



## **FOREWORD**

Recent advances in Artificial Intelligence's (AI) ability to create content that is indistinguishable from that produced by humans is poised to transform every aspect of our lives. Generative AI has written bestselling books, won poetry contests, and created award-winning advertising campaigns. But what makes generative AI truly revolutionary is its ability to commoditize the production of personalized content that speaks to the specific needs, preferences and desires of every one of us. But let's start at the beginning: Personalization is something deeply human. Every interaction we have is, in a sense, personalized. Whether we're adjusting our tone when speaking to a colleague versus a close friend, or choosing what to talk about based on someone's interests, we instinctively consider who is on the other side of the conversation, We adapt the content of our communication without giving this process of personalization a second thought; we simply intuit that doing so will make our conversation more engaging, and our appeals more effective.

This intuition is supported by decades of social science research showing that content is more engaging and persuasive when it is personalized to the unique psychological make-up of recipients. Whether this principle is applied to product advertising, health communication or educational materials, considering our target audience in what and how we communicate gives us an edge in capturing their attention and soliciting the desired cognitive, emotional and behavioral response. In a nutshell, personalization is a powerful path to behavior change.

Yet, personalized interactions can be difficult to scale. There are only so many people we can engage with in our daily interactions, and only so many pieces of customized content creative teams can design for different audiences. Education is no different. Think of a typical classroom in which a single teacher might be responsible for up to 100 students at the same time. No matter how good she is, there is a limit to how much she can customize her lessons to the needs and preferences of each student.

Generative AI is a game changer. It can be the high-touch tutor that is everywhere all at once, for as long as it takes, and in whatever form is most engaging and effective for a particular student.



Thanks to generative AI, every child in every part of the world could soon benefit from the type of personalized education only the most privileged families were able to provide up to this point.

What it takes to turn this vision into a reality is commitment and leadership and a series of concrete examples demonstrating the value of AI-based personalization for positive behavior change that reaches beyond academic research. This is exemplified by Lifebuoy's H for Handwashing campaign and its latest AI-based application featuring a Hippo that – thanks to its Augmented Reality (AR) feature – joins children from all around the world in their homes. Through a variety of fun activities that are customized to important aspects of a child's identity – their name, favorite color and favorite food – the Hippo makes learning about handwashing fun. It's like a loving mom, but without the nagging. Thank you to Lifebuoy for bringing together an interdisciplinary team of educators, scientists and technologists to showcase how AI and AR-based personalization can be used as a powerful force for good.

Dr. Sandra Matz

David W. Zalaznick Associate Professor, Columbia Business School





# **CONTENTS**

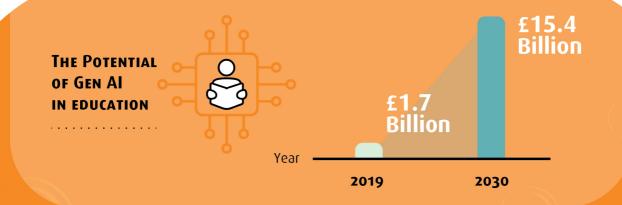
1	Introduction 1
2	The State of Hand Hygiene Globally
3	Lifebuoy and H for Handwashing 5
4	Changing Behaviors with AI & AR powered Personalization 8
5	Launching Al-Teacher Hippo9
6	Ethically Designed, Globally Inclusive: AI-Teacher Hippo's Approach to Hand Hygiene Education
7	<b>Results</b>
8	Conclusion
9	References
10	Acknowledgements



# INTRODUCTION

In today's rapidly evolving educational landscape, AI is increasingly being utilized to improve learning outcomes. The OECD¹ highlighted the transformative potential of generative AI in education, with the global personalized and adaptive learning market projected to reach £15.4 billion by 2030, up from £1.7 billion in 2019.

Personalization is one of the major potentials of generative AI. Capturing and detecting information that is specific to individuals and using it to make a diagnosis or design an intervention, is slowly being recognized as a means to strengthen educational outcomes, with studies<sup>2</sup> showing improvements of up to 130% in learning outcomes among students in the USA through personalized education. When it is combined with AR, these two technologies together can create immersive and interactive experiences that make learning even more engaging and effective.





