PROGRAMME OVERVIEW

MARKODING INNOVATION CHALLENGE

INNOVATION FOR GOOD: FROM ADOLESCENTS, FOR ADOLESCENTS, BY ADOLESCENTS

arm Jakarta a city of collaboration MARKODING! U-report INDONESIA unicef untuk setiap anak

MARKODING INNOVATION CHALLENGE

Thank you

UNICEF and Markoding thank the following members of our community for their dedication and generous support towards our mission.

Our Partners

Impact Byte

Thanks to these organizations

META Innovation

Gerakan Kepedulian Indonesia

SIAP (Social Innovation Accelerator Program)

Coworkinc

Raja Rental

Tim 32 Art Sinema

Mustafa Catering

Kedasi

Government Officials

Dr. Praptono, M.Ed (Direktur Guru dan Tenaga Kependidikan Pendidikan Menengah dan Pendidikan Khusus Direktorat Jenderal Guru dan Tenaga Kependidikan Kementerian Pendidikan dan Kebudayaan RI)

Ir. Suharti, MA, Ph.D (Deputi Gubernur Provinsi DKI Jakarta Bidang Pengendalian Kependudukan dan Permukiman)

Drs. Wisler Manalu, M.M (Asisten Deputi Kemitraan dan Penghargaan Pemuda, Kementerian Pemuda dan Olahraga RI)

Drs. Abri Eko Noerjanto, M.M (Kementerian Pemuda dan Olahraga RI)

Saryadi Guyatno, S.T., M.B.A. (Direktorat Kemitraan dan Penyelarasan Dunia Usaha dan Dunia Industri)

Muhammad Yasir (Kementerian Ketenagakerjaan)

Dinas Pendidikan DKI Jakarta

Schools

SMPN 253

SMPN 266

SMPN 238

SMPN 26

SMAN 35

SMAN 111

SMAN 95

SMAN 63

SMKN 24

SMK Prestasi Prima

SMK Jakarta Pusat 1

SMK Forward Nusantara

SMKN 64

SMKN 2

SMKN 46

SMKN Media Informatika

SMKN 71

PKBM Salsabila

PKBM Berdaya Indonesia

PKBM Gebang Sari

Yayasan KDM

Mentors

Augustine Merriska
Leorede Ano Oky Fani Thenu
Olphi Disya Arinda
Irnova Suryani
Hotniida AMW Sinambela
Normand Edwin Elnizar
Anditha Nur Nina
Mardea Mumpuni
Hanif Satrio Utomo
Rudini Mulya
Tetri Nabila Nurbaiti
Nisa Aulia Muftihani
Muhammad Audy Prasetya
Ajie Nugraha
Ziqrina Galih Aulia
Benedikta Atika
Lina Putri Pasaribu
Azzahra Lovely Andrieany
Muhamad Silmi
Disya Marianty
Nadhirah Nuha Shofura
Dzatia Muti Syahida
Grace Maria Sininta
Ahmad Syahid Zakaria
Aldeina Putriandita
Gloria Kezia Loupatty
Tracy Fania
Nastiti Setia Utami
Khairul Azman
Roma Tampubolon
Nadira Natasya
Adrianus Kevin
Stephanie
Johanes Latupapua
Yofriadi Yahya
Azharie Muhammad
Andrey
Fikri Muhammad
Agung Pangestu
Ibrahim
Ajat Darojat
Danny M.
Josprima Sihombing
Aryadi Made
Adryan Hafizh

Others

Adriana Amalia Herviany (Co-founder, Asa Berdaya)
Aisha Mita Habir (Co-founder, PiBo Media Anak)
Yuniar Kris Santoso (Co-founder, OBABAS)
Inggriani Liem (Founder, Bebras Indonesia)
Dimas Prasetyo (Head IT, KlikDokter)
Audrey Maximilian Herli (Co-founder, RILIV)
Talitha Amalia (Co-founder, Solve Education!)
Rhaka Ghani Satria (Co-founder, Menjadi Manusia)
Agung Bezharie Hadinegoro (Co-founder, Warung Pintar)

MARKODING INNOVATION CHALLENGE

Table of Contents

Welcome Message

By equipping adolescents with twenty-first century skills, we give them superpowers to unleash their potential to make the world a better place by solving everyday challenges.

When I managed my own IT-solutions firm five years ago, I often had to outsource client projects to programmers outside Indonesia because recruiting competent programmers and other digital talents in Indonesia was quite a challenge. It was one of the pressing issues not only for my company but also for many other IT-related industries. Today the demand for digital workers is at an all-time high and more critical than ever. Meanwhile, high school graduates make up a significant portion of the unemployed workforce in Indonesia. Thus, Markoding was founded to bridge the talent gap and skill mismatch facing the digital industry in Indonesia.

The journey of Markoding started in 2017 when I volunteered at a shelter in Cilincing, a low-income community in a fishing village in North Jakarta. Seeing how adolescents are tech-savvy despite their severe poverty level, I recognized a clear opportunity to transform them from technology consumers to technology innovators.

We kick-started the first Markoding workshop at an Internet shop in Cilincing by teaching 20 high school students to build a simple website. Two years later, in partnership with UNICEF and supported by the global technology company, Arm, we held the Markoding Innovation Challenge and trained 482 adolescents and 46 teachers from 21 schools and community learning centres with innovative coding skills to solve problems around them. Fifty-five passionate volunteers with diverse professions from software engineers, startup founders, investment analysts to diplomats, participated as mentors.

The ideas and solutions that come from this event were remarkably specific, relevant and beyond our expectations. From littering to suicide prevention, pill-tracking to legal assistance, this programme showed participants that they have the power to help solve challenges they identified. By equipping adolescents with twenty-first century skills such as critical thinking, creativity, communication, collaboration and compassion, we give them superpowers to unleash their potential and join the effort to make the world a better place.

I believe coding is more than creating a program or application; it's about creating solutions by using the logic of thinking. It encourages adolescents to be prudent and efficient in their analysis, triggers curiosity and creativity and nurtures better decision-makers and problem solvers.

At Markoding, we want to pave a way for adolescents to unleash their potential. Let's innovate and give every adolescent a chance to live better.

Amanda Simandjuntak

Founder and Chief Executive Officer

Foreword

As the Minister of Education has often said, there is a learning crisis in Indonesia, one that was acknowledged well before the start of the COVID-19 pandemic.

In a UNICEF Indonesia study 'Skills for the Future', conducted two years ago, we found major gaps in adolescents' problem solving, critical thinking, and communication skills.[1] This tells us that young people are not developing the skills they need to enter the workplace. COVID-19 has only exacerbated this situation. It has deepened the learning gaps and highlighted the digital divide. If we want to address this crisis, we need to adjust our approach to learning, for example, by rolling out programmes that are innovative, fit for purpose, and that bring together the strengths of government, NGOs, and the private sector. One example is the Digital Innovation Programme and Demo Day held recently on 25 July 2020.

UNICEF Indonesia, together with global technology company Arm and the Government of Jakarta, promoted this exciting programme with Yayasan Daya Kreasi Anak Bangsa (Markoding). The Digital Innovation Programme is fully aligned with the Minister of Education and Culture's vision of *Merdeka Belajar* (Liberating Learning) and *Profil Pelajar* (Character Education) and has brought together girls and boys from all over Jakarta – from junior secondary, senior secondary and vocational schools, as well as community-based learning centres. The adolescents have worked in teams to develop digital solutions which address issues that concern them. They have learned new skills, received support from mentors, and enjoyed the space to explore new ideas. They were empowered to take action. We are delighted with the success of the programme and the support of the Government of Jakarta. With creative partners like Markoding, we hope it can be replicated to more schools and community learning centres to inspire and engage more children and young people.

UNICEF is committed to continue to support the Government of Indonesia to build back better after the pandemic and create a next normal where learning is relevant and meets the needs of all children and adolescents, including the most marginalized. This digital innovation challenge is a promising start.

