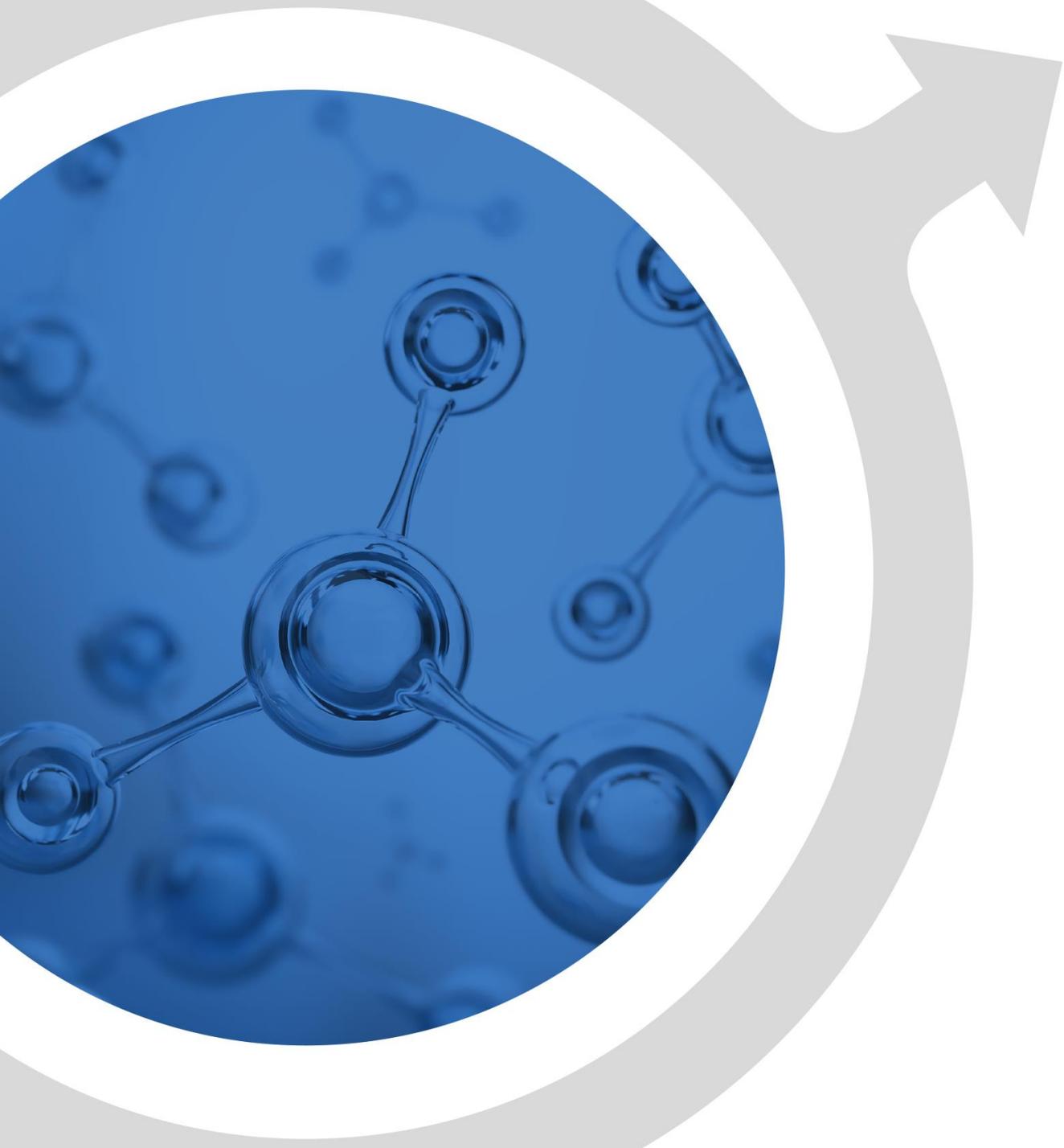


# Students' STEM Aspiration in Korea

Hyunju Lee & Yeonjoo Ko  
Ewha Womans University