Lifebuoy has been educating parents and children about the importance of handwashing with soap at critical occasions for decades, supporting progress towards achieving Sustainable Development Goal (SDG) 6 under the United Nation's SDGs launched in 2015.

This education comes in the form of innovative learning material developed and deployed through school and community programs. To reach people at scale, Lifebuoy has partnered with more than 70 organizations including Sesame Street Workshop, Save the Children, and GAVI, the Vaccine Alliance, with the single-minded aim of improving handwashing behaviors for children and parents across the world.

A new frontier has emerged with the advent of advanced technology specially in the realm of AI and AR.

Today both AI are AR are integrated into various aspects of daily life and while significant efforts are underway to ensure these are developed and used responsibly, there is huge potential in using these technologies for good, to make a positive difference in people's lives.

The AI and AR revolution isn't just about efficiency it's about possibility. With AI-Teacher Hippo, we're demonstrating how technology can bridge the gap between knowledge and action in public health. This isn't just about teaching handwashing – it's about using AI to create adaptive, engaging experiences that can address critical health challenges & improve lives at scale.

Khim Yin Poh Global Brand Vice President Lifebuoy, Singapore

Leveraging this, Lifebuoy sees a unique opportunity to use the power of AI and AR driven personalization to further its mission of improving hygiene behaviors on a global scale.





# THE STATE OF HAND HYGIENE GLOBALLY

Global health has seen significant improvements, as evidenced by the striking decline in child mortality rates. From 2000 to 2022, deaths among children under 5 years worldwide decreased from 9.9 million to 4.9 million, representing a 51% reduction in the global under-five mortality rate<sup>3</sup>. Deeper analysis into this data tells us that more than 20%

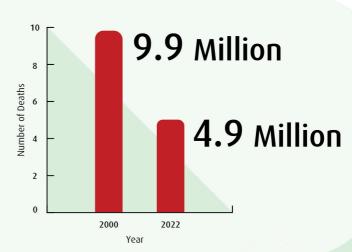
of these deaths<sup>4</sup> can be attributed to preventable diseases such as diarrhea and respiratory diseases such as pneumonia.

Hygiene has long-established links with health. Of the range of hygiene behaviors considered important for health, hand washing with soap is a top priority across all contexts.

UNDER 5 MORTALITY HAS REDUCED, YET A SIGNIFICANT PROPORTION OF DEATHS ARE STILL PREVENTABLE.

**51**% reduction in mortality of children under 5

20% preventable deaths from pneumonia, diarrhea





Handwashing with soap is evidenced to reduce deaths from respiratory and diarrheal diseases in children under five by 21% and 30% respectively<sup>5</sup>.

Unfortunately, the practice of proper handwashing with soap worldwide has seen a consistent decline post-COVID in developed as well as developing nations.

Post-COVID, only 65% Americans reportedly washed their hands with soap multiple times a day in January 2021, down from 78% in 2020<sup>6</sup>. Findings of a 10-country survey in Sub-Saharan Africa<sup>7</sup> revealed a significant decline in handwashing practices from July to November 2020 across all countries surveyed.

This context underscores the substantial hurdles that remain in achieving SDG 6, which aims for universal coverage of Water, Sanitation, and Hygiene (WASH) services.

As reported by UNICEF and the World Health Organization (WHO) current efforts to achieve basic hygiene services by 2030 are falling short, requiring a fourfold increase in pace.

Notable gaps persist in hygiene services, especially for school children. In fact, as of 2023, 646 million children lacked basic hygiene services at their school.8

#### **CURRENT:**



646 Million

children lack basic hygiene services at school as of **2023** 

#### NEEDED:



# Fourfold increase

in pace of current efforts for universal coverage of basic hygiene services by **2030** 

AS REPORTED BY UNICEF & WORLD HEALTH ORGANIZATION (WHO)

# The ABCs of education haven't changed in over a hundred years. Maybe, now is the time.

Handwashing saves lives. It's a lesson many pandemics have taught us. But it is also the lesson we forget very easily. Which is why, this Global Handwashing Day, we are pledging to forever change the world's handwashing behaviour. By making a fundamental change in the way the letters of the alphabet are taught.

A for apple, B for Ball. We never forget these first lessons of life. Lifebuoy proposes to forever change 'H for Hat' to 'H for Handwashing'. By collaborating with educators and publishers of kids' content, worldwide.

