachers in using VR-assisted teaching and learning

70%

Primary school students believed that VR can help them learn Chinese language

Note: Surveyed 30 students in the project after a trial lesson.

25%+

After introducing VR-assisted learning, the Chinese language learning interest of primary students was increased.

Note: Surveyed 30 students in the project before and after a trial lesson.

20%+

引入虛擬實景輔助學習後, 小學生對中文科的學習動機有提升



Enhancing Literacy Education with Artificial Reality Neo-platform (eLEARN) 2.0

“The e-Learning Ancillary Facilities Programme”

- Based on the courses of **Chinese, English and General Studies** (personal, social and humanities education key learning area), use virtual reality technology to optimize and promote the eLEARN learning platform 以中文科、英文科及常識科(個人、社會及人民教育學習領域)課程為基礎，透過虛擬實境技術去優化和推廣eLEARN學習平台;
- Under the **co-preparation and design** of a platform containing virtual reality technology with teachers, teaching design and related teaching materials to support life-wide learning 在與老師共同備課及設計包含虛擬實境技術的平台下，以支援全方位學習的教學設計和相關教材；
- **Evaluate the effectiveness** of the optimized eLEARN platform and suggest the future development direction of integrating virtual reality into teaching 評估已優化的eLEARN平台的成效，並建議未來虛擬實境融入教學的發展方向;
- **Encourage and support students** to assist their learning through the eLEARN platform 鼓勵及支援學生透過eLEARN平台輔助學習; 及
- Explore how the eLEARN platform can effectively support the learning model of the “**new normal**” under COVID-19 and beyond 探討eLEARN平台如何有效地支援「新常態」的學習模式。

1	Fung Kai No.1 Primary School 鳳溪第一小學
2	Yan Tak Catholic Primary School 仁德天主教小學
3	St. Edward's Catholic Primary School 聖愛德華天主教小學
4	Tung Chung Catholic School 東涌天主教學校
5	Ying Wa Primary School 英華小學
6	Ping Shek Estate Catholic Primary School 坪石天主教小學
7	St. Matthew's Lutheran School (Sau Mau Ping) 路德會聖馬太學校 (秀茂坪)
8	Tsuen Wan Trade Association Primary School 荃灣商會學校
9	Shanghai Alumni Primary School 滬江小學
10	Tsuen Wan Catholic Primary School 荃灣天主教小學
11	Sha Tau Kok Central Primary School 沙頭角中心小學
12	Shau Ki Wan Tsung Tsin School 筲箕灣崇真學校
13	St. Paul's Primary Catholic School 聖保祿天主教小學
14	Tak Sun School 德信學校
15	PLK Camões Tan Siu Lin Primary School 保良局陳守仁小學
16	Tai Po Old Market Public School 大埔舊墟公立學校
17	SKH Kei Hin Primary School 聖公會基顯小學
18	Lok Wah Catholic Primary School 樂華天主教小學
19	Choi Wan St. Joseph's Primary School 彩雲聖若瑟小學
20	Catholic Mission School 天主教總堂區學校
21	Ling Liang Church Sau Tak Primary School 靈糧堂秀德小學

**Expected
beneficiaries
Schools : 21
Students : 8,400
Teachers : 700**



Four concerns in the development of Metaverse in e



Metaverse in education : Issues unresolved

- Choices of the learning platform for specific subjects
- Teaching strategies, control, classroom management
- Software/hardware technologies
- Equity and equality in learning
- Social issues (e.g. identity, gender and cultural stereotype, bullying)
- Beyond verbal expression (e.g. Facial expression in avatar)
- Cybersecurity and crime (e.g. threats to personal safety, online luring and online bullying, privacy leaks, malicious content, etc.)
- ...