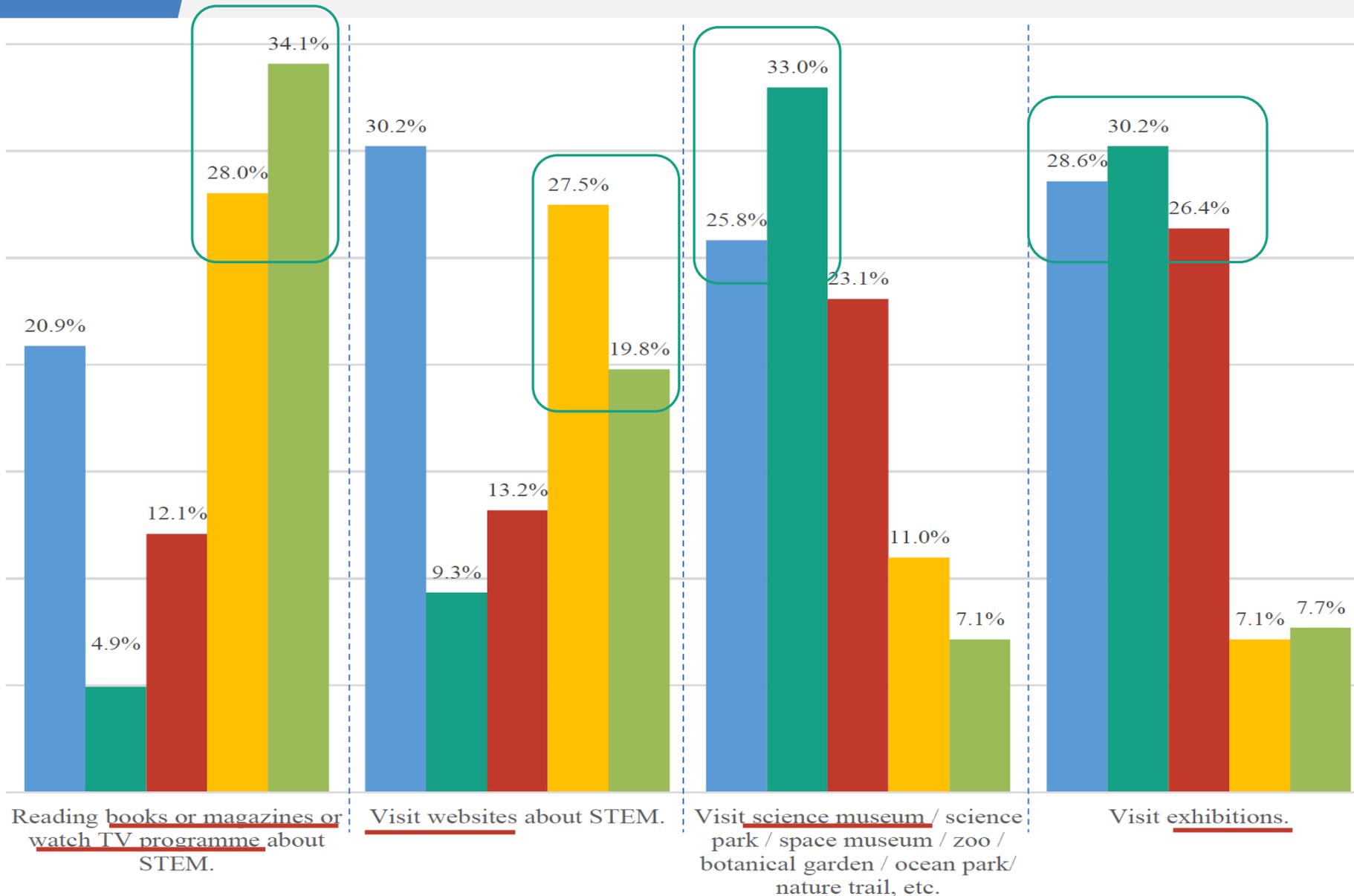


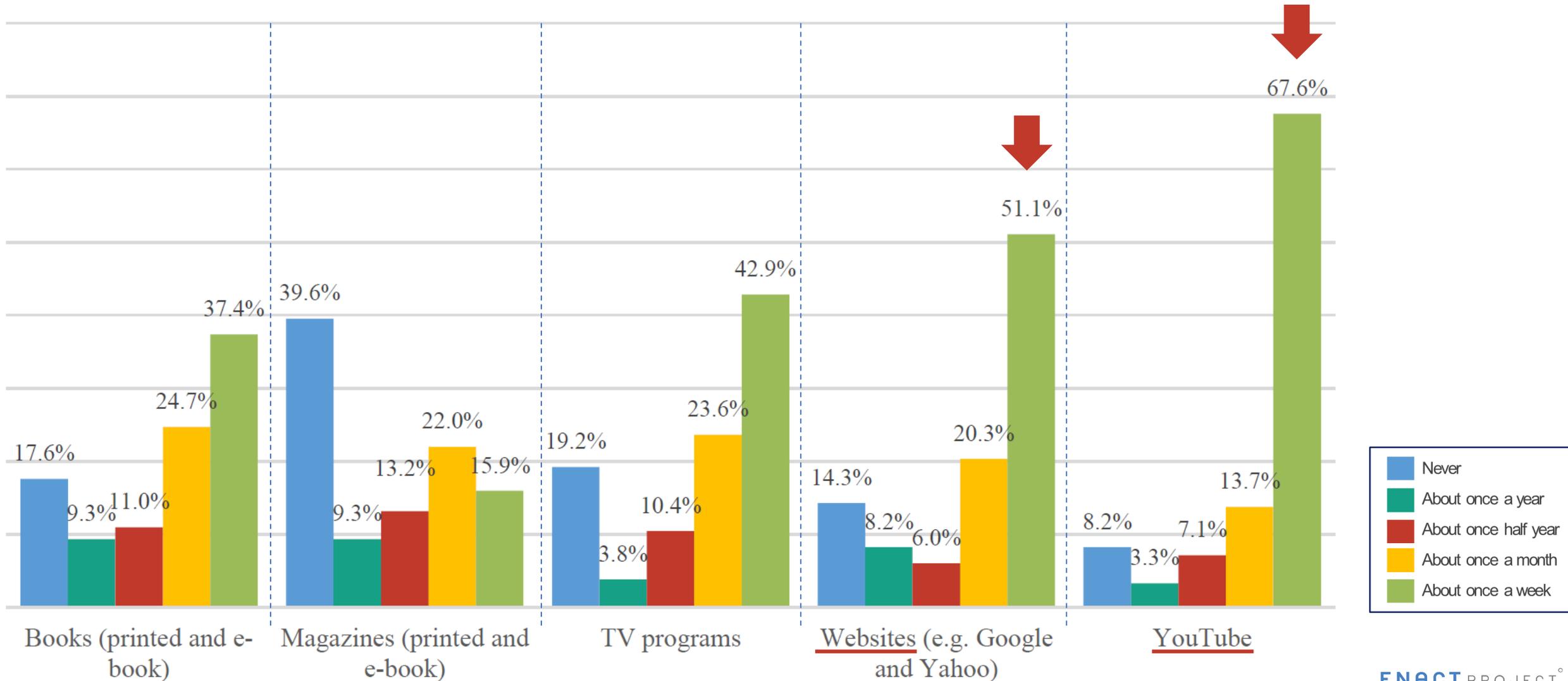
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# Survey Results