To spread the word, go to Instagram, use the #HforHW filter, tag #HforHandwashing and #DoTheLifebuoy. The more you post, the more educators we reach with our programme.



# LIFEBUOY AND H FOR HANDWASHING

Brands and corporations play a crucial role in addressing the world's challenges by leveraging their resources, influence, and innovative capabilities to drive large-scale impact.

Since 1895, Lifebuoy has led the way on hand hygiene education, pushing the boundaries through the design & development of educational materials used in programs made for children, parents, and communities at large.

The brand's approach is grounded in behavior change principles which have proven to work across geographies, reaching more than 1 billion people since 2010.

# BEHAVIOR CHANGE

#### **Awareness**

Why is hand washing important?

#### **Commitment**

Pledge to wash hands with soap at key occasions



#### Reward

Positive strokes for practicing the behavior

#### Reinforcement

Repeated practice of the behavior

Lifebuoy's H for Handwashing campaign launched in 2020 aims to fundamentally change global handwashing habits by focusing on the integration of hand hygiene lessons into school curricula across the world. Through tremendous advocacy efforts, Lifebuoy has already reached over 14 million children across 25 countries, in collaboration with more than 70 partners, including government ministries, successfully making hygiene a stronger part of curricula.

Since 2010, Lifebuoy reached over 1 billion people through hand hygiene initiatives, influencing behaviors that help prevent illness. The H for Handwashing movement launched in 2020 has tapped into innovative ways to make handwashing engaging for kids, including breaking a Guinness World Record for the largest online classroom, empowering 100,000 young changemakers to help educate their peers on the importance of handwashing, and using play to teach critical hygiene lessons to children. This year, we are excited to take this further with а groundbreaking driven tool technology that personalizes hand hygiene education for millions of children worldwide. Our aim is always to make hygiene memorable, and engaging, teaching children in a way that they understand best!

Parnil Sarin Global Brand Director Lifebuoy, Singapore







Transforming the lives of more than 1 billion people through proven handwashing behavior change programs

### IMPACTFUL PARTNERSHIPS WITH NGOs AND GOVERNMENTS

















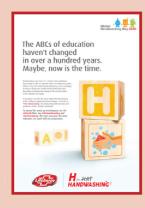








### AWARD-WINNING H FOR HANDWASHING CAMPAIGN









From reaching 1 billion people through vital partnerships to revolutionizing hygiene habits with the H for Handwashing campaign. Together with our partners & ministries of education, we're building a healthier future -

ONE HAND AT A TIME.



# CHANGING BEHAVIORS WITH AI & AR POWERED PERSONALIZATION

Al has emerged as a powerful tool, particularly in its ability to personalize experiences, more so when combined with AR.

Personalization is key to influencing long-term behavior change in health, as it targets not only the cognitive understanding of health practices but also emotional and motivational factors.

Ample evidence of personalization-led behavior change exists in health-related settings. For instance, a study on personalized dietary interventions showed significant improvements in eating habits, with participants increasing their consumption of vegetables and fruits by cover 3g per week<sup>9</sup>. Similarly, personalized fitness apps were found to improve users' daily step count from 926 to 1850 steps per day<sup>10</sup>, highlighting the effectiveness of customized approaches in promoting healthy behaviors.

Given the progress needed in ensuring basic hygiene services reach children all over the world, Lifebuoy takes its commitment to improving hygiene behaviors to the next level in 2024, leveraging AI and AR as powerful tools for delivering personalized hygiene learning and habit building.

Augmented reality and gaming transform the learning experience into an engaging adventure. By merging the virtual and real worlds, we create a dynamic environment that not only teaches but also motivates kids to practice good hygiene consistently.

Amanpreet Singh Global Media Innovation and Gaming Lead Unilever, UK



# LAUNCHING AI-TEACHER HIPPO

Lifebuoy in collaboration with Microsoft & Aircards, launches Al-Teacher Hippo. This one-of-its-kind educational tool has been designed to provide personalized hand hygiene education to young learners.

The tool is accessed through the simple scanning of a QR code/web link, following which through AR, the child accompanied by an adult is able to interact with Al-Teacher Hippo in their real-world surroundings, creating a more immersive and engaging learning experience. By placing the Hippo in their physical environment, children can visually and physically engage with the lessons in a way that enhances understanding and retention of key hygiene messages.