Debora Comini

UNICEF Indonesia Representative

1 UNICEF. 2019. Skills for the future. https://www.unicef.org/indonesia/education/reports/skills-future

Markoding

MARKODING *<Mari kita koding!>*, or Yayasan Daya Kreasi Anak Bangsa, is an organization with a mission to empower disadvantaged adolescents in Indonesia by teaching coding and innovation. Established in 2017, Markoding aims to improve adolescents' digital skills. Markoding developed a free integrated learning ecosystem to teach coding in a fun and simple way.

UNICEF

The United Nations Children's Fund (UNICEF) is a United Nations agency committed to save children's lives, to defend their rights, and to help them fulfil their potential, from early childhood through to adolescence and youth. UNICEF works with governments, educational institutions, civil society organizations, private sector organizations, and adolescent and youth groups and networks as changemakers to empower the most vulnerable and marginalized young people through innovative and inclusive approaches to education, engagement and entrepreneurship.

Arm

Arm defines the pervasive computing that's shaping today's connected world. Realized in 125+ billion silicon chips, our device architectures orchestrate the performance of the technology that's transforming our lives — from smartphones to supercomputers, from medical instruments to agricultural sensors, and from base stations to servers.


PERS
JAKA
PEMETAAN MASALAH


APPLICATION WITH GOVERMENT
TIM POU

Introduction

The Markoding Innovation Challenge is an adolescent empowerment programme in Indonesia and a co-creation of the 'Innovative Digital Solutions Programme', a digital innovation incubation programme for adolescents. It was held in Jakarta, targeting marginalized young people aged 10–19 years in 2019. In this programme, young people were given a challenge to find digital and innovative ways to voice their ideas, thoughts and aspirations.

Background

The mismatch of skills in the workforce is thought to be one of the reasons for high unemployment in Indonesia.

The unemployment rate among adolescents in Indonesia is 14 per cent. Finding the first job is a challenge for many young people. Education access is also a huge challenge; 29 percent of adolescents aged 16–18 drop out from school, and 23 percent of adolescents aged 15–19 have never had any formal education or training. In 2015, researchers in the Association of Southeast Asian Nations found that 50 percent of Indonesian high school and vocational school graduates do not have the skills required for the workforce. According to a recent UNICEF study, the most important competencies for adolescents are creativity, critical thinking, and digital skills.[2] Yet many adolescents felt they were not developing these skills through their education. These findings are in line with private sector findings, which highlighted a significant lack of transferable skills among new recruits.

The UNICEF study provides a basis for discussions with government partners on skills development and improving the quality of teaching and learning, especially within the context of Indonesia's Mid-Term National Development Plan (RPJMN) 2020–2024. The Ministry of Education and Culture highlighted five priorities to translate the Indonesian President's 'Direction to Create Superior Human Resources' (*SDM Unggul*) into concrete action in the education sector. One of the five priorities is building student character and the practice of *Pancasila,* Indonesia's founding philosophy. Using a character survey, the Ministry developed the Pancasila Student Profile composed of six characteristics: noble character, global diversity, independence, able to work together, critical reasoning and creativity. The Minister of Education has also embarked on a series of policy reforms entitled 'Liberating Learning' (*Merdeka Belajar*). One of the main focuses is drastically reforming the national learning assessment framework and mechanisms. The ministry is currently working on the development of assessment frameworks and instruments with support from different development partners.

2 UNICEF. 2019. Skills for the future. https://www.unicef.org/indonesia/education/reports/skills-future

Skills for adolescents

According to the UNICEF study, there are several skills needed for success in school, life and work.

1. **Foundational skills**. Literacy and numeracy are essential for further learning, productive employment and civic engagement.
2. **Digital skills**. Digital skills support the development of digitally literate children, enabling them to use and understand technology, search for and manage information, create and share content, collaborate, communicate, build knowledge, and solve problems safely, critically, and ethically.
3. **Transferable skills**. Known as 'life skills', 'twenty-first century skills', 'soft skills' or 'socio-emotional skills', these skills enable young people to become agile learners and global citizens equipped to navigate personal, social, academic and economic challenges. Transferable skills also help crisis-affected adolescents cope with trauma and build resilience. They include problem-solving, negotiation, managing emotions, empathy and communication.
4. **Job-specific skills**. Job-specific skills support the transition of older adolescents into the workforce with technical and vocational skills which are directly associated with specific occupations.

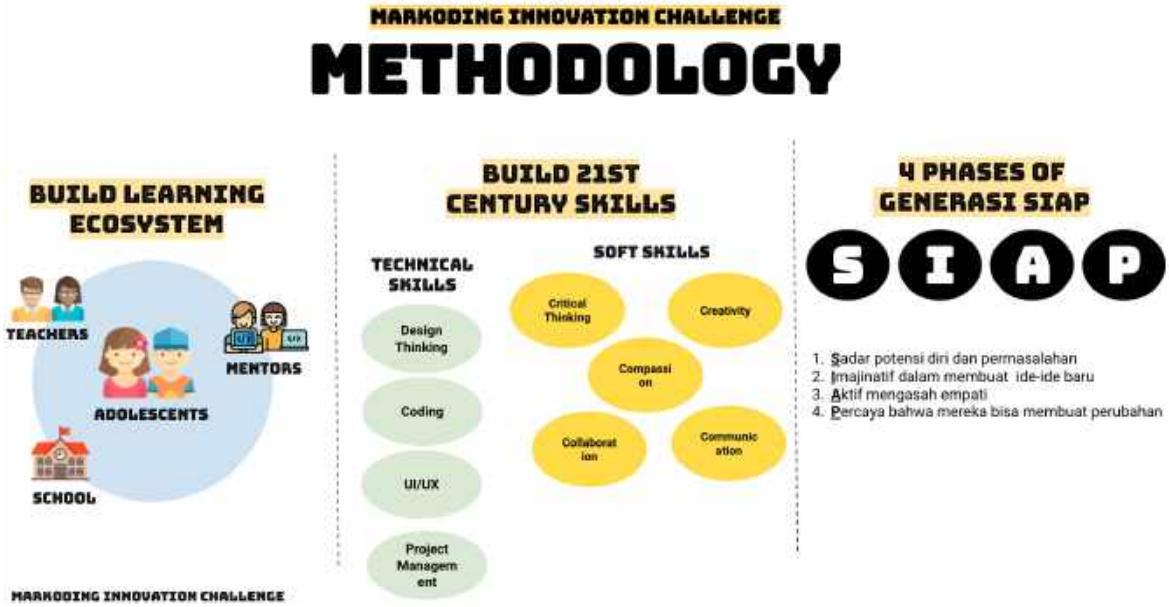
The Markoding Innovation Challenge focused on developing **digital skills**, including design thinking skills, coding skills, UI/UX skills, and project management; and **transferable skills**, such as critical thinking, creativity, compassion, collaboration and communication.

Through the Markoding Digital Innovation Challenge, adolescents can become a part of the 'SIAP Generation' (*Sadar*, *Imaginatif*, *Aktif* and *Percaya*) where they can imagine new ideas, have a sense of empathy and believe they can make a difference. These skills will help them become lifelong learners, secure productive work, make informed decisions, and positively engage in their communities.

Programme Design

Markoding Innovation Challenge uses a humanist and creative approach in finding solutions to solve problems.

The Challenge encouraged adolescents to voice their aspirations and problems and create digital-based solutions, such as websites, animation, games, or mobile apps. Job opportunities for adolescents, empowerment of underprivileged adolescents, and digital innovation training for adolescents were the three main focuses. Adolescents were trained in a series of innovative workshops to develop technical and soft skills. With additional skills training and guidance from professional mentors, they identified problems at hand and digitized their solutions to be presented to the private sector as prototypes that can be used to encourage adolescent participation in communities throughout Indonesia.



HOW TO PREPARE FOR SIAP GENERATION?

	S	I	A	P
Definition	**SADAR** Be aware of the problems around and self potential.	**IMAJINATIF** Imaginative and dare to look for new solutions and ideas.	**AKTIF** Actively sharpening empathy and willingness to continue learning.	**PERCAYA** Believe that we can make a difference.
	LAB INOVASI GENERASI SIAP			
Process	Map problems and understand your potential.	Explore new ideas and solutions in finding problems.	Validate and refine solutions.	Create an action plan and implementation.

