



2021 PROGRAM SUMMARY

DIGITAL INNOVATION CHALLENGE

21ST CENTURY SKILLS, DIGITAL SKILLS, AND ENTREPRENEURSHIP DEVELOPMENT PROGRAMME WITH AND FOR ADOLESCENTS



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FOREWORD BY UNICEF INDONESIA



“Improving the capacity of young people to further enhance their 21st century skills through innovative learning initiatives can make a huge contribution toward the strengthening of relationship between adolescent development, education, and employment.”

The importance of the young generation for the future of Indonesia is clear. With around 44 million adolescents (aged 10-19 years old)^[1], constituting around 16 per cent of the total population, the country has the opportunity to leverage further national growth and social development through this demographic dividend.

Adolescents in Indonesia however, continue to face significant challenges in accessing high quality learning to develop their skills, competencies and employment opportunities. According to UNICEF’s Skills for the Future study conducted in 2019,^[2] the most important competencies adolescents need for the future are creativity, critical thinking, and digital skills. The study found however, that many adolescents felt they were not developing these 21st Century skills through their education.

With COVID-19, learning gaps have widened both in foundational and 21st century skills development; and the opportunity is shrinking for young people, including the most disadvantaged, to equip themselves with relevant skill sets, essential for their future work life. Strengthening the link between adolescent development, education and employment is therefore critical to assure the potential of young people.

In response to the educational needs of young people, UNICEF, with support from Generation Unlimited,^[3] a global multisector partnership to support the development

of young people; and in partnership with Yayasan Daya Kreasi Anak Bangsa (Markoding), has implemented the Digital Innovation Programme 2021. This programme represents a continuation from our previous initiative in this area, implemented in 2019, which brought together girls and boys from all over Jakarta and Semarang, from secondary and vocational schools, religious schools, as well as community-based learning centres, to equip them with skills and co-create solutions on issues that most affected them.

Aligning these efforts with Indonesia’s Minister of Education, Culture, Research, and Technology’s vision of *Merdeka Belajar* (Emancipated Learning) and *Profil Pelajar Pancasila*^[4], this programme brought together the Governments of DKI Jakarta, Central Java, and Kota Semarang; and the Regional Offices of the Ministry of Religious Affairs in Jakarta and Central Java. The programme has also created a pathway of strong partnership between government, non-government and private sector partners, which play important roles in shaping the future of young people. This vibrant collaboration has placed adolescents at the centre, where they are supported to develop new skills; given the opportunity to address issues most impacting their lives, and empowered to take the lessons learned from this experience into their future.

Implementing the programme during COVID-19 showed that despite facing boundaries, there are still many possibilities. The adolescents were provided with a supportive and inclusive space to experiment with new tools; and to determine how they wished to engage with their peers. Disadvantaged youth, such as girls and young people with disability, were also encouraged to participate in a process that left no one behind.

UNICEF is committed to continuing to work with the Government of Indonesia and other partners to meet the needs of children and adolescents, including the most marginalized; and to support them as change-makers and co-creators of solutions that improve their lives and their communities.

Katheryn Bennett
Chief of Education, UNICEF Indonesia

^[1] 2020 Population Census, BPS <https://sensus.bps.go.id/topik/tabular/sp2020/86>

^[2] UNICEF. 2019. Skills for the future <https://www.unicef.org/indonesia/education/reports/skills-future>

^[3] <https://www.generationunlimited.org/>

^[4] Profil Pelajar Pancasila, Ministry of Education, Culture Research, and Technology: <https://cerdasberkarakter.kemdikbud.go.id/profil-pelajar-pancasila/>

FOREWORD BY MARKODING



“From the implementation of the 2021 Digital Innovation Challenges, we learned that barriers are not the reason to stop. It is barriers that inspire perseverance, foster hope, build resilience, and eventually help promote the creation of positive innovations.”

From the implementation of this second Digital Innovation Challenges program, we learned a lot of important lessons related to challenges, innovations, and hopes. The COVID-19 pandemic, which is full of uncertainties and exacerbated by natural disasters such as floods, has become the main challenge that is beyond our control. The gap in digital access in Indonesia has increasingly become evident with 75% of children and adolescents in urban settings and 85% of those in the rural counterparts not having laptops or computers and internet access^[5]. Furthermore, 67% of teachers in Indonesia face difficulty in operating the devices that are necessary for facilitating online learning^[6]. The situation has resulted in the learning loss and a decrease in motivation among students and teachers during the pandemic.

These challenges drive us to continuously experiment in order to find learning solutions that are appropriate and effective, yet exciting for all adolescents in Indonesia, helping them develop their 21st century skills. Unlike last year’s implementation, where the learning happened in face-to-face setting, this year we deployed innovative learning methods, enabling transformation into approaches that are completely online for all stages of activities.

In the first stage of the program, we started out by establishing a strong basis for the adolescent learning ecosystem, i.e. the teachers. Through Lokakarya Guru Inovasi (*Innovative Teacher Workshop*), we equipped teachers with online facilitation skills for them to play their roles as

mentor, motivator, and facilitator from the environment of school internal support system for adolescents during the program implementation.

Through blended learning approach, we provided space for students to learn independently by joining online classes, asking questions and engaging in discussions with mentors and other participants through online discussion forums, and presenting their proposed solutions as well as receiving feedback through social learning platform. 137 industry mentors with different professions, from software developers to UI/UX designer, from psychologist to conservation scientists, made contributions toward facilitation of adolescent learning activities by introducing methods of live workshop and mentoring in small groups so that adolescents could learn materials and information that are relevant to the modern industries.

With the implementation of this learning program for 4,774 adolescents (58%) from the cities of Jakarta and Semarang, 1,018 ideas of innovative digital solutions were developed. These solutions aim to address many different social and environmental issues in Indonesia, including violence against women and children and access to healthcare, education, and mental health services. Given that the participants were 58% girls, the program also achieved the gender equality aspect. The program has proven that when every adolescent, boy and girl, is given the access to quality education, they will have the same potential when it comes to interests, skills, and opportunities in science, technology, engineering, and mathematics (STEM).

From the implementation of the 2021 Digital Innovation Challenges, we learned that barriers are not the reason to stop: a student who is able to develop their first app using only a regular smartphone, a teacher who is able to join an online training session from a hospital bed, and a mentor who is able to teach during self-isolation. It is barriers that inspire perseverance, foster hope, build resilience, and eventually help promote the creation of positive innovations.

Amanda Simandjuntak
Co-founder

^[5] UNICEF. 2020. Strengthening Digital Learning across Indonesia: A Study Brief <https://www.unicef.org/indonesia/media/10531/file/Strengthening%20Digital%20Learning%20across%20Indonesia:%20A%20Study%20Brief.pdf>

^[6] Yarrow, Noah; Masood, Eema; Afkar, Rythia., ‘Estimated impacts of COVID-19 on learning and earning in Indonesia: How to turn the tide’, World Bank, 2020, <https://documents1.worldbank.org/curated/en/184651597383628008/pdf/Main-Report.pdf>

ABOUT UNICEF, MARKODING, AND GENU



UNICEF Indonesia

United Nations Children’s Fund (UNICEF) is a United Nations agency committed to making the lives of children better, promoting their rights, and helping them achieve their full potential, from childhood to adolescence. UNICEF is working with governments, educational institutions, civil society organizations, private sector organizations, and groups and networks of adolescents and youth serving as changemakers in order to empower the most vulnerable and marginalized adolescents through innovative and inclusive approaches toward education, participation, and entrepreneurship.

MARKODING

Markoding (*Mari kita koding!* or Let’s learn coding!), also known as Yayasan Daya Kreasi Anak Bangsa, is an organization whose mission is to empower the most disadvantaged adolescent in Indonesia by teaching coding and introducing innovations. Founded in 2017, Markoding aims to improve the digital skills of young people. Markoding has established a free and integrated learning ecosystem where young people can learn coding in a fun and simple way.