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- **182 respondents from Korea**
  - Between 12 and 18 years of age
  - 34.6% senior primary school students, 47.8% junior secondary school students, 17.6% senior secondary school students
  - 56.6% females and 43.4% males
  - 35.7% of students' either parent were working in STEM occupations.





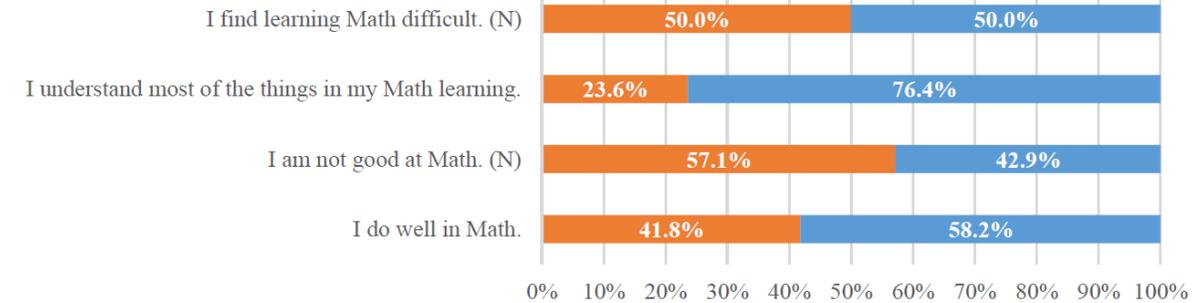
*Percentages of students agreeing with the school STEM education opportunities and quality.*

| School STEM opportunities   | Agree (%) |
|---|-----------|
| My school provides STEM opportunities in <u>Math lessons</u> .  | 53.8      |
| My school provides STEM opportunities in <u>Science-related lessons</u> .                                       | 64.8      |
| My school provides STEM opportunities in <u>IT-related lessons</u> .  | 54.4      |
| My school provides STEM opportunities in <u>other lessons</u> . (e.g. Arts, Music, Sports and language studies) | 52.2      |
| My school provides STEM opportunities outside of class time.  | 59.3      |
| I think my school does not attach great importance to STEM. (N)   | 51.1      |
| I don't have enough opportunities to engage in STEM learning. (N)   | 53.3      |

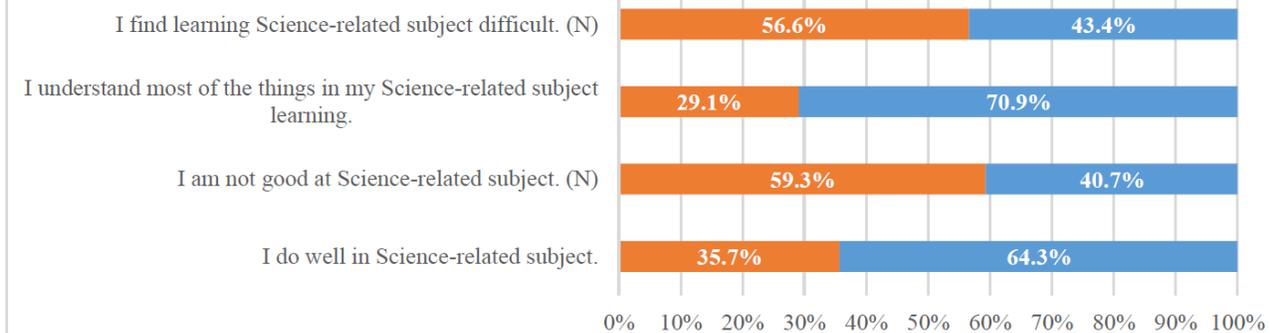
| Teaching quality  | Agree (%) |
|---|-----------|
| I learn interesting things from STEM.                     | 75.3      |
| My teachers have adequate STEM knowledge.                 | 79.7      |
| I look forward to STEM learning opportunities.            | 76.9      |
| My teacher has clear answer to my question.               | 82.4      |
| My teacher is good at explaining the STEM content.        | 75.3      |
| My teacher lets me show what I have learned.              | 78.6      |
| My teacher does various activities to help us learn STEM. | 74.2      |
| My teacher tells me how to do better when I make mistake. | 80.2      |
| My teacher listens to what I say about STEM.              | 71.4      |