Activities

Supporting the whole learning ecosystem is essential and workshops were held for teachers, potential employers (acting as mentors) as well as students. The SIAP Generation Innovation Lab (*Lab Inovasi Generasi SIAP*) teaching module was created and implemented in all stages of the Challenge. Adapted to the context and problems of teenagers in Indonesia, this module uses learning methods from several problem-solving methods including Design Thinking for Growth (Columbia Business School), Design-Thinking Process (IDEO) and UNICEF's Adolescent Kit and UPSHIFT curriculum. Design thinking is a human-centered approach to problem solving and encourages learners to take new perspectives in solving the challenges at hand. The UPSHIFT curriculum and Adolescent Kit provided references and benchmarks about the type of activities, level of difficulty, and use-case scenarios in an adolescent context.

One-day digital innovation workshop for teachers

The design thinking workshop for teachers was held on 22 November 2019 and aimed to improve teaching skills for digital innovation. With implementation of design thinking in the classroom, teachers can actively facilitate building innovative solutions to solve problems with students.

Mentor workshop

A design thinking workshop for mentors who work in the digital industry was held. Mentors included innovation consultants and volunteers who acted as facilitators in the digital innovation challenge workshops for students.

One-day and three-day digital innovation challenge workshops

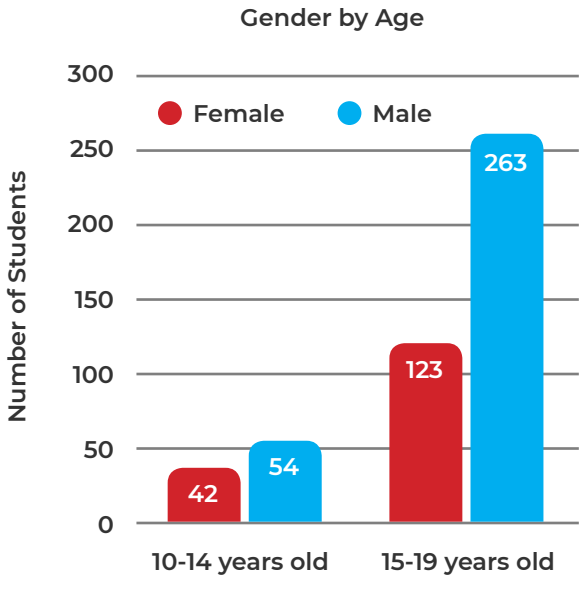
Held on 14–15 December 2019 and 21–23 December 2019, these workshops taught design thinking to young people in Indonesia to solve problems around them using digital-based ideas and solutions. A selection of ideas from the one-day workshop were moved forward to the three-day workshop and adopted by students working in teams to further refine the solution. A total of 21 schools from Jakarta participated in the workshops.

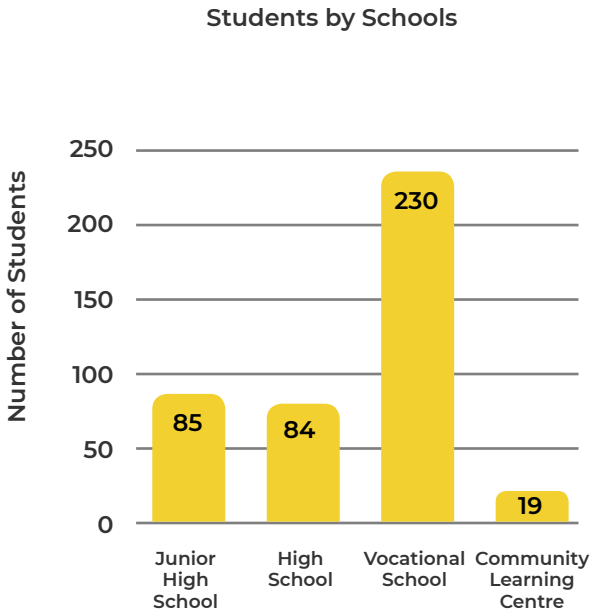
Markoding Digital Innovation Bootcamp

Twenty participants in seven teams created their digital solution ideas into reality under the guidance of mentors in a two-month Markoding Digital Innovation Bootcamp from January to March 2020. Five teams received a coding bootcamp and two teams received a gaming bootcamp. The final prototypes were presented online at a Demo Day on 25 July 2020.

Markoding Innovation Challenge at a glance

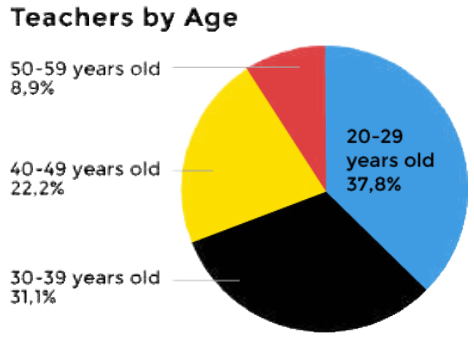
21	Number of schools participated.	**46**	Number of teachers trained in the teacher workshop.
482	Number of students participated in workshops.	**164**	Number of ideas for digital solutions submitted.
17	Number of students have basic coding skills proficiency.	**33**	Number of mentors volunteered to assist students.



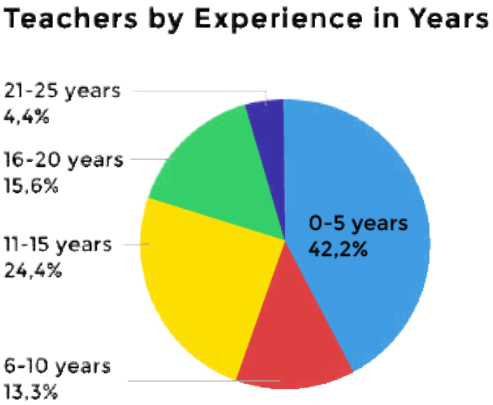


Teacher profile

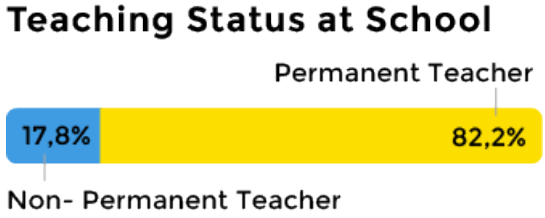
Forty-five out of forty-six teachers from 21 schools who participated in the teacher workshop (23 men and 22 women) completed the profile survey.



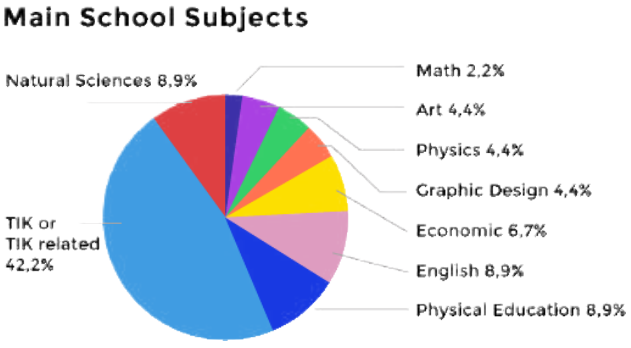
Seventeen teachers, aged from 20–29 years, made up the largest group in the workshop, followed by 14 teachers aged 30–39 years, 10 teachers aged 40–49 years and four teachers aged between 50 to 59 years.



Almost half of the teachers (19) had 0–5 years of teaching experience, six had 6–10 years, 11 had 11–15 years, and 7 teachers had 16–20 years. Only two teachers had 21–25 years of teaching experience.



Only 37 teachers had permanent teacher status while the rest were non-permanent teachers, and almost all of them (43) had teaching as their main income. Six teachers had other jobs outside teaching such as tutoring (office application course), entrepreneurs, administration and basketball coach.



Nineteen teachers were teaching information communication technology (TIK) or related topics as their main teaching subject; the remaining teachers (26) taught non-TIK subjects. However, six non-TIK teachers taught TIK or TIK-related topics as an extra subject. These include TIK, *administrasi infrastruktur jaringan* (administration of network infrastructure), *sistem komputer* (computer systems), and *simulasi & komunikasi digital* (communication digital and simulations).