GENERATION UNLIMITED



Generation Unlimited (GenU) is a global multisector partnership to meet the urgent need for expanded education, training and employment opportunities for young people, aged 10 to 24 years old, on an unprecedented scale. GenU is focused on four strategic priorities:

- (1) Connecting every school and learner to the internet;
- (2) Scaling up online/remote learning, skilling, and livelihood platforms;
- (3) Boosting entrepreneurial skills and opportunities;
- (4) Engaging youth as changemakers.

EXECUTIVE SUMMARY



The Digital Innovation Challenges program is a skills development and adolescent participation program implemented through the partnership between UNICEF Indonesia and Yayasan Daya Kreasi Anak Bangsa (Markoding). The program was also supported by Generation Unlimited, the Government of DKI Jakarta Province, the Education Office of DKI Jakarta Province, Central Java Province, and Semarang City, and Regional Offices of the Ministry of Religious Affairs in DKI Jakarta Province and Central Java Province.

This year, the program reached 4,774 adolescents (58% are girls) from 105 schools, madrasah and community based learning centres. There were 243 teachers and 137 mentors who supported the adolescents in developing their skills. There were 1,018 ideas of innovative solutions proposed, 36 of which became fully-fledged prototypes presented in a forum to young people, government, development and private sector partners.

The program provided space that encouraged adolescents to raise their voice and issues they were facing as well as to create digital-based innovative solutions. The program reached adolescent girls, adolescents with disabilities, and other marginalized adolescents. In this program, they received training through innovative workshop sessions, guided by professional mentors, aiming to enable them to identify issues around them and digitize their innovative solutions so that these solutions can be presented to the public as prototypes that could be utilized to encourage adolescent participation in communities across Indonesia.

Using UNICEF's 12 Core Life Skills framework, these adolescents were equipped with 21st century skills, digital skills, and entrepreneurial skills to help them identify issues that were important to them and together develop innovative solutions to address the issues.

skills for adolescents?

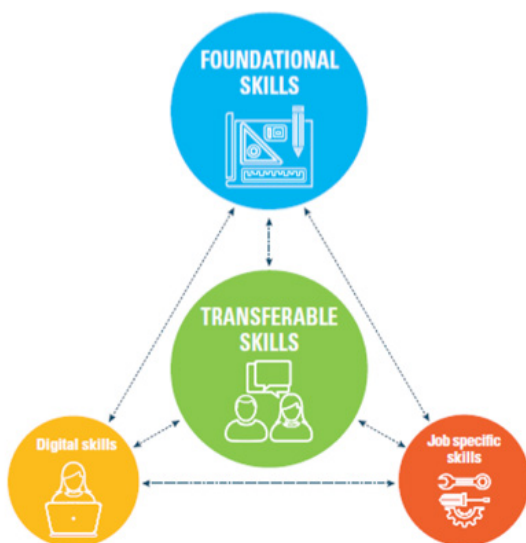
INTRODUCTION

Program Background

According to the BPS census^[7], young people aged 10–24 make up over a quarter of Indonesian population. This age group offers both possibilities and challenges in terms of reaching their full potential. Girls and boys graduate from school without the skills they need to obtain decent work, with 24% of Indonesian adolescent aged 15–19 reporting that they have not had access to education, employment, or training^[8]. Some of the key factors contributing to high young unemployment are a skill mismatch, lack of awareness of job opportunities, and lack of training on how to obtain work (ILO, 2019). Both boys and girls believe that they are lacking in the following skills: decision making, digital skills, and negotiation. In addition to job opportunities, this lack of skills may affect their life choices, self-esteem, risk management, and other areas of their lives. (UNICEF Skills for the Future, 2019)^[9].

Adolescent are trained in this program through a series of training, innovative workshops, mentoring, and they are equipped with 21st century skills^[10], entrepreneurship, and digital skills. They are challenged to come up with innovative solutions and to express their ideas about problems in the community. Their solutions will be digitalized into digital products in the final phase, which will have a wide impact throughout Indonesia due to the digital skill training.

What are Skills for Adolescents?



According to UNICEF, young people (particularly adolescents) require different types of skills in order to excel in school, life, and work. These skills are:

- 1. Foundational skills** Advanced learning, productive work, and active engagement in society require literacy and numeracy skills.
- 2. Digital skills** Digital skills enable children to use and learn technology, locate and manage information, create and share materials, collaborate, communicate, build knowledge, and solve issues in a safe, critical, and ethical manner.
- 3. Transferable skills** These skills, often known as “life skills,” “21st century skills,” “soft skills,” or “socio-emotional skills,” allow young people to become agile learners and members of community capable of navigating personal, social, academic, and economic problems. Transferable skills may also help young people who have been affected by a crisis to cope with trauma and build resilience. These skills include problem solving, negotiation, emotion management, empathy, and communication.
- 4. Job-specific skills** Job-specific skills help older adolescents transition into the workforce by providing them with technical skills that are directly connected to a certain job.

The Digital Innovation Challenge is aimed at developing digital skills, such as thinking, programming, design, and project management skills; as well as transferable skills, such as critical thinking, creativity, collaboration, and communication. As a result of this program, adolescents can develop new ideas and empathy, and believe that they can make a difference. These skills will help them become a lifelong learner, secure productive jobs, make appropriate decisions, and engage positively in their communities.

^[7] 2020 Population Census, BPS: <https://sensus.bps.go.id/topik/tabular/sp2020/86>

^[8] 2020 SAKERNAS, BPS; <https://www.bps.go.id/indicator/6/1186/1/persentase-usia-muda-15-24-tahun-yang-sedang-tidak-sekolah-bekerja-atau-mengikuti-pelatihan.html>

^[9] 2019 Skills for the Future study, UNICEF Indonesia, [Skills for the future | UNICEF Indonesia](https://www.unicef.org/indonesia/skills-for-the-future)

^[10] UNICEF Global Framework of Transferable Skills: <https://www.unicef.org/reports/global-framework-transferable-skills>

PROGRAM DESIGN

This program serves as a platform for adolescents to express their ideas and concerns while also developing innovative solutions. This program reaches out to girls, adolescents with disabilities, and other marginalized adolescents, in which they are trained through a series of innovative workshops led by professional mentors so that they can identify problems in their environment and digitize their innovative solutions to be presented to the general public as a prototype that can be used to encourage adolescent participation in communities across Indonesia.

Adolescents are equipped with 21st century skills, digital skills, and entrepreneurial skills using UNICEF's 12 Core Life Skills framework to enable them to identify important issues and collectively develop innovative solutions to address these issues.



Timeline



Significant Figures of the Digital Innovation Challenge in 2021



105

schools have signed up to participate.



4774



adolescents have signed up to participate in the adolescent workshops.

243

teachers were trained in the teacher workshops.



137

mentors helped adolescents with their skills.



1018

innovative solution ideas were proposed.

36



prototypes of innovative solution were produced.

School Profile

There were 105 schools listed as participants	
59 schools from Jakarta	46 schools from Semarang
35 Junior High Schools (SMP)	27 Senior High Schools (SMA)
25 Vocational Schools (SMK)	5 PKBM (Community Learning Center/CLC)
7 Islamic High Schools (Madrasah Aliyah/MA)	
6 Islamic Junior High Schools (Madrasah Tsanawiyah/MTs).	