- I find learning ♣ difficult.
  - Math > Science > IT
- I understand most of things in my ♣ learning.
  - Math > Science ≈ IT
- I am not good at ♣.
  - Math > Science > IT
- I do well in ♣.
  - Science > IT > Math

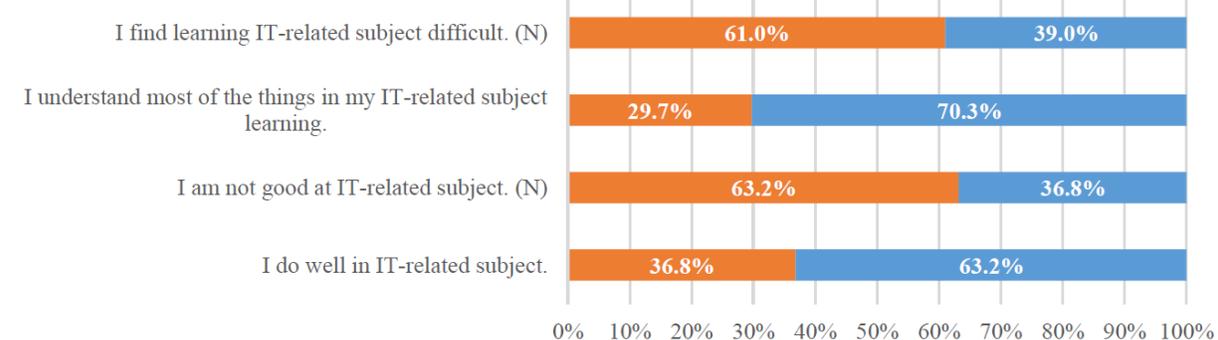