What teachers say about the programme

Syahida Humairoh
SMK Prestasi Prima

Markoding Innovation Challenge provides valuable learning opportunities for us as teachers as well as for students who have participated in this activity and it certainly makes an impression on their life journey. By participating in this activity, adolescents will continue to be sensitive to the environment so that they can be developed into good ideas.

Desmarita
SMPN 253 Jakarta

Markoding Innovation Challenge was an innovative programme that motivated adolescents from SMPN 253 Jakarta to explore and develop their potential and also boost their confidence so that they can become agents of change for a better environment.

Danan Wuryanto Pramono
SMK Forward Nusantara

By participating in Markoding Innovation Challenge, my students become more aware of their own abilities, more active in working together, and are also motivated to make changes for the better for their environment. Learning coding gives students the ability to think more coherently and structurally than before. They also seem to have better self-confidence.

Anita
PKBM Berdaya Indonesia

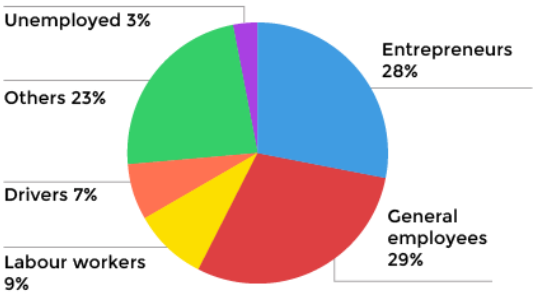
Markoding Innovation Challenge provides valuable experiences for teachers and also for students from PKBM Berdaya Indonesia because they are given the trust and motivation to bring change to better their lives. So far, many of them are in an environment that is not supportive of self-growth, self-development, and self-confidence, but when they joined this programme, their perspective on life changed. They can still have the same opportunities as other children and have a better future.

Student Profile

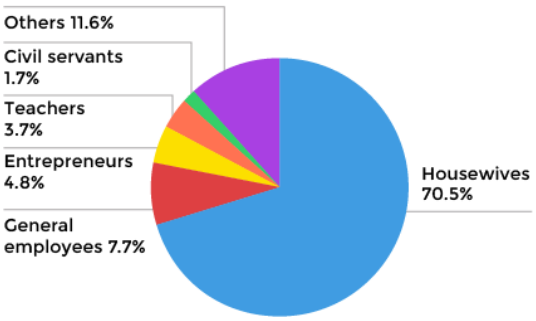
Up to 482 students from 21 schools participated in the one-day innovation challenge workshop. Fifty-four male students and 41 female students were aged between 10 and 14 years. For the students aged 15 to 19 years, there were 264 male students and 123 female students.

Family background

Father's Occupations



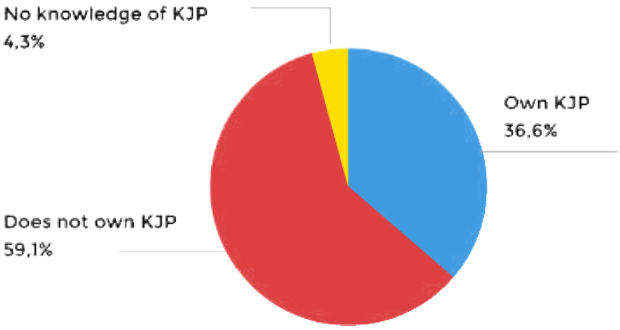
Mother's Occupations



Most fathers (54 percent) of students had attended high school, 11 per cent had attended junior high school and 15 per cent had bachelor's degrees. Fifty-one percent of mothers had attended high school; 13 percent elementary school and 13 percent junior high school.

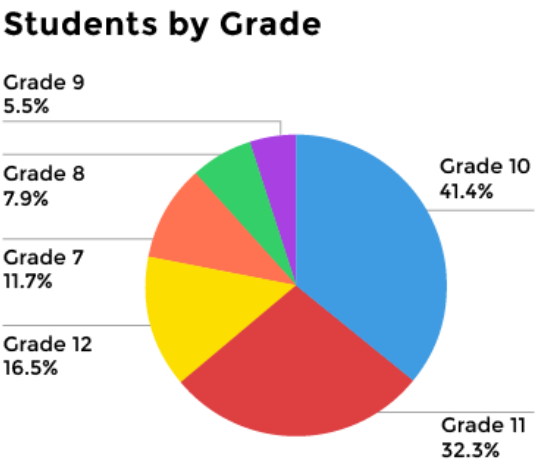
Most fathers were working as entrepreneurs (28 percent) and general employees (29 percent) while most mothers (70.5 percent) were housewives.

KJP Ownership Status



The Jakarta Smart Card KJP (*Kartu Jakarta Pintar*) is a programme funded by the Jakarta provincial government to assist students from less affluent families to go to secondary school. Students receive a monthly education allowance. Over one-third of students attending the workshop received funding.

Education level

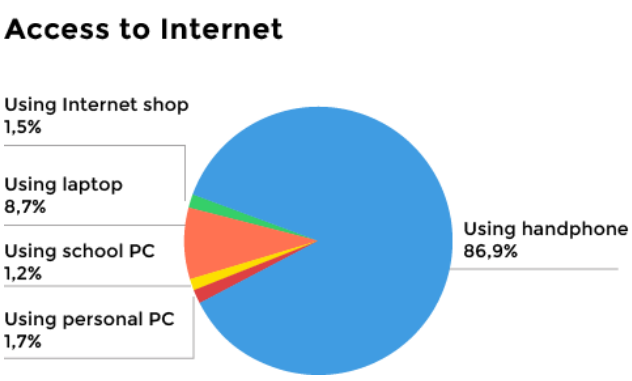


One hundred four students attended junior high school; 97 students attended high school; 257 students attended vocational school and 24 students attended community-based learning centres. Using grade levels, 49 students are in Grade 7, 33 students are in Grade 8, 23 students at Grade 9, 173 students at Grade 10, 135 students at Grade 11, and 69 students are from Grade 12.

Top three difficulties in accessing the Internet:

1. **Expensive Internet quota.**
2. **Do not have Internet access/Wi-Fi at home.**
3. **Do not have the devices.**

Access and digital behaviour



Almost half of students (49 per cent) have Internet access at home and 64.3 percent students own personal laptops. 20.3 percent of them also have PCs at home and 85.9 per cent of their schools have computer labs with Internet access. Almost all of the students own personal handphones (96.1 per cent) which they mainly used to access the Internet. However, there are 18.7 percent of students who find it difficult to access the internet.

When students access the Internet, 48.5 percent open social media accounts. They also use the Internet to do school assignments (18.3 percent) and play games (19.5 percent). The remaining 13.7 percent of students use the Internet to use search engines. Eighty-six per cent of students access the Internet every day with the average period of access per day being more than four hours (49.2 percent), 3–4 hours (26.8 percent), 1–2 hours (20.5 percent), and less than one hour (3 percent).

The top six social media channels and websites visited are Instagram, WhatsApp, YouTube, Facebook, Line and Google. The most popular games include Mobile Legend, Call of Duty and PUBG.

Plans after graduation

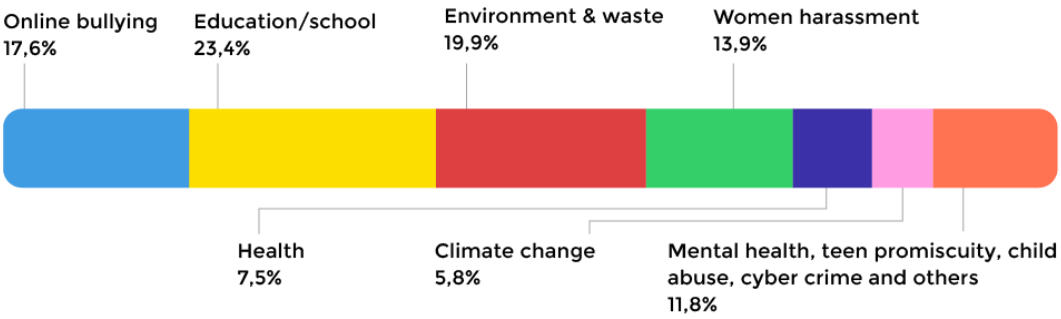
More than half of the students plan to continue education to bachelor level after graduating high school (58 per cent) and 34 percent plan to directly look for a job. When asked what their ideal occupations are, the top three answers were:

1. IT-related occupations (25 percent); programmer, developer, IT security, etc.
2. Business/enterprise-related (18 per cent); entrepreneurs, manager, employees, etc.
3. Design-related occupations (9 per cent); designer, graphic designer, web design, etc

Issues adolescents care about

In the one-day workshop, the top three most important issues identified by students to be addressed were education (25.4 percent), environment and waste (18.7 percent), and online bullying (18.2 percent). These issues remained the top three issues in the three-day workshop with the values of 28.6 percent for education, 22.1 percent for environment, and 10.4 percent for online bullying.