Schools in Jakarta

School	Level	City
MAN 21 Jakarta (public)	MA	Jakarta
MAN 14 Jakarta (public)	MA	Jakarta
MAN 12 Jakarta (public)	MA	Jakarta
MAN 4 Jakarta (public)	MA	Jakarta
MAN 7 Jakarta (public)	MA	Jakarta
MTs Negeri 29 Jakarta (public)	MTs	Jakarta
MTs Negeri 13 Jakarta (public)	MTs	Jakarta
MTs Negeri 8 Jakarta (public)	MTs	Jakarta
MTs Negeri 5 Jakarta (public)	MTs	Jakarta
MTs Negeri 18 Jakarta (public)	MTs	Jakarta
PKBM Negeri 35 Jakarta (public)	CLC	Jakarta
PKBM Windsor Jakarta (private)	CLC	Jakarta
PKBM Negeri 34 Jakarta (public)	CLC	Jakarta
PKBM Teach Indonesia School Jakarta (private)	CLC	Jakarta
SMAN 23 Jakarta (public)	SMA	Jakarta
SMAN 106 Jakarta (public)	SMA	Jakarta
SMAN 58 Jakarta (public)	SMA	Jakarta
SMAN 54 Jakarta (public)	SMA	Jakarta
SMAN 85 Jakarta (public)	SMA	Jakarta
SMAN 8 Jakarta (public)	SMA	Jakarta
SMAN 112 Jakarta (public)	SMA	Jakarta
SMAN 81 Jakarta (public)	SMA	Jakarta
SMAN Unggulan M.H. Thamrin Jakarta (public)	SMA	Jakarta

School	Level	City
SMAN 6 Jakarta (public)	SMA	Jakarta
SMAN 37 Jakarta (public)	SMA	Jakarta
SMAN 68 Jakarta (public)	SMA	Jakarta
SMAN 34 Jakarta (public)	SMA	Jakarta
SMAN 66 Jakarta (public)	SMA	Jakarta
SMKN 28 Jakarta	SMK	Jakarta
SMKN 48 Jakarta (public)	SMK	Jakarta
SMKN 54 Jakarta (public)	SMK	Jakarta
SMKN 56 Jakarta (public)	SMK	Jakarta
SMKN 60 Jakarta (public)	SMK	Jakarta
SMKN 8 Jakarta (public)	SMK	Jakarta
SMKN 15 Jakarta (public)	SMK	Jakarta
SMKN 35 Jakarta (public)	SMK	Jakarta
SMKN 12 Jakarta (public)	SMK	Jakarta
SMKN 46 Jakarta (public)	SMK	Jakarta
SMKN 42 Jakarta (public)	SMK	Jakarta
SMKN 40 Jakarta (public)	SMK	Jakarta
SMK Forward Nusantara (private)	SMK	Jakarta
SMKN 64 Jakarta (public)	SMK	Jakarta
SMK Prestasi Prima (private)	SMK	Jakarta
SMK Media Informatika (private)	SMK	Jakarta
SMKN 2 Jakarta (public)	SMK	Jakarta
SMPN 149 Jakarta (public)	SMP	Jakarta
SMPN 248 Jakarta (public)	SMP	Jakarta

Schools in Jakarta

School	Level	City
SMPN 265 Jakarta (public)	SMP	Jakarta
SMPN 49 Jakarta (public)	SMP	Jakarta
SMPN 125 Jakarta (public)	SMP	Jakarta
SMPN 194 Jakarta (public)	SMP	Jakarta
SMPN 9 Jakarta (public)	SMP	Jakarta
SMPN 41 Jakarta (public)	SMP	Jakarta

School	Level	City
SMPN 254 Jakarta (public)	SMP	Jakarta
SMPN 115 Jakarta (public)	SMP	Jakarta
SMPN 227 Jakarta (public)	SMP	Jakarta
SMPN 213 Jakarta (public)	SMP	Jakarta
SMPN 36 Jakarta (public)	SMP	Jakarta
SMPN 255 Jakarta (public)	SMP	Jakarta

Schools in Semarang

School	Level	City
SMPN 13 Semarang (public)	SMP	Semarang
SMPN 18 Semarang (public)	SMP	Semarang
SMPN 6 Semarang (public)	SMP	Semarang
SMPN 39 Semarang (public)	SMP	Semarang
SMPN 36 Semarang (public)	SMP	Semarang
SMPN 15 Semarang (public)	SMP	Semarang
SMPN 12 Semarang (public)	SMP	Semarang
SMPN 22 Semarang (public)	SMP	Semarang
SMPN 17 Semarang (public)	SMP	Semarang
SMPN 31 Semarang (public)	SMP	Semarang
SMPN 29 Semarang (public)	SMP	Semarang
SMPN 9 Semarang (public)	SMP	Semarang
SMPN 7 Semarang (public)	SMP	Semarang
SMPN 2 Semarang (public)	SMP	Semarang
SMPN 1 Semarang (public)	SMP	Semarang
SMPN 5 Semarang (public)	SMP	Semarang
SMPN 19 Semarang (public)	SMP	Semarang
SMPN 14 Semarang (public)	SMP	Semarang
SMPN 16 Semarang (public)	SMP	Semarang
SMPN 21 Semarang (public)	SMP	Semarang
SMPN 25 Semarang (public)	SMP	Semarang
SMKN 3 Semarang (public)	SMK	Semarang
SMKN 10 Semarang (public)	SMK	Semarang
SMKN 11 Semarang (public)	SMK	Semarang

School	Level	City
SMKN 4 Semarang (public)	SMK	Semarang
SMKN 5 Semarang (public)	SMK	Semarang
SMKN 8 Semarang (public)	SMK	Semarang
SMKN 9 Semarang (public)	SMK	Semarang
SMKN 7 Semarang (public)	SMK	Semarang
SMAN 13 Semarang (public)	SMA	Semarang
SMAN 12 Semarang (public)	SMA	Semarang
SMAN 2 Semarang (public)	SMA	Semarang
SMAN 11 Semarang (public)	SMA	Semarang
SMAN 6 Semarang (public)	SMA	Semarang
SMAN 3 Semarang (public)	SMA	Semarang
SMAN 1 Semarang (public)	SMA	Semarang
SMAN 10 Semarang (public)	SMA	Semarang
SMAN 4 Semarang (public)	SMA	Semarang
SMAN 8 Semarang (public)	SMA	Semarang
SMAN 9 Semarang (public)	SMA	Semarang
SMAN 5 Semarang (public)	SMA	Semarang
SMAN 7 Semarang (public)	SMA	Semarang
PKBM BANGKIT, Semarang	CLC	Semarang
MTsN 2 Semarang (public)	MTs	Semarang
MA Al Hikmah Polaman Mijen (private)	MA	Semarang
MAN 2 Kota Semarang (public)	MA	Semarang

Adolescent Profile

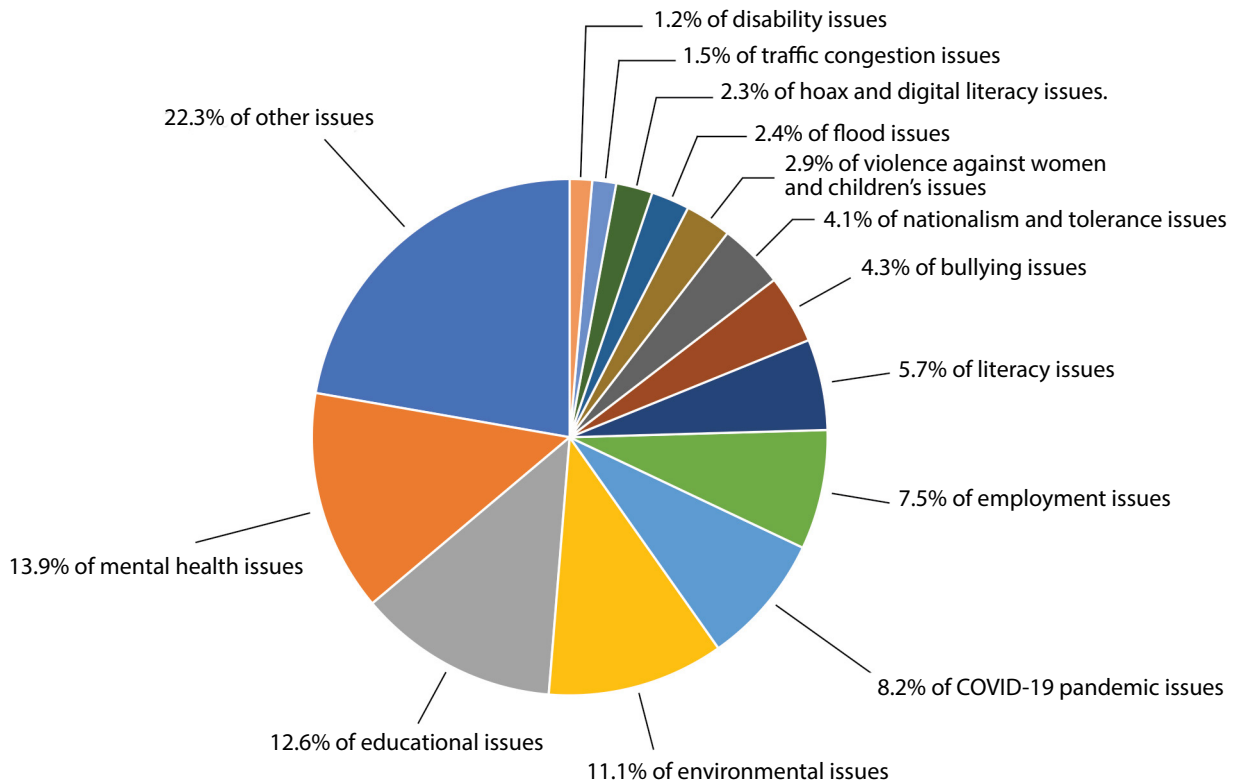
There were **4,774** adolescents from DKI Jakarta and Semarang listed as participants in the adolescent workshops.