## Math



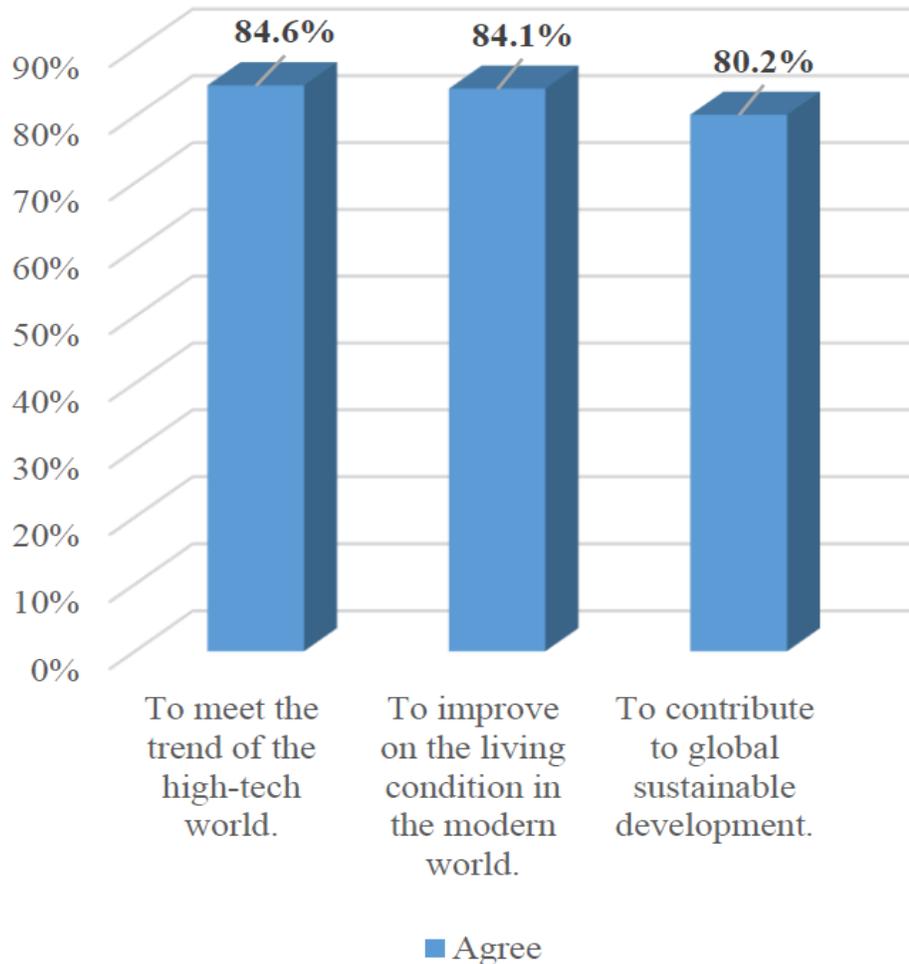
## Science



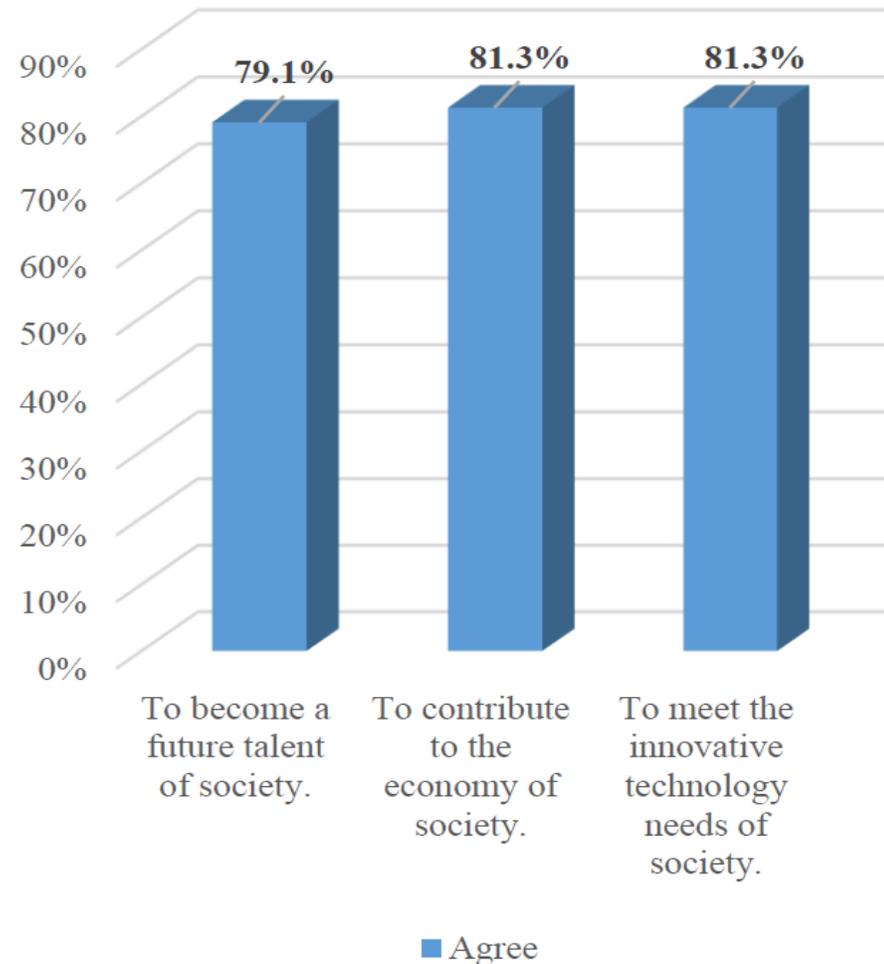
## IT &amp; Engineering



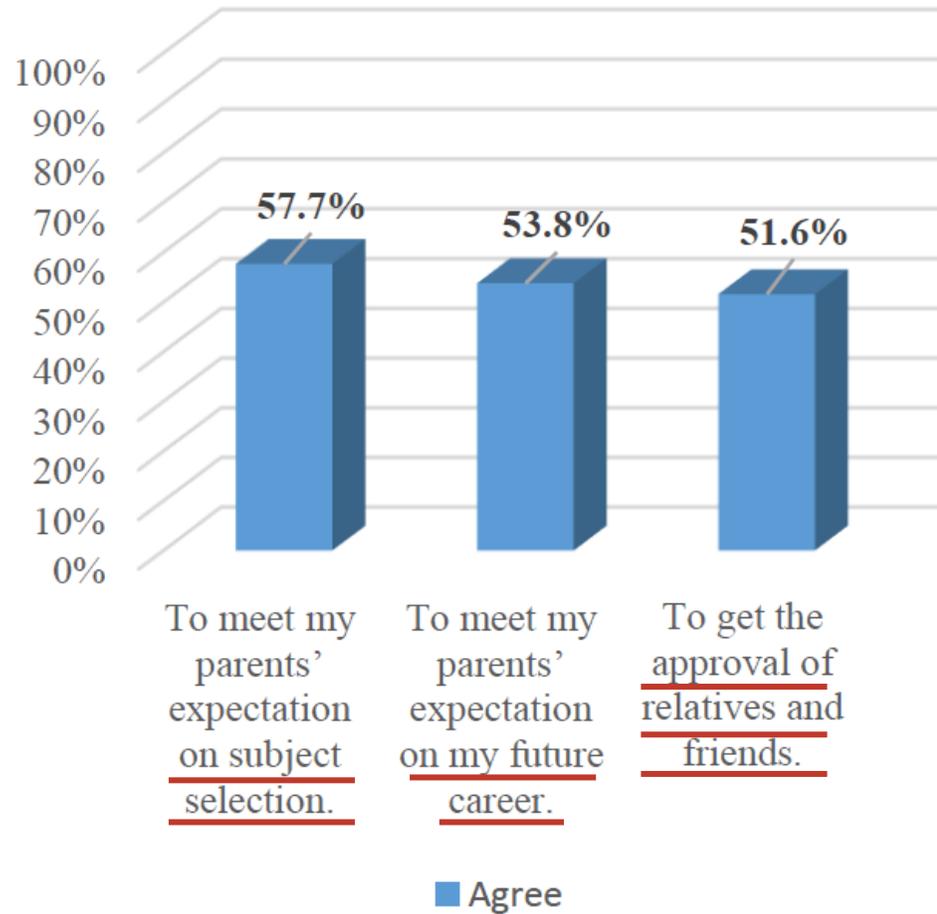
### I. Global purposes



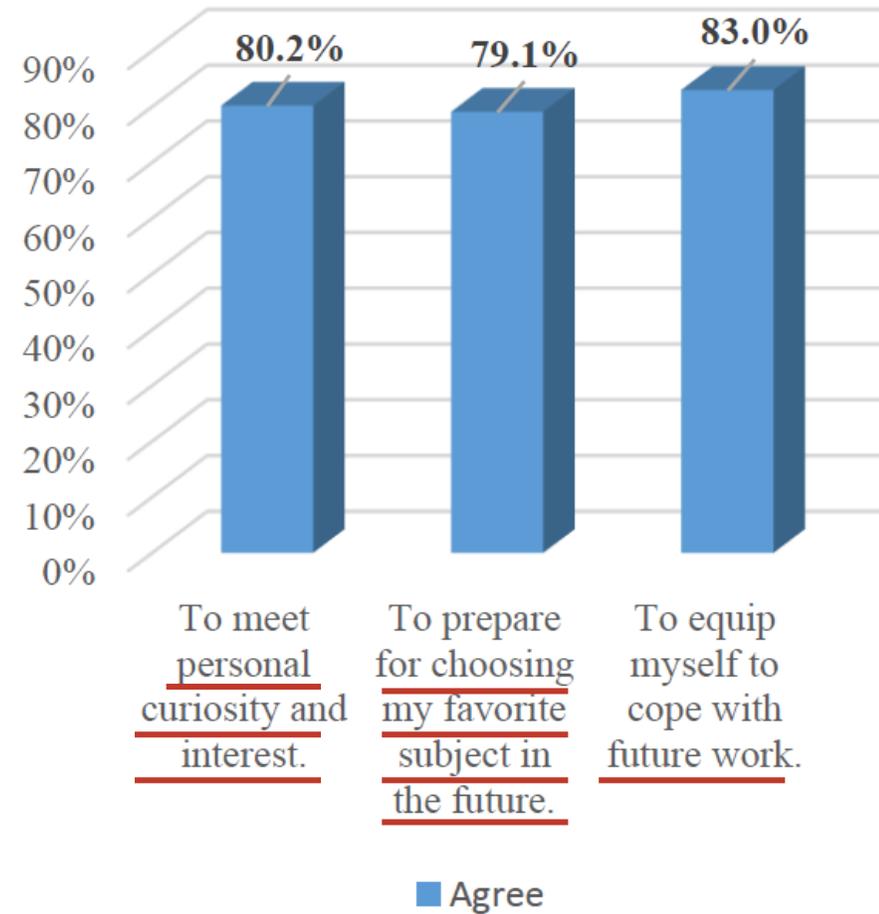