# EFFECTIVENESS OF SONGS, GAMES & COLORING ACTIVITIES IN ENHANCING LEARNING & IMPROVING BEHAVIORS



Songs

Studies show songs evoke emotions and create positive associations, making them powerful tools for behavior change<sup>11</sup>. The rhythmic and melodic structure of songs aids in memory retention.



Games im

Games are inherently engaging and can significantly increase attention and participation in the learning process. Gamification in health promotion interventions such as increasing exercises has seen an improvement of 70%<sup>12</sup>.



Coloring Sheets Coloring engages multiple senses—visual and tactile—thereby enhancing the learning experience<sup>13</sup> and making it more memorable for children. A study published in PLoS One found a 30% increase in proper handwashing techniques among children who used a hand hygiene coloring book<sup>14</sup>.



Al-driven personalization then takes over with Al-Teacher Hippo tailoring content to each child's preferences, such as their favorite color, food, and even learning style. Once preferences are captured, Al-Teacher Hippo allows children to choose from three key activities – songs, games, and coloring sheets – each designed to reinforce hand hygiene practices through engaging and interactive methods.

This level of customization ensures that the educational content is not only engaging but also effective in driving long-term behavior change.

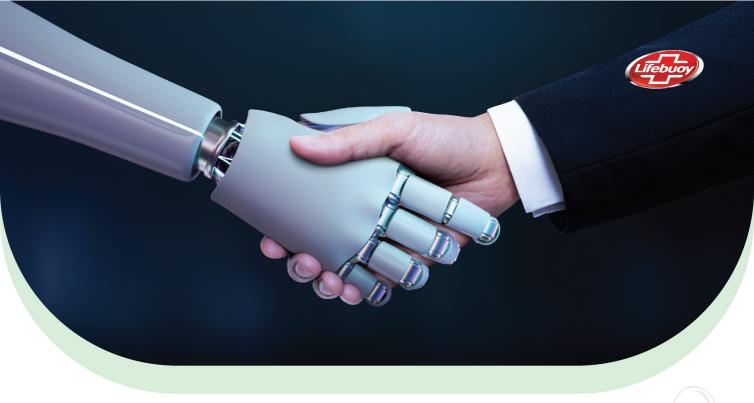
for Handwashing The platform is a prime example of how creativity, purpose, and technology can intersect to drive meaningful change. By personalizing the learning journey, we connect with children in a way that's both intuitive and impactful. This AR experience, empowered by AI, makes learning feel less like a chore and more like an exciting adventure.

**Theodor Sandu**Creative Director
Mullen Lowe, Singapore

## AI MEETS PERSONALIZATION

A fully customized handwashing adventure for Lisa using AI! From her favorite, purple themed games and coloring sheets to pizza inspired songs, every handwashing lesson is personalized just for her!





# ETHICALLY DESIGNED, GLOBALLY INCLUSIVE: AI TEACHER HIPPO'S APPROACH TO HAND HYGIENE EDUCATION

Throughout its development, ethical considerations have been central to the AI-Teacher Hippo.

Supported by Unilever's AI Foundation and adhering to Microsoft's responsible AI practices, the AI algorithms are crafted with robust safety layers to ensure that the content remains appropriate and safe for young users with a focus on creating an educational experience that is not only effective but also trustworthy and secure.

Over and above this, the tool has been designed and recommended to be used under adult supervision.

The AI-Teacher Hippo is available in five different languages, including English, Hindi, Amharic, Bahasa Indonesian, and Vietnamese spoken by roughly 30% 15 of the world's population, ensuring that children from diverse backgrounds can fully engage with and benefit from the tool.



Language plays a crucial role in learning. According to UNICEF, children taught in their mother language tend to perform better academically<sup>16</sup> in the long run.

The use of emojis and visual cues is another inclusive feature of the AI-Teacher Hippo, particularly effective in engaging young learners who may face challenges in literacy. Emojis enhance engagement and communication effectiveness. Additionally, qualitative evidence suggests that children prefer emojis over words to express their feelings, making them feel more familiar with the communication method used in the digital era<sup>17</sup>.