2024 boys	2750 girls
2685 adolescents from Jakarta	2089 adolescents are from Semarang
2071 adolescents aged 10–14	2703 adolescents aged 15–19

Issues that Concern Adolescents

Adolescents are concerned about various issues in their environment. Mental health is the crucial matter for them, followed by educational and environmental issues.

After analyzing those problems, the adolescents developed 1,018 innovative solution ideas as a means to solve the issues. Those ideas can be seen at <https://inovasi.markoding.com>

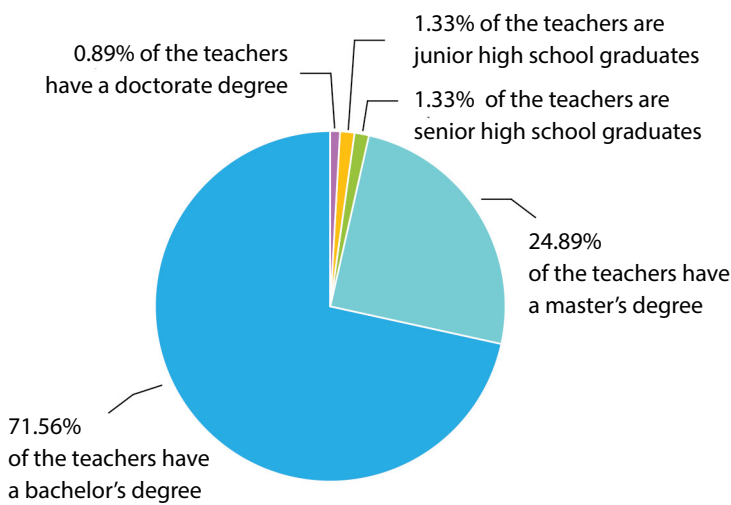
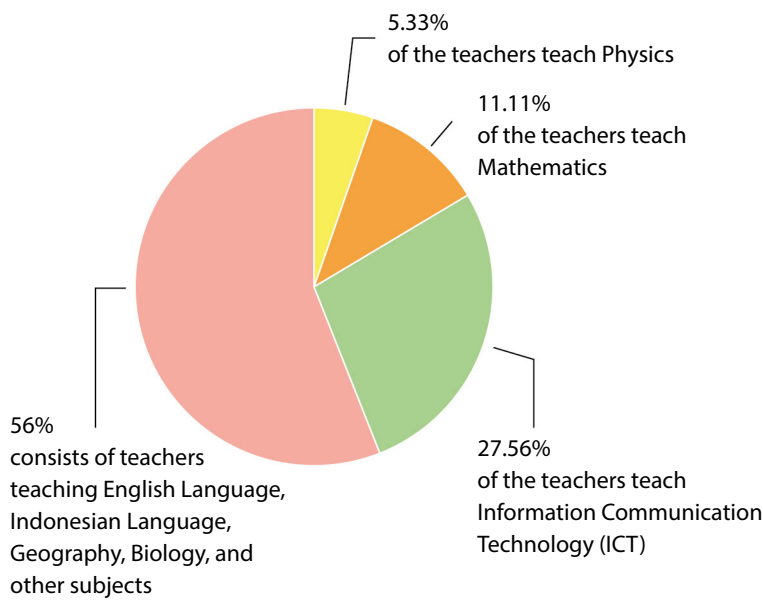


Teacher Profile

243 teachers listed as participants in the teacher workshops

58.84% male

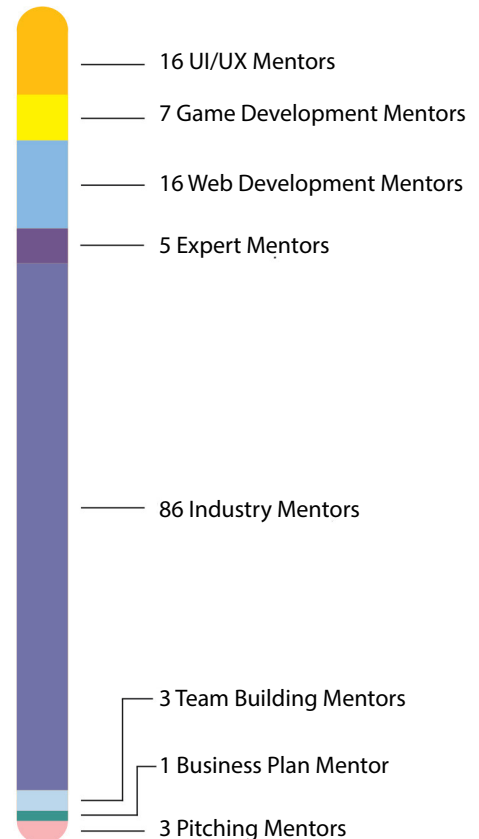
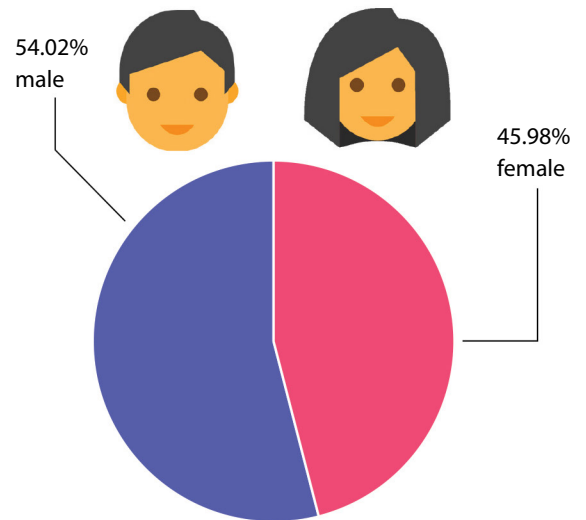
41.15% female



Mentor Profile

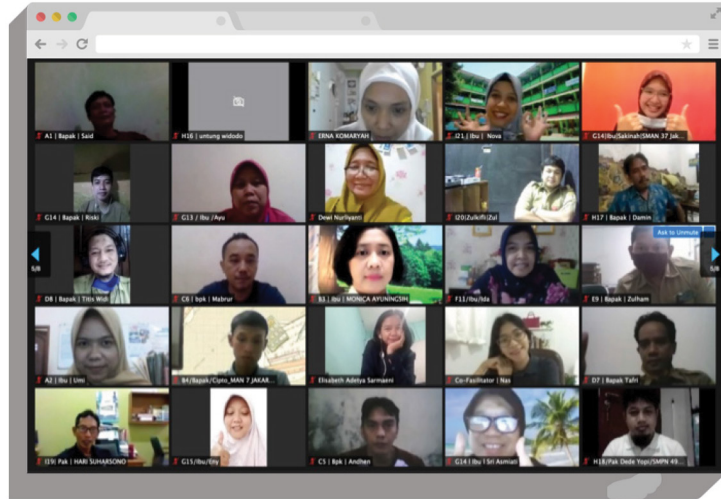
The mentor involvement is critical to the program's success. These mentors help adolescents in their learning process by providing professional advice.