Issues identified by students in one-day workshop



Mentors

The involvement of mentors greatly contributed to the success of the programme. Up to 35 mentors were trained and 33 mentors (12 men and 21 women) volunteered in the one-day innovation challenge workshop. There was a diverse range of professions represented including software engineer, designer, researcher, social worker, diplomat, college student, investment analyst, and startup founder.

Mentors' Background

1
Analyst
Community
Corporate staff
Diplomat
Engineer
Finance/Investment
Foundation
Foundation worker
Impact
Journalist
Program Trainer
Student
Teacher

2
Designer
Researcher
Social Entrepreneur

3
Freelance
IT

4
Entrepreneur
Ministry Worker

Some mentors also participated in the bootcamp, contributing expertise and professional experience to guide students in developing digital innovation ideas. For example, Kevin, a software engineer from Tokopedia, acted as one of the lead coding mentors. Almost all of them had previous experience in volunteering and teaching in training or classroom settings.

Mentors' Origin

Jakarta	29
Bandung	3
Garut	1
Singapore	1

Mentors were willing to participate because they wanted to learn more about design thinking and were looking for an opportunity to give back to the community. They felt the programme goals were aligned with their personal mission to increase access to education for marginalized students. This opportunity would help develop their skills to support students. They wanted to share their knowledge and experience, especially those who have relevant work or project experience.

Volunteering Motivation

Development of the students	12	Relevant with current work/ expertise	4
Self development	8	Interaction/to socialise	3
Channeling interests & knowledge	8	Short & temporary project	1
Sharing	7	Curiosity	1
Align with personal social mission	6		

Mentor Testimonies

Azharie Muhammad
Software engineer,
Tokopedia

Azharie Muhammad is a software engineer at Tokopedia. Being a coding mentor is an experience that is not easily forgotten. “Every Indonesian young person must have the courage to innovate and have creative thinking. Creativity, critical thinking, problem-solving are twenty-first century skills that every Indonesian adolescent must have,” he explained.

He also said that he got a lot of inspiration from the Markoding Innovation Bootcamp participants, about the spirit of learning, curiosity, and wanting to bring change to their environment. He hopes that more and more Indonesian adolescents become innovators in the digital field, who can bring changes to their lives, Indonesia and even the world.

Augustine Merriska
Meta Innovation Lab

“Being the facilitator at the Markoding Innovation Challenge makes me feel grateful, because I was given the opportunity to learn and get inspiration from young people who don’t just only care to do something to solve the problems around them, but also have the enthusiasm to want to learn. This interaction and process working together with participants humanized me.”

Adrianus Kevin Kusuma
Software engineer,
Tokopedia

Adrianus Kevin is a software engineer at Tokopedia. His love of the programming world brought Kevin to participate in the Markoding Innovation Challenge. According to Kevin, adolescents still play a relatively small role in society and in decision-making processes in the community. He believes the younger generation can be an agent of change and their voices are worth listening to. Kevin wants to help increase adolescents participation in the social environment. Through the Markoding Innovation Challenge, Kevin hopes that adolescents participation in Indonesia can increase and bring change for Indonesia.

Khairul Azman
First Secretary (Political),
Singapore Embassy Jakarta

“I am very happy to see the enthusiasm of my friends from SMKN 46 and SMAN 95 to study design thinking and apply it in the process of finding their solutions. Some of them are very critical of the problems experienced by people around them and are creative in finding solutions. When I see them working, I think their future and the Indonesian nation will be very bright. Hopefully, this programme can continue to benefit more young people in Indonesia. “

Stephanie
Founder & CEO,
MyEduSolve

"It's great to be one of the mentors in the Markoding Innovation Challenge. It's really amazing how this programme can be such an impactful and transformative experience, both for me and the children. Some of the adolescents who participated, even though it was on Saturday, were very excited to take part in the workshop and they finally formed their group to discuss the innovations they wanted to make for their school and Indonesia!"

Benedikta Atika
Impact Investment Lead,
Angel Investment Network
Indonesia (ANGIN)

"Markoding Innovation Challenge is a programme that I think is very inspiring. Through this programme, adolescents have access to opportunities to work and learn from industry experts who have been far from their reach. From my experience as a mentor at the one-day innovation challenge, I learned a lot not only from other mentors and the Markoding team but from the adolescents and teachers we met during the session. I saw the high morale of the schools we attended. The adolescents we met were also very creative and sensitive to the problems around them. This programme helps them to explore these ideas further and inform the public."

Roma Tampubolon
Founder, StrengthsID

"Markoding Innovation Challenge was such a wonderful, successful event, thank you for including me into your programme as a mentor. Everyone was having a blast; it's been a long time since I've been to an innovation session that was that much fun! Again, thank you for letting me add value and contribute to this programme."

Programme Results: What Changed?

Teachers

80 percent of teachers felt solving problems using different perspectives became easier.

The number of teachers who first tried to understand the root cause of any problems before trying to solve it increased by 3 percent.

Sixty-five per cent of teachers found leading group discussions more enjoyable. Seventy-two percent of teachers admitted that their students often ask for their opinions when facing problems and 79 percent feel that they now can give better feedback.

Ninety-two percent of teachers realized the importance of understanding their student's difficulties more and all of them can look at students' problems from students' perspectives. One hundred percent of teachers understood the importance of their students' aspirations more.

The teachers feel like they can give better feedback

Ninety-five percent of teachers became more interested in exploring ways to create optimal learning environments for their students and 87 percent felt more confident in exploring ideas to optimize the learning process. Eighty-nine percent of teachers felt more confident in experimenting with classroom design to encourage student participation. Ninety-three percent felt more confident in playing their role to prepare their students for the future.

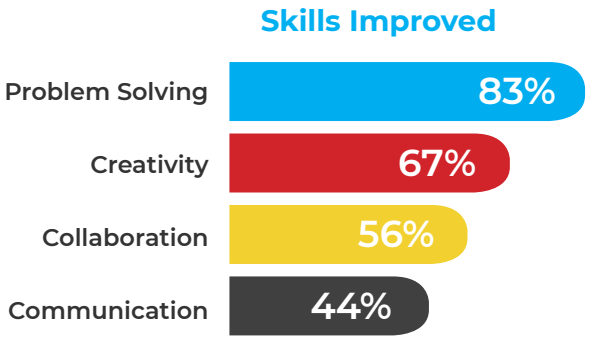
9 out of 10 teachers felt more confident to:

Implement what they've learned in their classrooms

Use creative thinking in problem solving

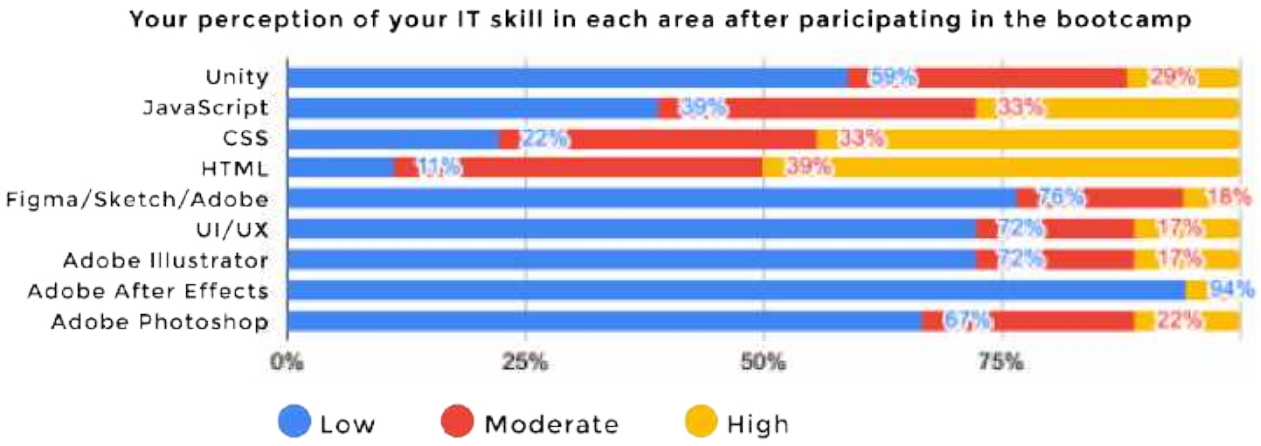
Solve problems that require creativity

Improving student skills



The majority of students who progressed to the bootcamp believed that their problem-solving skill and creativity skills (67 percent) were improved after joining the programme. Half of these students were female. There were fewer female students who perceived an increase in collaboration skills (24 percent), compared to male students (35 percent). While almost half of the students (44 percent) believed that their communication skills were improved, only 12 percent of those were female students.

Fifty-six percent of students believed their coding skills were highly improved after participating in the bootcamp, while 33 percent perceived themselves as having moderate coding skills and needed to learn more. The rest stated they have low coding skills as they faced difficulties in learning.



After the bootcamp, around half of students said that their HTML, CSS, and JavaScript skills were improved the most. In general, older participants showed more fluency in sharing their ideas, better presentation skills, and clearer ideas structure. They usually have more benchmarks and references compared to the younger participants.

Gender

There was no significant difference in performance and quality between male and female students although female participants were more focused on presentation of prototypes and male students focused on functionality. Male students were more confident (3 percent) in making a real change compared to female students. Female students found it easier to listen to other people's opinions and understand their point of view; scoring 9 percent higher than male students.

Future plans

When asked about their ideal job, there is a change. Eighteen per cent more students (from five to eight students) said their ideal job is IT-related; programmer, app developer, system analyst, or game developer. There was also one participant who aspired to build an enterprise in the IT industry. At the start of the programme, there were no female participants whose dream jobs were related to IT, but this increased by 33 percent after the bootcamp. When asked to further specify their plans after graduation, 12 percent (50 percent female) said they wanted to further their education in IT/computer science subjects.

Even if every student does not want to pursue an IT-related career, the programme broadened students' horizons and they agreed their new twenty-first century skills could be used in many other fields outside IT/computer science.

After the programme, more than 90 percent of students believed that the workshop is useful and that digital platforms can be used to make changes in solving existing problems. They are interested in participating further in available training.

Voices from Adolescents

Karnadiyya

Karnadiyya ('Diyya') is 16 years old, studying skin beauty at a vocational high school. Prior to the challenge, Diyya did not have any knowledge of coding. She participated in the Markoding Innovation Challenge because she said, "This is not just an ordinary workshop. This can help to create a better future."

Since joining the Challenge, Diyya has felt many changes have taken place in her life. She felt more confident, can manage her time better, and became more sensitive about problems around her and her peers. Diyya cares about women's issues, victims of violence, and mental health issues. According to Diyya, mental health in Indonesia is still taboo and many people with mental disorders prefer to hide their illnesses rather than seek help. Diyya and Team Lugna want to raise awareness of mental health and provide assistance to victims of sexual abuse, domestic violence, and child abuse through the team's application, Lugna. Diyya believes this will help many adolescents her age.

Lukman

Lukman, 15 years old, is currently studying multimedia at a vocational high school. Since childhood, he has been interested in the world of technology, and he is very fond of online gaming. He has aspirations to become a game developer. Knowing his school was invited to take part in the Markoding Innovation Challenge, he immediately decided to participate. Since joining the Markoding Innovation Challenge, he has been able to divide his time better, he has more confidence and his coding skills have also been honed.

In addition, Lukman cares about the environment and waste issues. He says there are still many people who do not care about waste, even though the Earth must be guarded and cared for together. "If the young generation won't care for our Earth, then who will?" he said. To raise awareness about waste management, Lukman and Team Dream Catcher created the Tractor Chicken Trash online game. Through this application, Lukman hopes that young people will be more aware of the importance of throwing trash in the right place, and jointly care for the Earth.

Kristianti

Kristianti's enthusiasm for learning coding has increased since joining the Markoding Innovation Challenge. Kristianti feels that she has more self-respect, confidence and values her life more. She believes she can bring about change and values time spent on useful activities. She hopes that more and more Indonesian children will realize their potential as agents of change.

For more voices, go to:

1. Innovation and adolescents: The (super)power of coding
    - http://bit.ly/unicefHIS1 (English)
    - http://bit.ly/unicefHIS2 (Indonesian)
2. The Markoding Challenge
    - http://bit.ly/unicefHIS3 (English)
    - http://bit.ly/unicefHIS4 (Indonesian)

Digital Prototypes Presentation

Six teams presented their digital solutions at the end of the bootcamp. However, one team (PKBM community-based learning center) did not finish the bootcamp, because participants could not manage their time between the bootcamp and other schedules.

The Digital Innovations

TEAM LUGNA

APPLICATION: LUGNA (MENTAL HEALTH)

TEAM PLASTIC SOLVE

APPLICATION: PLASTIC SOLVE

TEAM SOMETHING

APPLICATION: RUBBISH TO POINT

TEAM ASIK

APPLICATION: SELF-LOVE

TEAM DREAM CATCHER

GAME: TRACTOR CHICKEN TRASH

TEAM UNTOUCHED

GAME: HERO STORY

For more information, visit:

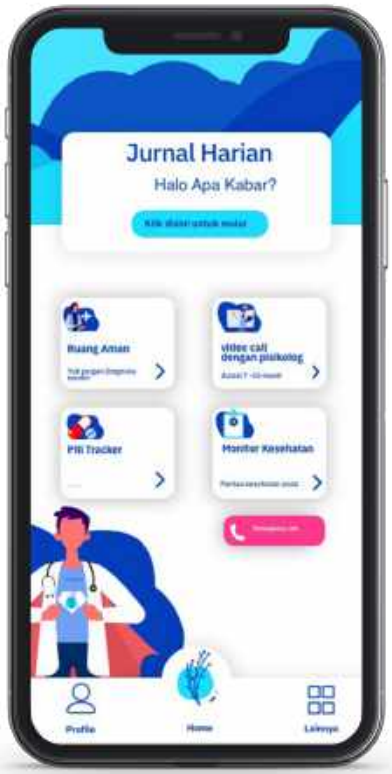
- https://bit.ly/unicefmarkoding1 (English)
- https://bit.ly/unicefmarkoding2 (Indonesian)

Team Lugna Application

Three students (Audrey, 17, Karnadiyya 17, Zelita, 17) formed the Lugna SMK Forward Nusantara Team. They wanted to help overcome the mental health problems of young people and create an application that helps make them aware of the importance of mental health. The digital solution idea they developed was called Lugna.

Application Features:

1. Emergency call is a list of mental health and suicide prevention hotline services and emergency contacts for domestic and sexual violence.
2. Daily journal is an online journal with a mood tracker so users can record their feelings every day. Journaling provides space to practice mindfulness or focus on the present or evaluate the positive and negative sides of different points of view.
3. Group chat or Safe Room (*Ruang Aman*) is an online place where users can talk about their grievances with other users safely. Users can provide mental support to one another. Video calls with a psychologist serves to prevent self-diagnosis and users can meet directly with psychologists to discuss problems. The first meeting can be done by video call, with subsequent meetings face to face.
4. Pill tracker. Users can record drugs prescribed by doctors/psychiatrists, with dates and times to trigger alarms when to take the drugs. This feature can be used for people who need medication.