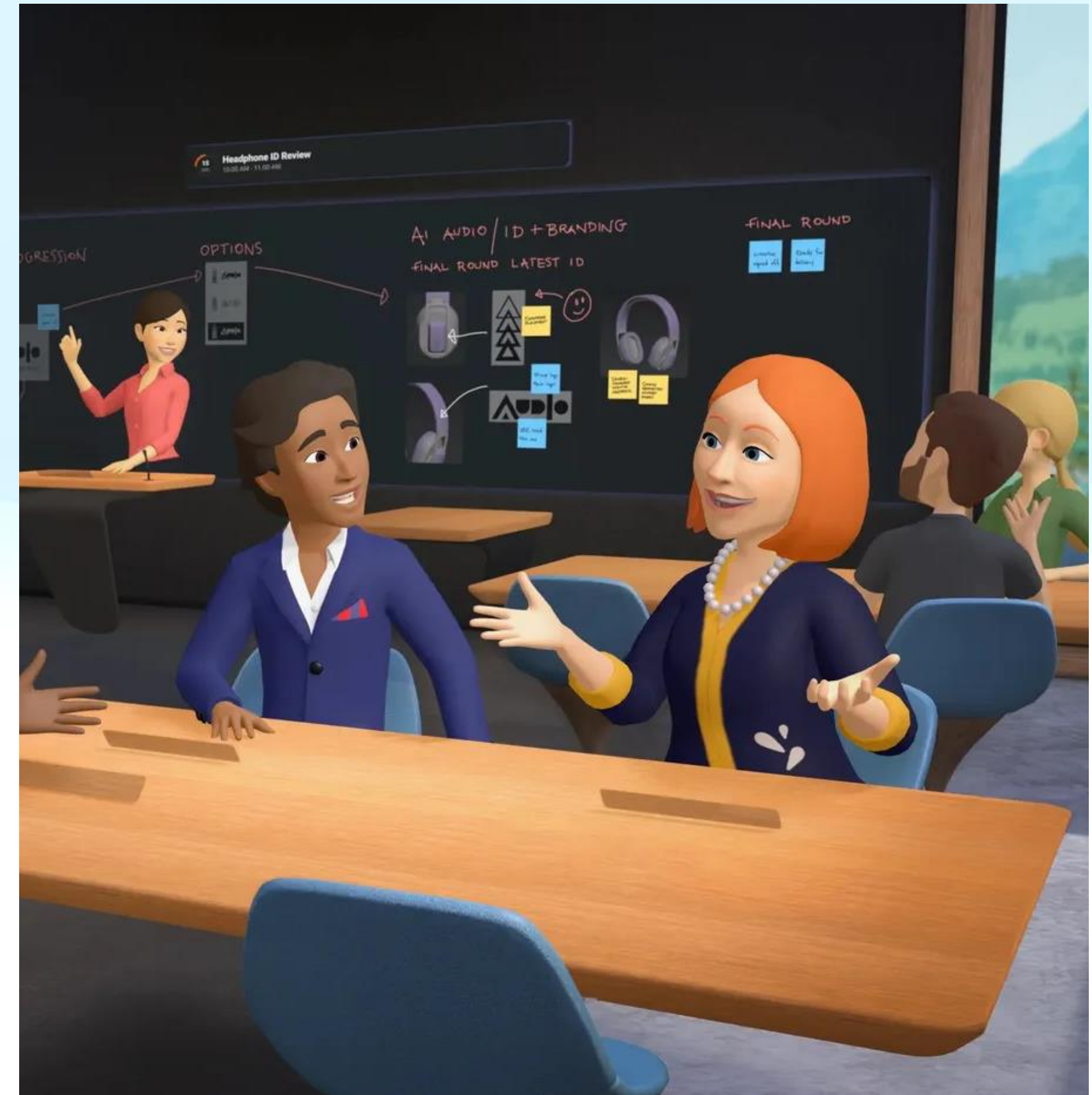


Image Source: <https://nymag.com/intelligencer/2022/10/why-your-boss-wants-you-in-the-metaverse.html>

REPORT

A whole new world: Education meets the metaverse

Kathy Hirsh-Pasek, Jennifer M. Zosh, Helen Shwe Hadani, Roberta Michnick Golinkoff, Kevin Clark, Chip Donohue, and Ellen Wartella ·

Monday, February 14, 2022

*“...we challenge those creating educational products for the metaverse to **partner with educators and scientists** to ensure that children experience **real human social interaction** as they navigate virtual spaces, children’s agency is supported as they explore these spaces, and there is a real eye to **diversity** in the representation and **access** to what is created.”*

Brookings, Feb 14, 2022

Recommendation

Brooking Report

1. Learning should be **active**, not passive, and that children learn best in environments that are “minds-on.”
2. The app should be **engaging** rather than distracting and only include bells and whistles that are integrated into the narrative of the game, lesson, or storyline.
3. The app should tap into something **meaningful** for the child. There should be some point of connection that will allow children to relate the content of the app to what they know, rather than to start de novo in a foreign space.
4. Finally, the app should **encourage social interaction** inside or outside of the app space, not just playing solo.

Concluding thoughts

Ways to look forward and look backward...

- Co-design and co-create the future **Metaverse in education**, similar to **computer in education** and the **Internet in education** for decades
- Develop a **closed, private, and controllable** Metaverse using AR/VR technologies, before meeting the **open, public, and uncontrollable** Metaverse in the future, to explore policing and guidelines for students
- Research to inform educational practices
- Involve **researchers/developers/teachers/principals/parents/guardians** as the stakeholders to discuss the development and the use of the virtual spaces for learning in school or at home



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