There were 137 mentors:

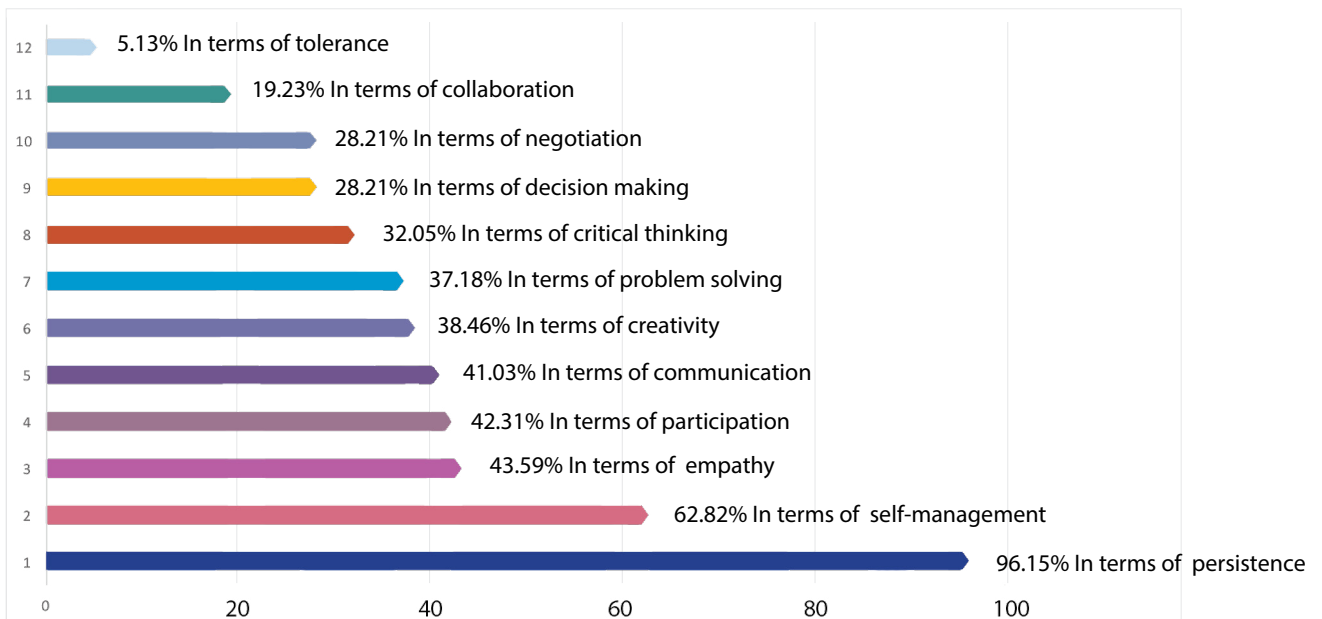


2021 PROGRAM OUTCOMES

Teacher



In general, after attending 2 workshops, 39.53% of the teachers (about 4 from 10) reported an improvement in 12 21st Century Skills.



3 skills with highest percentage of improvement among teachers include **perseverance, self-management, and empathy.**

Teachers have **81.13%** confidence in providing students with a safe space for online teaching and learning.

Almost all teachers (**91.28%**) stated that they found the training to be beneficial. In particular, the training gave them the skill to facilitate their students.

Adolescents



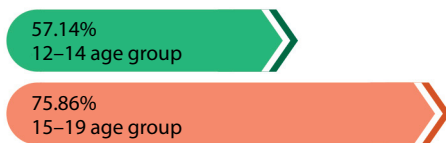
Adolescent Participation

Adolescent participation can be understood as male and female adolescents' ability to express their thoughts and directly or indirectly influence the matters concerning adolescents.

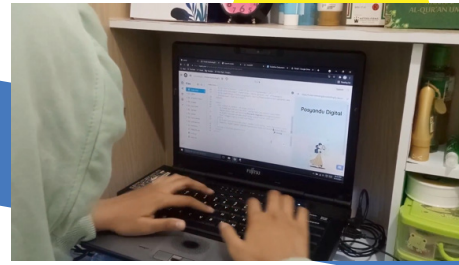
Improvement based on Sex



Improvement based on Age Groups



Improvement based on Level of Education



Confidence and Proficiency in Using Tools

In the bootcamp stage, adolescents were trained to use tools such as Unity, Javascript, CSS, HTML, Figma, UI/UX Prototype, and Lean Canvas Model.



Compared to their female counterparts, more male adolescents felt confident in using tools (77.09%). However, more female adolescents are proficient in using tools (90.16%).



There were more adolescents of younger age namely 12-14 years old (70.20%) that have improved confidence in using tools compared to those of older age namely 15-19 years old. However, there were more older adolescents (88.42%) that have improved proficiency in using tools.

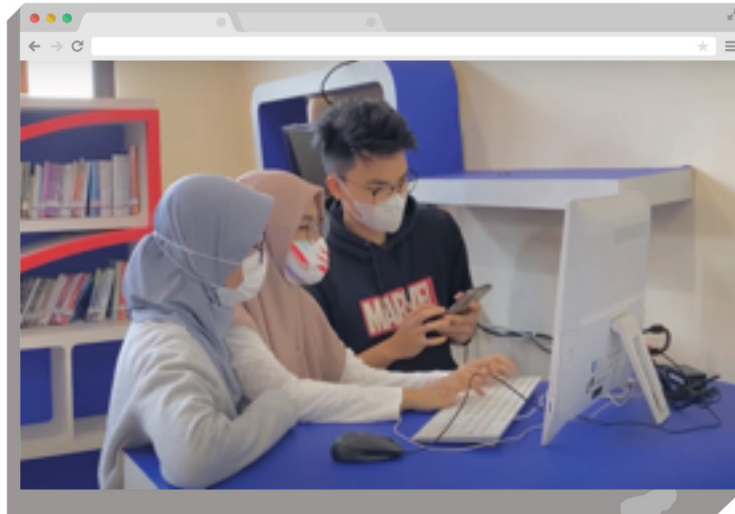
12+

15+

Adolescents from other type of school (PKBM) tended to have improved confidence and proficiency compared to those from middle schools (SMP and MTS) and high schools (SMA, SMK, MA).



21st Century Skills



There were twelve 21st century skills measured, they covered: Communication, Teamwork, Creativity, Critical Thinking, Decision Making, Empathy, Negotiation, Participation, Problem Solving, Respect for Diversity, Persistence, and Self-Management.

Overall, **57.61%** of the adolescents who participated in the bootcamp improved their skills.

Communication was the 21st century skill that saw **equally high increase** in both male and female adolescents.

Male adolescents felt that **creativity, communication, and self-management** were the three 21st century skills that they improved the most.

Female adolescents felt that **persistence, communication, and critical thinking** were the three 21st century skills that they improved the most.

Younger adolescents (**12–14 year old**) felt that **persistence, communication, and empathy** were the three 21st century skills that they improved the most.

There was higher number of **older adolescents (aged 15–19 years)** with 3 improved 21st Century Skills namely **creativity, problem solving, and communication**.

Younger adolescents (12–14 year old) felt that they **needed more time and support to solve problems** compared to older adolescents. Older adolescents (**15–19 year old**), on the other hand, **needed more time and supports to make decisions** compared to younger adolescents.

There was higher number of adolescents from **middle schools (SMP and MTs)** with 3 improved 21st Century Skills namely **empathy, communication, and critical thinking**.

There was higher number of adolescents from **high schools (SMA, SMK, and MA)** with 3 improved 21st Century Skills namely **creativity, self-management, and communication**.

There was higher number of adolescents from **other type of school (PKBM)** with 3 improved 21st Century Skills namely **persistence, participation, and problem solving**.