Team Plastic Solve Application

The Plastic Solve team are three young people from SMAN 111 Jakarta (Stevi Wong, 17, Kristianti, 17, Regita, 17) who feel they must help protect the environment by reducing the daily use of plastic. They decided to create an application, Plastic Solve, to reduce waste by encouraging users to replace plastic bags with a reusable tote bag.

This Plastic Solve application invites users to buy or borrow tote shopping bags at the nearest shopping centre, earning points with each purchase and return of the bag.

Application Features:

1. Online purchasing service for tote bags at shopping malls. After a tote bag is chosen, a barcode for payment is issued.
2. Tote bags can be returned to the mall where they were first 'borrowed'.

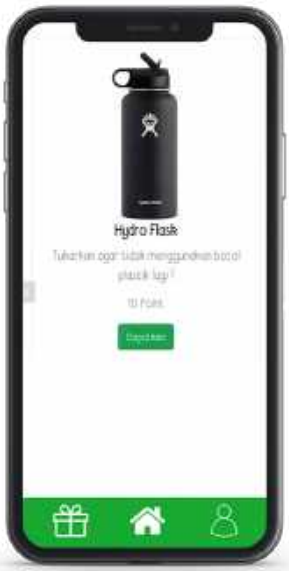
Team Something: Rubbish to Point Application

Team Something (Abyan, 17, Mikhael, 17 and Gilang, 17) from Prestasi Prima Vocational School wanted to help solve the problem of increasing rubbish. They developed a waste management application, Rubbish to Point. In this application, users can collect rubbish and separate plastic and paper waste before finally being taken to the nearest garbage bank.

After users deliver waste to the nearest garbage bank, they earn points that can then be exchanged for reusable items such as drinking bottles, straws and cutlery.

Application Features:

1. 'Throw your trash now' feature. The user is required to separate garbage and deliver it to the nearest garbage bank, which earns reward points.
2. Reward points can be used to obtain 'eco-friendly' items, for example, stainless straw or reusable cutlery.
3. Classification and separation of waste educates users about the types of waste ranging from organic, inorganic, and B3 (hazardous and toxic materials).



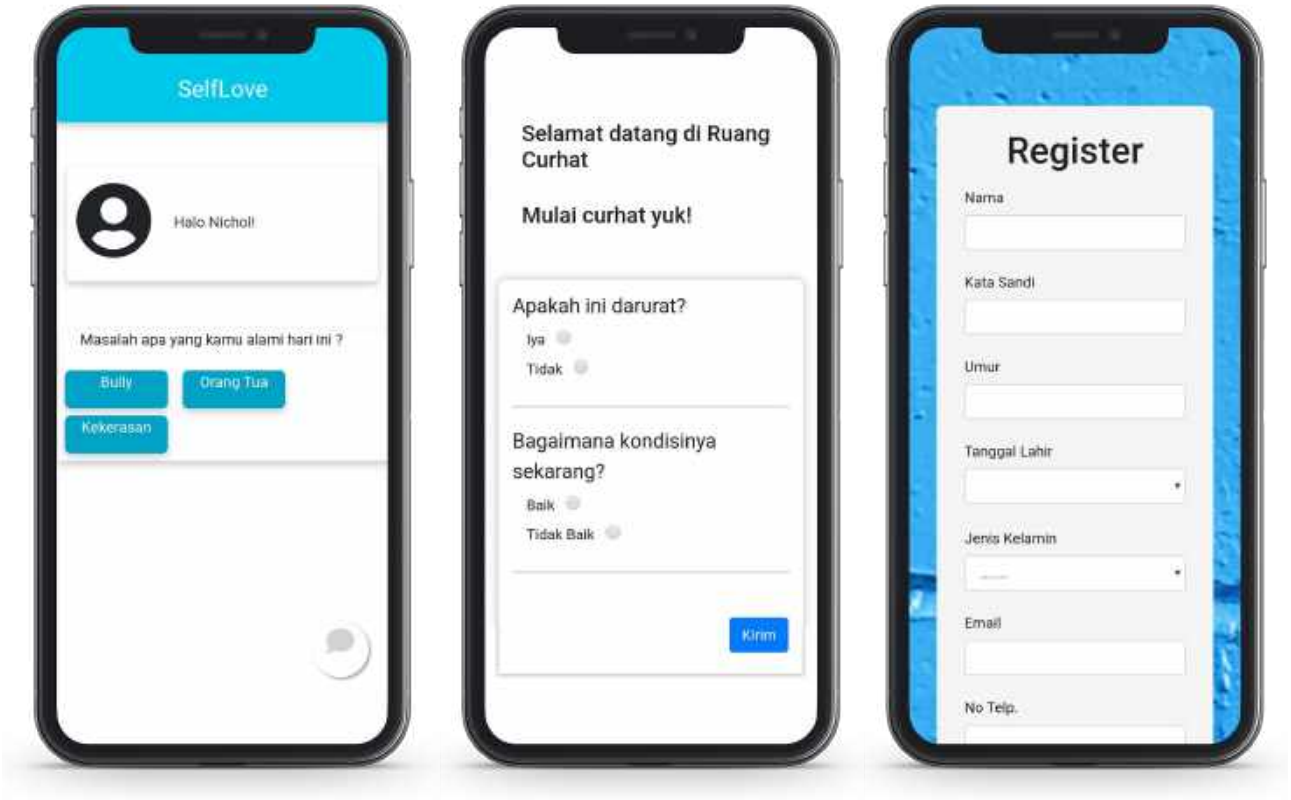
Team Asik: Self-love Application

Team Asik (Yasin, 14, Nichol, 14, and Faisal, 14) from SMPN 253 Jakarta created a self-love application as a place for peers to tell their stories of sadness and depression and share solutions.

Users can tell stories in a safe room with a bot until they feel calmer and don't feel alone.

Application Features:

1. Users can consult with BOT for concerning issues and seek advice.
2. In case the user need further suggestion, the BOT provides alternative advice so that the user can find a satisfactory solution in the end.



Team Dream Catcher: Tracktor Chicken Trash Game

The Dream Catcher team (Lukman, 16, Farhan, 16, Nouvel, 16) from SMKN 64 Jakarta want to help end the problems of increasing volumes of waste and lack of public awareness of the importance of throwing garbage in the right place. They made a game called Tractor Chicken Trash which invites users to find the location of the nearest trash in real-time and invites them to dispose of it responsibly.

Game Features:

1. Through the GPS features, users pick up garbages by a clamping machine, release it to hit garbage monsters and earn a point.
2. Earned points can be used for character customisation in future development so that users can keep enjoying to play the game.

Team Untouched: Hero Story Game

Every citizen should know the history of their country and appreciate the services of its past heroes. However, today more and more young Indonesian people forget and do not care about Indonesian heroes of the past. These issues prompted the Untouched Team (Ode, 17, Fariz, 17 and Jordan, 17, from Prestasi Prima Vocational School) to create a digital solution to help the younger generation know Indonesian history and heroes in a fun way.

They created a game called Hero Story where users are invited to play roles to help victims of war. This game also teaches that people must always spread goodness and help those in need. Users are introduced to the history of wars in Indonesia and the heroes who played a role. The Untouched team hoped that young people's interest and knowledge for history and heroes would increase.

Game Features:

1. Mission quest. Users can help people search for food and spices; and retrieve items related to missions.
2. Watch out! Enemies (monsters) can also chase users, if too close. The monsters will stop if users move away. Getting hit by a monster will make the 'health bar' decrease and the game will be over when the bar runs out.


ODIN
VATIO
LENGE
I 2020:
OLUSI DIGITAL
KEBAIKAN!

Digital Prototypes Presentation

On 25 July 2020, six teams showcased their digital prototypes at the online Markoding Innovation Challenge Demo Day. The session was held on two online platforms, YouTube and a Zoom webinar. Thirty-three participants attended the Demo Day through Zoom, and to date, UNICEF Indonesia's YouTube live stream (https://bit.ly/InovasiChallenge0725) reached over 1,200 viewers.