By combining all of these elements, the AI-Teacher Hippo provides a holistic and personalized educational experience that not only teaches children about the importance of hand hygiene but also motivates them to practice it consistently.

Collaborating with Lifebuoy on Al-Teacher Hippo has been a journey of innovation meeting purpose. By harnessing cutting-edge large language models (LLMs). text-to-speech systems, augmented reality, we have created an interactive platform that makes hygiene education both accessible and engaging. This groundbreaking project puts safe, generative AI directly children's hands, incorporating robust safety layers, and transforming traditional lessons into captivating experiences. We're proud to drive innovation that has the potential to significantly impact children's health globally.

Adin Gold Co-Founder and CTO Aircards, USA

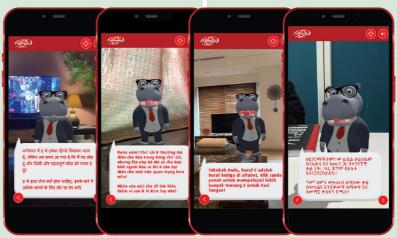
# ONE TOOL, FIVE LANGUAGES

Breaking barriers to make handwashing education accessible for everyone!

### **Using Emojis**









# **RESULTS**

Al-Teacher Hippo was tested with around 200 children from grades 1-5 at Montfort Senior Secondary School, Delhi (India) to directionally assess its effectiveness in enhancing handwashing awareness, motivation, and behaviors with support from teachers. The results, comparing pre-session and post-session data, revealed substantial improvements across all three parameters.





# **Awareness**

The AI-Teacher Hippo tool greatly enhanced children's understanding of how germs spread, where they are most likely to be found, the moments in the day when it's important to wash hands with soap and how to wash hands with soap correctly.

8x

improvement in children's awareness of critical handwashing occasions & germcatching hotspots

**6**x

increase in children's awareness of proper handwashing technique



# **Engagement**

Teachers observed that children remained highly engaged with the tool's personalized elements—such as when Al-Teacher Hippo used their names and favorite preferences.

90%

children were fully immersed while interacting with tool

100%

expressed desire to continue learning post interaction with tool

Furthermore, 8 out of 10 children acknowledged that learning about hand hygiene at school is important not only for themselves, but for their classmates too.



# **Behaviours**

With a dedicated 5-minute handwashing break scheduled before lunch time every day, a large proportion of students already washed hands with soap before eating.

By focusing on the correct steps and emphasizing thorough handwashing, the tool ensured that children were not only washing more thoroughly but also targeting areas where germs are more likely to hide.

28% more children followed all handwashing steps correctly

30% more children encouraged peers to wash hands with soap at key moments





# CONCLUSION

Lifebuoy remains steadfast in its mission to improve hygiene behaviors through innovative approaches.

Al-Teacher Hippo represents a significant leap forward in hand hygiene education by integrating Al and AR driven personalization with evidence-based behavior change strategies.

The tool not only makes hand hygiene education personal but also has proven to drive positive impact through improved awareness, engagement and behaviors.

AI-Teacher Hippo has unveiled the immense potential AI has in the fight against preventable diseases by teaching children the important lessons of hand

hygiene from a young age, ensuring a healthier future for generations to come.

Handwashing is vitally important, and this initiative exemplifies how cutting-edge technology and a commitment to public health can come together to create a safer, healthier world. By harnessing the power of AI, Lifebuoy has been able to quickly develop an application innovative that will capture the imagination of children and drive better health outcomes across the world.

**Olaf Akkerman** General Manager Retail and Consumer Goods Industry Microsoft, UK



### REFERENCES

<sup>1</sup> From transition to transformation: Insights from the 2023 digital education outlook. (2023, December 14). OECD Education and Skills Today. https://oecdedutoday.com/from-transition-to-transformation-insights-from-the-2023-digital-education-outlook/

<sup>2</sup>Cheung, S., Wang, F., Kwok, L., & Poulová, P. (2023). Personalized learning: Approaches, methods and practices. Routledge.