Adolescents from **other types of school (PKBM)** tended to have higher **persistence**, adolescents from **middle schools (SMP and MTs)** tended to have more **empathy**, and adolescents from **high schools (SMA, SMK, MA)** tended to have higher **creativity**.

INNOVATIVE SOLUTION PROTOTYPES BY ADOLESCENTS

SAFETY CALL

Creators



Zetanaia Kinanti Salim (15) Najmi Mudiah Lubis (15)
Talitha Elysia Arethuza (16)

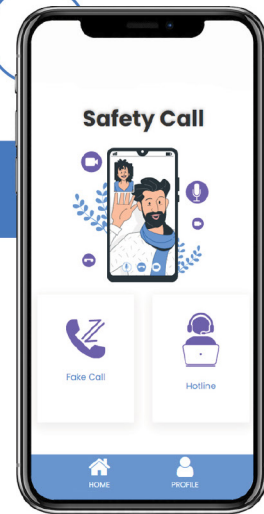
SMAN 54 Jakarta

Application Features

1. Hotline, a feature that allows users to contact key institutions.
2. Fake Call, a feature that emulates video call features in general.

Link to Application:

<https://bit.ly/dic-app-safecall>



VILAS

Creators



Hanin Salsabila Wardany (17) Raissa Mumtaz (16)
Shyfa Kanaya Zulkifli (16)

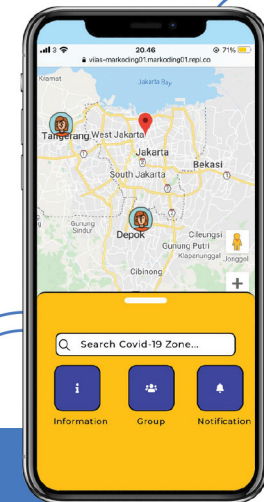
MAN 7 JAKARTA

Application Features

1. Real-time location system and search engine for information about COVID-19 alert level areas.
2. Health protocols reminder.

Link to Application:

<https://bit.ly/dic-app-vilas>



CYCLE MALL

Creators



Roy Arya Anugrah Julian Saputra Hartono (16) Azaria Dian Khoirunnisa (16)

SMAN 2 SEMARANG

Application Features

1. Market place for used, preloved, and recycled items.
2. Environmental education articles.

Link to Application:

<https://bit.ly/dic-app-cyclemall>



THE DIFLE GAME

Creators

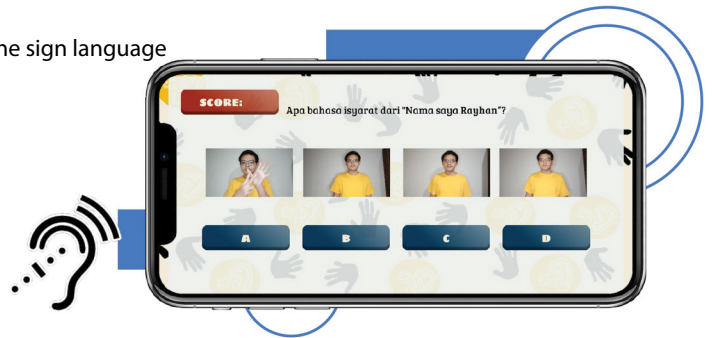


Application Features

1. Read the lips
2. Guess the sign language

Link to Application:

<https://bit.ly/dic-apk-thediflegame>



TRIPLEF - DIGITAL READING ROOM

Creators

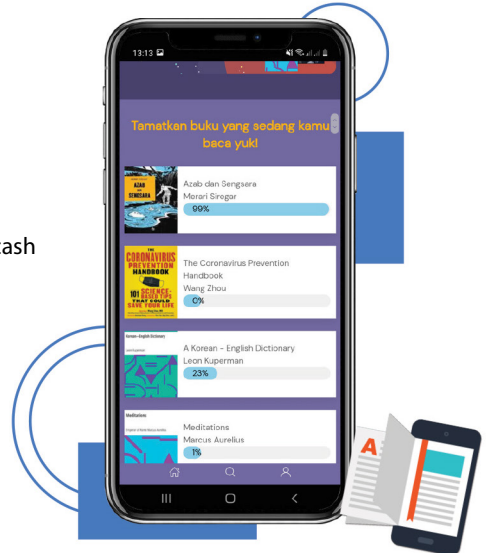


Application Features

1. Digital library
2. System that converts points to cash on digital wallet

Link to Application:

<https://bit.ly/dic-app-triplef>



TALENTAKU

Creators

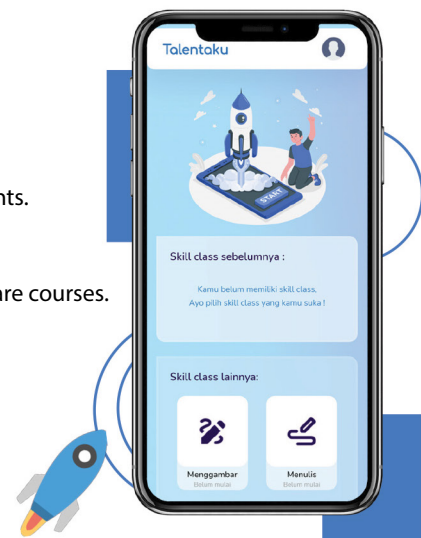


Application Features

1. Skill Class for students, a learning medium for students.
2. Skill Class for mentors, a facility for mentors to prepare courses.

Link to Application:

<https://bit.ly/dic-app-talentaku>



LOWCA

Creators

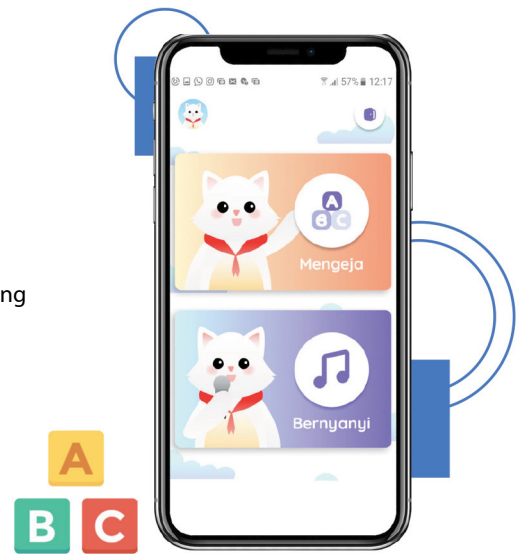


Application Features

1. Learn how to read with spelling games
2. Learn how to read by singing

Link to Application:

<https://bit.ly/dic-app-lowca>



RUBY

Creators

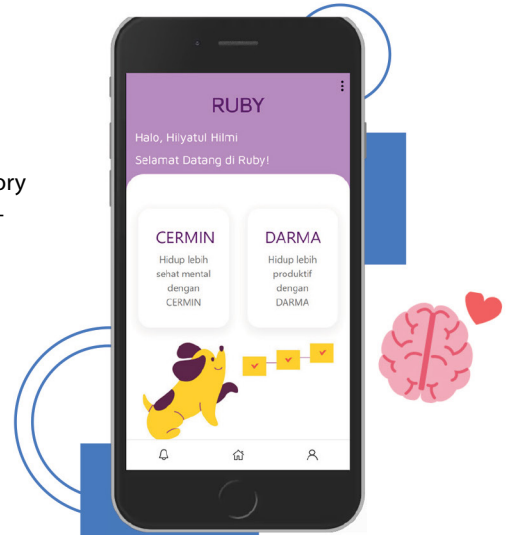


Application Features

1. Cermin (mirror), a feature for story sharing between users and self-reflection.
2. Darma (duty), a feature for time management optimization.