Panel discussion

Following opening remarks by Ms. Debora Comini, UNICEF Indonesia Country Representative, and Mrs. Ir. Suharti, Deputy Governor of DKI Jakarta Province. Division of Population and Settlement Control, a panel discussed twenty-first century skills (*Keterampilan Abad 21*) that every Indonesian child must have, to be set up for success in their careers, empower them, lead them to happier lives.

Panel members included Dr. Praptono, Director of Teachers and Education Personnel of Secondary Education and Special Education, Indonesian Ministry of Education and Culture; Amanda Simandjuntak, Markoding Founder and CEO; Audrey Maxmillian Herli, Riliv Founder; Kristianti Yulistia, SMAN 111 Jakarta; and Muhammad Abyan Satrio, Vocational School Prestasi Prima, as the representative of the Markoding Digital Innovation Bootcamp participants.

Presentation and testimonies

After the panel session, six teams presented their digital solutions. Student testimonies were given by Karnadiyya, Nusantara Forward Vocational School, and Lukman Maulana Hasan, Prima Prestasi Vocational School.

Fan vote results

A fan vote was conducted from 17–22 July 2020 for the most popular digital prototype using UNICEF Indonesia's Instagram platform, Facebook Messenger and WhatsApp U-Report Indonesia. U-Report is a mobile engagement platform where young people can voice their opinions on topics and issues around them.

The most 'liked' solution was the Tractor Chicken Trash game by Team Dream Catchers.

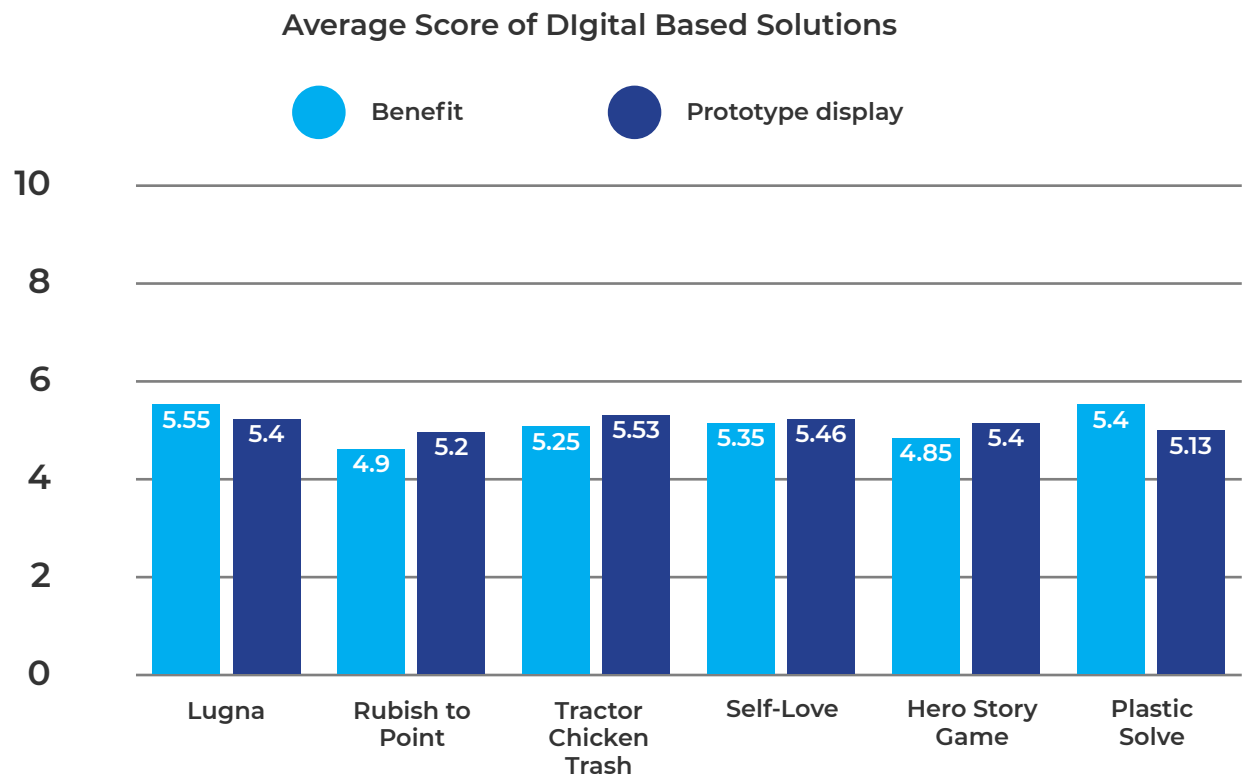
Some of the reasons included:

- The game is unique and makes people aware of taking out the trash.
- The idea is interesting, combining the concept of Pokemon-Go with a reminder to maintain cleanliness and always throw garbage in its place.
- The game is educational and exciting, it also looks interesting.

Feedback

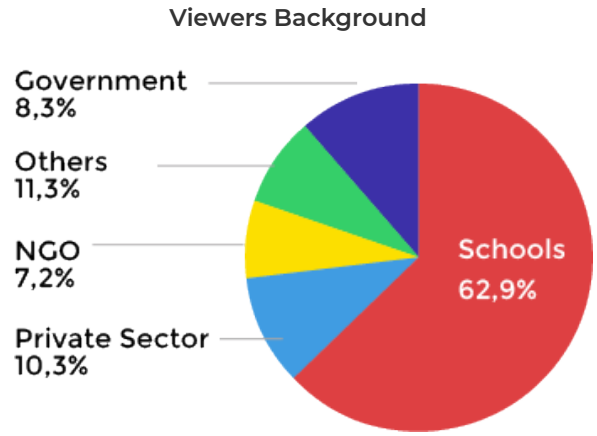
In a survey completed by Demo Day attendees, each prototype was given an average score based on the benefits and presentation by the participants.

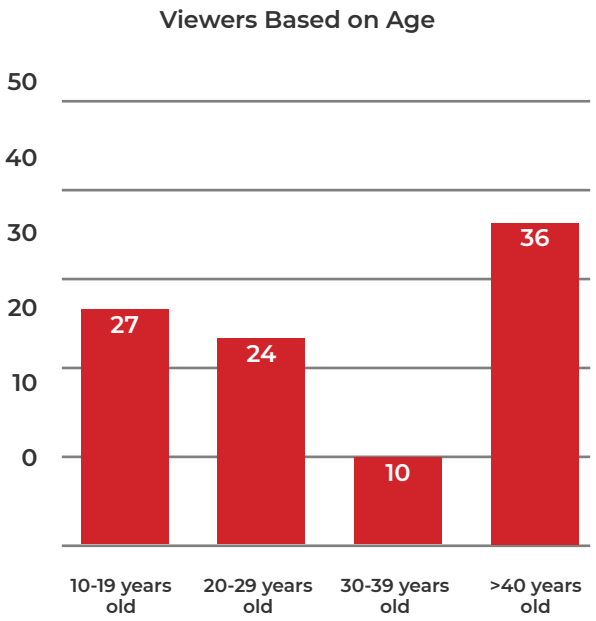
The attendees also scored the Demo Day event with an average score of 8.85 out of 10. They hoped this programme could be expanded outside Java as they felt that the event was interesting and great. Even though the event was held virtually due to COVID-19 risks, it fulfilled their expectations.



Attendees

Ninety-seven attendees registered for the Demo Day, 61 (63 percent) female viewers and 36 (36 percent) male viewers. Ninety-four percent of viewers came from Java, one percent (1) from North Sulawesi, one percent (1) from West Sulawesi and one percent (1) from West Papua.





Twenty-five attendees participated in the online survey for the bootcamp participants and Demo Day event. Thirteen attendees (52 percent) were women and twelve (48 percent) were men. Twenty-four attendees (96 percent) were from Java, and one (4 percent) from West Papua. These 25 people are divided into ages:

Age	Attendees
10–20 years old	2
21–30 years old	8
31–40 years old	8
>40 years old	7

For Demo Day Press Release, go to:

- http://bit.ly/unicefDemoDayPR1 (English)
- http://bit.ly/unicefDemoDayPR2 (Indonesian)

MARKODING INNOVATION CHALLENGE

INNOVATION FOR GOOD: FROM ADOLESCENTS, FOR ADOLESCENTS, BY ADOLESCENTS