https://books.google.com.sg/books?id=wvbUEAAAQBAJ&pg=PA1979&lpg=PA1979&lq=36%2C000%2BK-12%2Bstudents%2B130%25%2Band%2B122%25&source=bl&pots=9CeRY2fAej&sig=ACfU3U3m3Qmg3EkRdMfaHVfm07U-3cXP2w&hl=en&sa=X&ved=2ahUKEwjy5l7sqoqHAxW252wGHR04DWsQ6AF6BAgLEAM%23v%3Donepage&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20students%20130%25%20and%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20Students%20122%25&f=false#v=snippet&q=36%2C000%20K-12%20Students%20122%20A0%20K-12%20Students%20122%20A0%20K-12%20Students%20122%20A0%20K-12%20A0%20K-12%20A0%20K-12%20X-

<sup>3</sup> World health statistics 2024: monitoring health for the SDGs, Sustainable Development Goals. Geneva: World Health Organization; 2024. https://iris.who.int/bitstream/handle/10665/376869/9789240094703-eng.pdf?sequence=1

<sup>4</sup> Guideline on the management of pneumonia and diarrhoea in children. (2023, March 8). World Health Organization (WHO)

https://www.who.int/news-room/articles-detail/guideline-on-the-management-of-pneumonia-and-diarrhoea-in-children#: \$\$:\$ -: text=Pneumonia 20 and \$\$20 arrhoea 20 account 20 for \$\$2021 % 200 f, in \$\$20 and \$\$20 account 20 for \$\$2021 % 200 f, in \$\$20 and \$\$20 account 20 for \$\$2021 % 200 f, in \$\$20 and \$\$20 account 20 for \$\$2021 % 200 f, in \$\$20 and \$\$20 account 20 for \$\$2021 % 200 f, in \$\$20 and \$\$20 account 20 for \$\$2021 % 200 f, in \$\$20 and \$\$20 account 20 for \$\$20 account 20 for \$\$20 account 20 for \$\$2021 % 200 f, in \$\$20 and \$\$20 account 20 for \$\$20 account

<sup>5</sup> United Nations Children's Fund and World Health Organization, State of the World's Hand Hygiene: A global call to action to make hand hygiene a priority in policy and practice, UNICEF, New York, 2021. https://www.unicef.org/media/108356/file/State%20of%20the%20World%E2%80%99s%20Hand%20Hygiene.pdf

<sup>6</sup> LaMotte, S. (2021, April 26). Handwashing falls to pre-Covid levels despite pandemic, study finds. CNN. https://edition.cnn.com/2021/04/26/health/handwashing-drop-wellness/index.html

<sup>7</sup> Olapeju, Bolanle et al. "Trends in handwashing behaviours for COVID-19 prevention: Longitudinal evidence from online surveys in 10 sub-Saharan African countries." PLOS global public health vol. 1,11 e0000049. 12 Nov. 2021, doi:10.1371/journal.pgph.0000049. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10021665/

\* Progress on drinking water, sanitation and hygiene in schools 2015–2023: special focus on menstrual health. New York: United Nations Children's Fund (UNICEF) and World Health Organization (WHO), 2024. https://data.unicef.org/resources/jmp-wash-in-schools-2024/#:~text=Key%20facts,sex%20and%20usable%20at%20school.

<sup>9</sup> Effects of a novel applet-based personalized dietary intervention on dietary intakes: A randomized controlled trial in a real-world scenario. (2024, February 19). MDPI.

https://www.mdpi.com/2072-6643/16/4/565

<sup>10</sup> Do smartphone applications and activity trackers increase physical activity in adults? Systematic review, meta-analysis and metaregression. (n.d.). PubMed. https://pubmed.ncbi.nlm.nih.gov/33355160/

<sup>11</sup> Hong, M., Liang, D., & Lu, T. (2023). "Fill the World with Love": Songs with Prosocial Lyrics Enhance Online Charitable Donations among Chinese Adults. Behavioral Sciences, 13(9), 739. https://doi.org/10.3390/bs13090739

<sup>12</sup> Edwards, E. A., Lumsden, J., Rivas, C., Steed, L., Edwards, L. A., Thiyagarajan, A., Sohanpal, R., Caton, H., Griffiths, C. J., Munafò, M. R., Taylor, S., δ Walton, R. T. (2016). Gamification for health promotion: systematic review of behaviour change techniques in smartphone apps. BMJ Open, 6(10), e012447. https://doi.org/10.1136/bmjopen-2016-012447