Link to Application:

<https://bit.ly/dic-app-ruby>



POSTAL

Creators

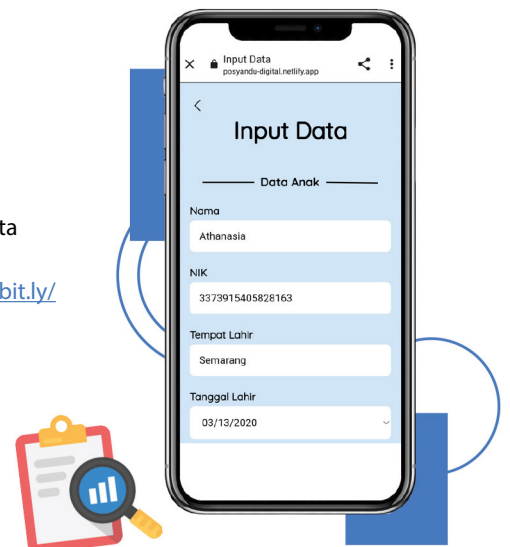


Application Features

1. Toddler data input
2. Reports to view toddler data

Link to Application:

<https://bit.ly/dic-app-postal>



TUKAKU

Creators

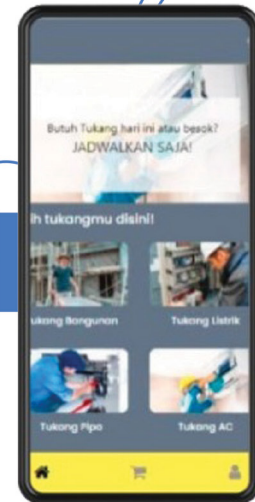


Application Features

1. A feature that allows users to order construction workers services in real time.
2. A feature to find construction workers and their rates.

Link to Application:

<https://bit.ly/dic-app-tukaku>



LYPS

Creators

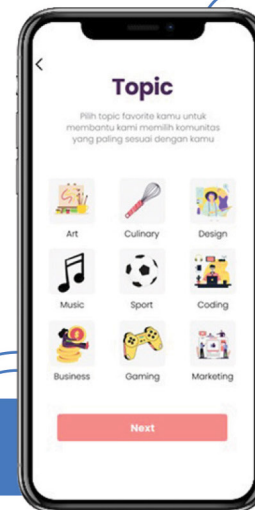


Application Features

1. Community, a feature that unites users with common interests.
2. Online Course, a room for users to access a wide selection of videos and e-books based on their topic of interest.
3. Mission List, a challenge received by users to apply what they have learned through the Online Course to real cases.

Link to Application:

<https://bit.ly/dic-app-lyps>



MONOLOGIC

Creators

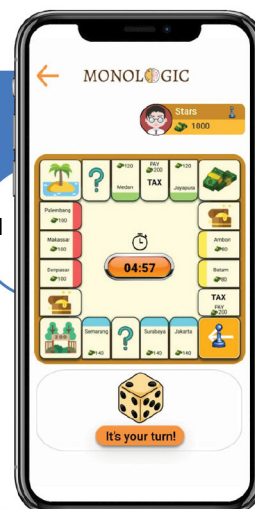


Application Features

1. Monopoly game with Q&A quizzes.
2. Four subject options: Mathematics, Natural Science, Indonesian, and English.

Link to Application:

<https://bit.ly/dic-apk-monologic>



DEMO DAY

In total, 31 adolescents from 12 teams were selected to showcase their innovative solution prototypes that they have developed in the course of the program to the public, government representatives, and private sector.

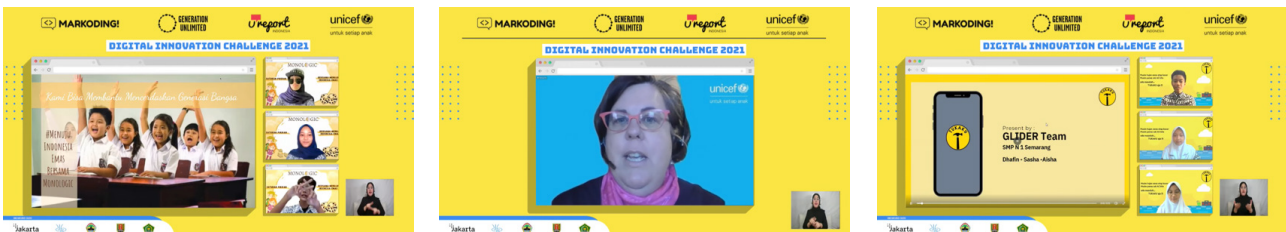
Road to Demo Day



Road to Demo Day was held on October 16, 2021 as part of the program finale, Demo Day Digital Innovation Challenge. The event was held online via Zoom and livestreamed on [UNICEF Indonesia's YouTube channel](#)

The event was opened with presentations from UNICEF about 21st century skills and Markoding about Digital Innovation Challenge. These presentations were followed by panel discussion. The members were: Roy Arya Anugrah Julian Saputra Hartono (Founder of Cycle Mall), Adyra Rachellyn Arkossand (Founder of LYPs), dan Arfiana Maulina (Founder of WateryNation). The panel discussion, themed "Digital Generation: 21st Century Generation" was hosted by Avita (Mitra Muda of UNICEF Indonesia). After the discussion panel, there were brief presentations by the youths of Microcredential Learning Program (KMMI) of Padjadjaran University and UNICEF Indonesia. Then the event continued with a workshop titled "Creating Contents for Goodness". At the end of the event, a video that summarized the Digital Innovation Challenge program was played, and the audience was invited to attend the finale, Demo Day Digital Innovation Challenge.

Demo Day



On October 17, 2021, 12 teams showcased their prototype solutions at the Demo Day Innovation Challenge. The event was held online via Zoom and livestreamed on [UNICEF Indonesia's YouTube channel](#).

Ms. Katheryn Bennet, the Chief of Education of UNICEF Indonesia, kicked off the event with her opening remark. This was followed by opening remarks by Amanda Simandjuntak, the Co-founder of Markoding. Afterwards, a video that summarized the 2021 Digital Innovation Challenge program was played, and the event finally proceeded to presentations by every participating team. There were also opening remarks, recorded and live, by the Government Partners that supported the program. They were: DKI Jakarta Education Office, Central Java Education Office, Semarang Education Office, and DKI Jakarta Office of Religion. After the presentations, Q&A and opinion sharing sessions were held by involving several adolescents.

TESTIMONIES FROM ADOLESCENTS AND MENTORS



Amelinda Jingga Cahyaningtyas - SMPN 16 Semarang

"My knowledge and skills regarding 21st century skills improved a lot during the DIC event. I am very different than I was a year ago. Before I did not know much and I did not even know anything about what exactly I needed to face this century. This is the era where digital technology is a necessity. Participation in the DIC has boosted my creativity and confidence, and this is an opportunity for me to learn new things from professional mentors. From the very start, we were trained to think critically and to be aware of the issues around us. The schedule of the DIC event was not too burdensome either, as it was held on weekends and at hours when the enthusiasm was still high. Other teams came up with cool and innovative ideas as well. This made me realize that there are real issues taking place today, we are just unaware of them. I will always remember the stories and skills shared during the DIC."

Muhammad Fikry Purbo - SMAN 66 Jakarta

"The DIC was such an amazing and rewarding experience. At the DIC, I learned a lot of lessons, both hard skills and soft skills. I was very green initially. I did not understand about programming, UI design, and design thinking. After this program, however, I began to understand and apply these skills. Regarding design thinking, I now have better ability to generate ideas and focus on solving issues. I also learned invaluable lessons at the DIC, which were teamwork and patience. I can also especially apply the patience-related skills in my daily lives. In addition, thanks to DIC, my communication skills, including in expressing my opinion, have greatly improved. Lastly, I can accept others' opinions and see problems from different perspectives."



Kristianti - Innovative Solution's Co-creator of Plastic Solve (DIC 2020)

"I am currently studying management at college and working as a Customer Service Officer. I benefitted greatly from DIC. One of them pertains to communication skills. These skills are particularly essential to my job as I have to communicate with all kinds of people. DIC trained me to familiarize myself with public speaking."