### II. Social purposes

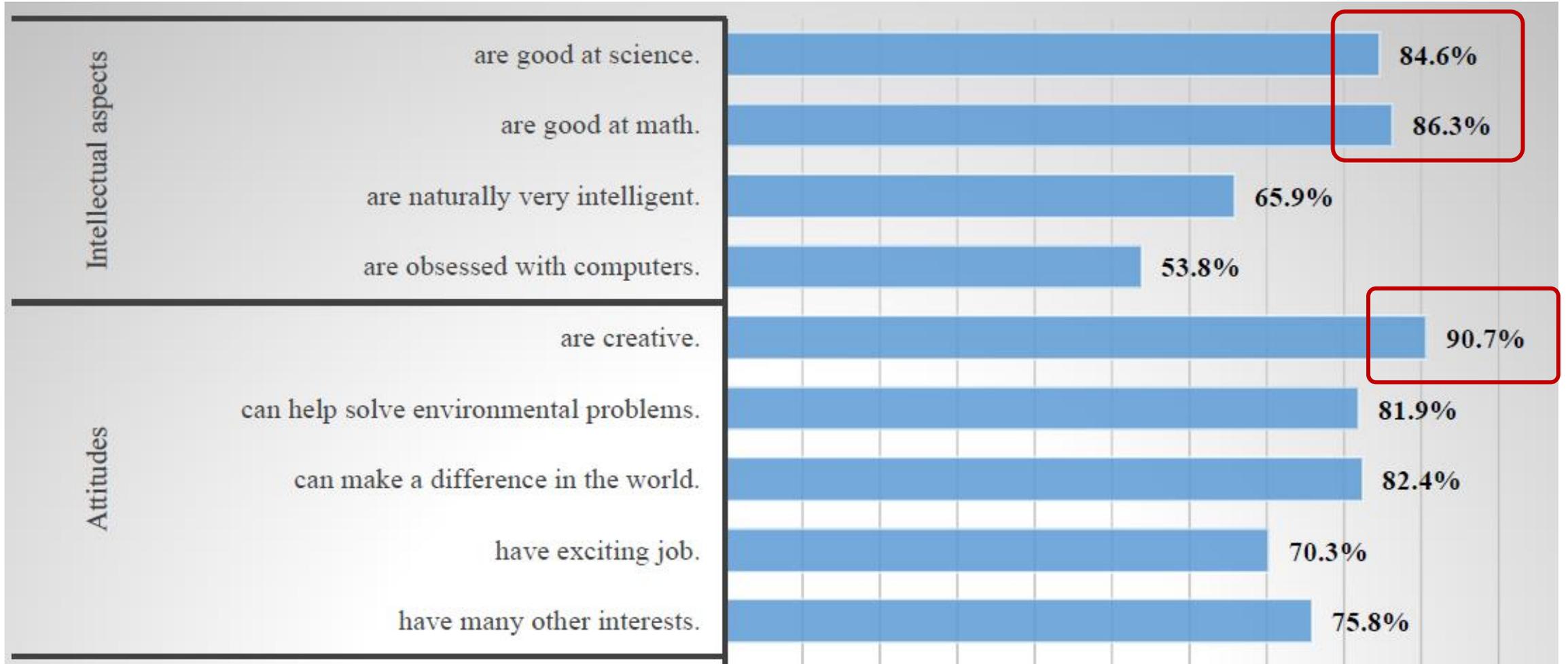


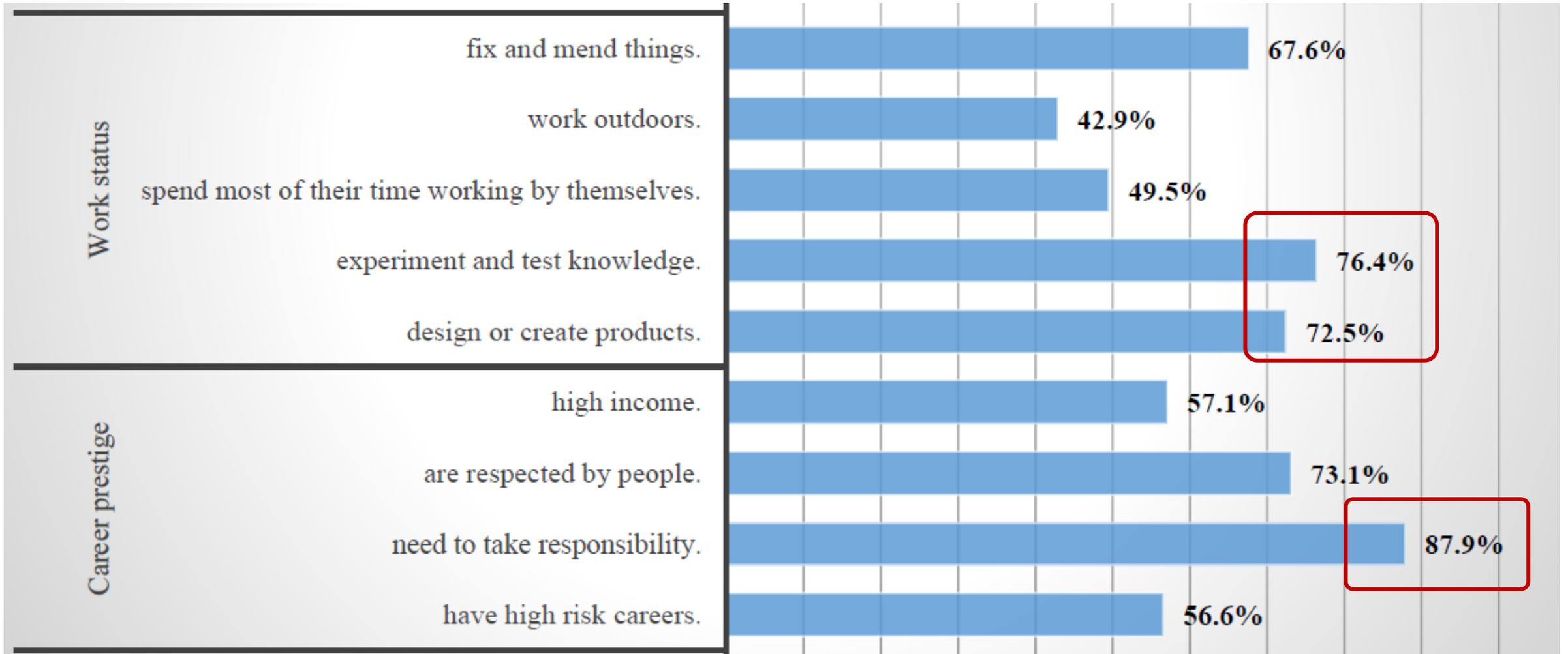
### III. Family purposes

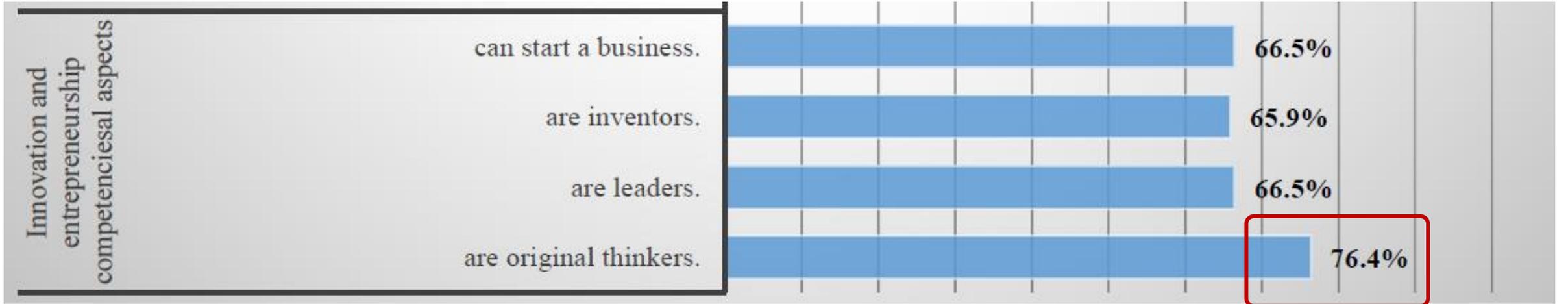


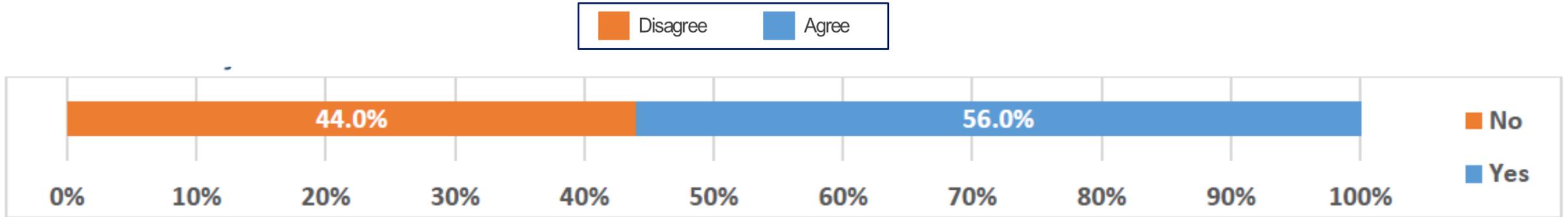