<sup>13</sup> Rosenfeld, L. (2012, April 18). Why your kids care so much about favorite colors. Slate Magazine. https://slate.com/human-interest/2012/04/small-children-and-favorite-colors-research-into-why-colors-are-so-important-to-kids-identity.html

<sup>14</sup> Crosby, S., Younie, S., Williamson, I., & Laird, K. (2020). Evaluating approaches to designing effective Co-Created hand-hygiene interventions for children in India, Sierra Leone and the UK. PloS one, 15(9), e0239234. https://doi.org/10.1371/journal.pone.0239234

<sup>15</sup> Languages by total number of speakers | List, top, & most spoken. (2023, August 4). Encyclopedia Britannica. https://www.britannica.com/topic/languages-by-total-number-of-speakers-2228881

<sup>16</sup> UNICEF. (2024, February 21). Learning in the mother tongue is the best start to education. https://www.unicef.org/india/stories/learning-mother-tongue-best-start-education

<sup>17</sup> Massey, S. (2021). Using Emojis and drawings in surveys to measure children's attitudes to mathematics. International Journal of Social Research Methodology, 25(6), 877–889. https://doi.org/10.1080/13645579.2021.1940774





### **ACKNOWLEDGEMENTS**

#### Dr. Sandra Matz

Sandra Matz is the David W. Zalaznick Associate Professor at Columbia Business School and author of Mindmasters. A computational social scientist, she specializes in using Big Data and experimental methods to understand how psychological traits impact business outcomes, including consumer behavior and decision-making. Her work aims to help businesses and individuals make ethical, data-driven decisions. Dr. Matz's research is published in top scientific journals and has received widespread media coverage. She has been recognized among the 40 under 40 best business school professors by Poets & Quants.

#### Theodor Sandu

Theodor Sandu is a renowned Romanian creative leader with two decades of experience in pioneering innovative advertising solutions. He has successfully led global brand development and creative communication strategies for some of the world's most recognized companies. As a seasoned Digital Creative Director, Theodor also brings his expertise to the AI Council at Mullen Lowe Singapore, where he provides valuable insights into the future of advertising and technology.

#### Olaf Akkerman

Olaf leads the Retail & Consumer Goods Industry for Microsoft UK. A seasoned leader in the UK tech industry for more than 20 years, Olaf drives a customer first approach and focuses on building inclusive and high performing cultures. Olaf and his team work closely with a diverse set of customers across the sector to enable them to create better and more sustainable outcomes for consumers worldwide. Olaf has held various senior sales positions at Microsoft, prior to this, Olaf was the VP of Sales EMEA for Rackspace.

#### Sarvesh Raikar

Sarvesh is President - **Creative, MullenLowe Lintas, India,** with over 20 years in advertising, his work has been recognized globally at Cannes Lions, WARC, D&AD, the Clios, Adfest, LIA, Global Effies, Jay Chiat, Spikes Asia, NYF and The Rx Club New York. Sarvesh leads the creative mandate for Unilever's Lifebuoy and has been the creative force behind Lifebuoy's 'H for Handwashing' that enlisted the participation of over 35 countries, 60+ global NGOs and the governments of 7 countries. The initiative has won the coveted Global Effie, twice in a row.

#### **Unilever Teams**

Lifebuoy: Khim Yin Poh, Parnil Sarin, Aarti Daryanani, Payal Shah, Anwesha Mishra

**Growth Marketing Office**: Amanpreet Singh

Uniops Tech: Stathi Papa, Alokedeep Singh, Diane Lim, Sneha Raghavendra, Pavan Dongare

**Data and Analytics**: Aparna Koranath, Madhavi P. **Legal**: Himanshu Jain, Ariane Lluis, Ana Castellano

#### **IPG Creative Conceptualisation Team**

Sarvesh Raikar, President, Creative, MullenLowe Lintas Group
Vinay Vinayak, Global Business Director, MullenLowe Singapore
Elizabeth Tan, Behavioural Sciences and Insights Manager, MullenLowe Singapore
Theodor Sandu, Creative Director, MullenLowe Singapore
Sharmine Panthaky, Executive Director, Account Management, MullenLowe Lintas Group
Prathamesh Kulkarni, Vice President, Account Management, MullenLowe Lintas Group
Mehak Parikh, Brand Services Director, Account Management, MullenLowe Lintas Group