Muhammad Abyan Satrio - Innovative Solution's Co-creator of Rubbish to Point (DIC 2020)

"After graduating from high school, I continue my study at college, majoring in Information System. DIC has honed my critical thinking and problem solving skills. Now I feel that I can be of help to my friends who are facing problems by giving them innovative solutions/ ideas to solve their problems. In the future, I hope what I have learned at DIC can help me continue my education to a higher level."



TESTIMONIES BY TEACHERS AND MENTORS



Dra. Cahyo Kismurwanti, S.Kom., M.Pd - SMP Negeri 2 Semarang

"Digital Innovation Challenge Program is a program suitable for keeping up with the development of the millennial generation and addressing the needs of the 21st century. I think that this program is extraordinary as it accommodates and helps realize spectacular ideas which can be applied in the daily life. Keep innovating, young generation. Diversity is not a barrier in becoming a blessing for others."

Kholiduan, S.Kom. - MAN 12 Jakarta

"The program is amazing. I gained new knowledge and experiences as a teacher. It is particularly true in terms of my role as a facilitator, not only a teacher. The materials are up to date and relevant for the future of students."



Sylvia Adriana - SML

"Thank you UNICEF Indonesia and Markoding for initiating this program. The adolescents can show their potential through the Digital Innovation Challenge. I believe this program is a great starting point and the experience we gained will be unforgettable for us all. I hope this program will be continuously held to consistently support Indonesian adolescents in learning the skills they need to compete for employment in the future."

Hisbullah Akbar - Hisa Games

"In 21st century, skills such as problem solving, teamwork, public speaking, and programming are all a necessity. This DIC program helps adolescents hone their skills in a targeted manner. These skills are invaluable resources for adolescents in the future."



LESSONS LEARNED

Gender and Inclusivity

The participation of female adolescents was higher (58%) than that during the pilot project in 2019. This indicates higher interest among them to develop 21st century and digital skills. Such a high participation was realized through several interventions namely the regulations that require all schools to send more female adolescents to realize their adequate representation, the use of female-friendly language during learning sessions, the delivery of sessions to develop the confidence of female adolescents which remind them that STEM-related skills as well as skills related to other fields should also be mastered by female, and the composition of mentors whose majority are females who serve as role models.

One adolescent with hearing loss participated in the bootcamp. This means, when given chances and supports, adolescents with disabilities can realize their potential during the program. Several adjustments are needed to accommodate the needs of adolescents with disabilities better such as providing learning modules in the PDF format and videos with subtitles to ensure the adolescents, including those with disabilities, can access them.

For program replication in the future, delivering a program that focuses on the female adolescents, inclusivity for adolescents with disabilities, and provision of supports for addressing the needs of marginalized adolescents, and ensuring the program design, evaluation, and adjustment stages at all times focus on the effort to support adolescents and address the barriers to their participation should be the priorities.

Skills Development for Adolescents

This program aims at improving several skills among adolescents: 21st century skills, digital skills, and entrepreneurial skills. The development of these skills among adolescents could be monitored properly through the measurement of the progress made in each activity through pre-test and post-test. The measuring instrument used was UNICEF's framework for 21st Century Skills, which has also been used by the Ministry of Education, Culture, Research, and Technology for assessing students' characteristics that reflect the principles of Pancasila.

The involvement of parents remains an important factor that supports the development of skills among adolescents. Program promotion in schools as well as to parents can be conducted to ensure parents can better know this program and support their children in participating in this program.

In general, skills development among female and male adolescents does not vary greatly. Looking at the composition of the teams that managed to reach the Demo Day stage, of which 80% of the teams' composition comprised both genders, it can be said that such a composition generated positive impacts for adolescents since adolescents of both genders could support one another during the learning process.

Supports for Adolescents

Learning from the experience, due to the COVID-19 pandemic that results in school closures and remote learning, the long duration of this program which was 8–9 months was taxing for adolescents particularly those who had to do homeworks and housework, who had difficulty in accessing the internet, and who did not have gadgets to support their learning process. To support the adolescents learning process and participation, several interventions were done, namely: Providing psychosocial supports, e.g., psychologists and webinars on mental health, internet quota subsidies and laptops, access to training materials and mentorings in small groups to support effective communication and learning.

In the future, the program design needs to consider the importance of synergy between stakeholders to ensure enough supports are given to adolescents during the program. Based on experience during the partnership, government and private sector partners had differing perspectives in terms of the forms of supports to be given and the mechanism of program delivery. It is important to strengthen synergy and effective communication to ensure the moral and material supports are given during the partnership for the program.

Teachers' Capacity Building and Learning As Program Facilitators

To support teachers' capacity as facilitators, design thinking method was introduced. Through this method, teachers could facilitate adolescents in realizing their innovative ideas. Teachers were also encouraged to apply this method directly by asking them to submit proposals for innovative laboratory to the principal of their respective school.

Written guidance was needed to ensure teachers could assist adolescents in participating in this program properly.

The attempts to motivate teachers were made in the form of provision of incentives and additional trainings such as for coding and learning design for those who managed to include 60 students from their school in this program. These were proven to be effective in ensuring adolescents' participation in the program.

To maintain teachers' enthusiasm in assisting adolescents throughout the long duration of this program, incentive such as certificates to appreciate the teachers' willingness to innovate can be given. This certificate can indicate the total hours dedicated by teachers to assist adolescents.

Learning Method

Learning was realized by encouraging peer learning among adolescents through the provision of space for them to raise questions and give answers, provide inputs, and interact within community via the provided communication platforms.

Further, learning was realized through individual learning process through learning platforms that provided learning contents in the form of videos, infographics, and texts as well as quizzes.

To motivate adolescents, selection of best participant may be done weekly based on their performance in completing tasks and active participation. The details of adolescents selected can be posted on the social media.

Program Sustainability and Development

Building sustainable community moderated to support the post-program learning may be required.

Exploration of partnerships with schools to make the program into a formal extracurricular activity may be conducted to ensure better participation of adolescents.

Further, higher number of professional mentors is needed in program replication. Collaboration with private sectors should be considered, for example through the employee volunteering mentorship program. Through this, there will be pools of mentor that are linked to schools that wish to replicate this program.

Collaboration with the government can be explored to integrate this program into the framework of *Merdeka Belajar* (Freedom to Learn), in which this program can be a subject taken by the adolescents at their school. In light of that, further exploration regarding the program replication model that is more affordable and more accessible and ensures better outreach of adolescents of all groups needs to be conducted.

ACKNOWLEDGMENT

UNICEF Indonesia and Markoding thank the stakeholders below for their dedication and supports for this program.

Partners

U-Report Indonesia

Impact Byte

Government Agencies

The Ministry of Education, Culture, Research, and Technology
of the Republic of Indonesia

DKI Jakarta Provincial Government

DKI Jakarta Education Office

Central Java Education and Culture Office

Semarang City Education Office

Regional Office of the Ministry of Religious Affairs of DKI Jakarta

Regional Office of the Ministry of Religious Affairs of Central Java

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Mardea Mumpuni

Maria Yuniar Ardhiati

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Nadya Talita	Rahma Utami	Syafina Ikatama Putri
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Nastiti Setia Utami	Ramadhani	Tessa Viennie S
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Ni Luh Putu Anita Dewi	Reza Novandri, S.Sos., M.Si.	Tracy Fania
Nisa Aulia Muftihani	Rhita Simorangkir	Vania Utami Gunawan
Noridha Weningsari	Rio Husnady Hidayat	Wikal Pratama
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Other supporting stakeholders

mpala Network

META Innovation Lab

ASA Berdaya

This Play

Kain Agency

Indorental

Multimedia Promosindo

Multikarya Mitra Indonesia

Pusat Layanan Juru Bahasa
Isyarat Indonesia

Metta Sandie

Siti Arifah Zahra

Aulion

Avita

Arfiana Maulina



DIGITAL INNOVATION CHALLENGE

**INNOVATION FOR GOOD:
FROM ADOLESCENT, TO ADOLESCENT, BY ADOLESCENT**