### IV. Personal purposes

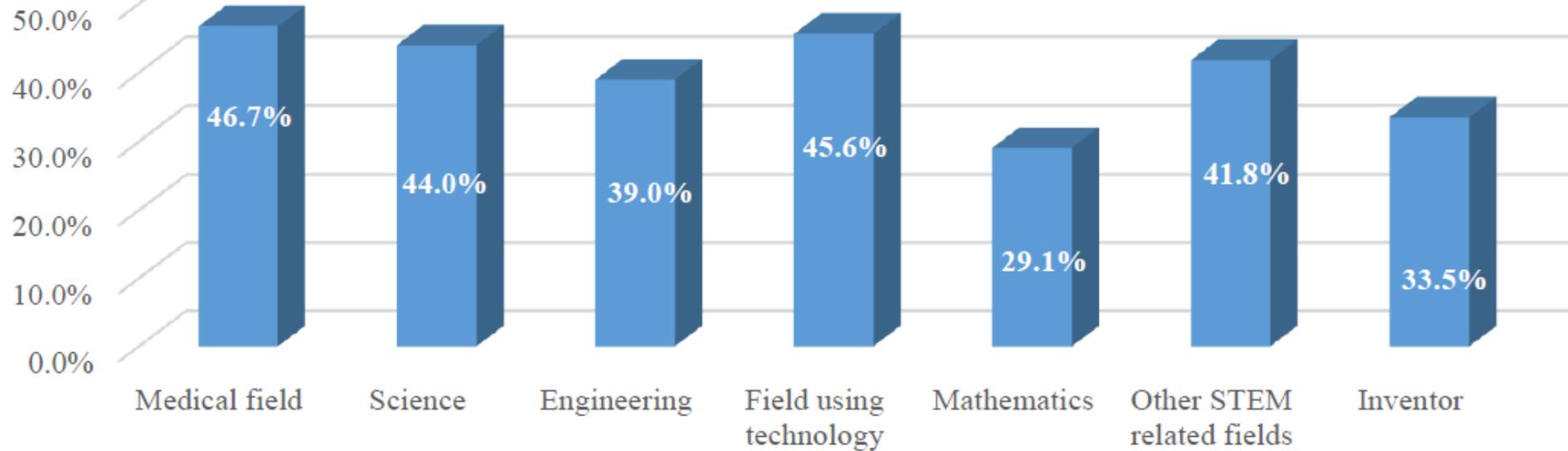












Interests in STEM related jobs

Major factors on career aspiration



Access STEM Information

$B = 0.163$



STEM Professional Image

$B = 0.251$



STEM learning purposes

$B = 0.285$

Strength of impact on STEM career aspirations



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# Efforts to Promote STEM in Korea

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Reference: [kofac.re.kr](http://kofac.re.kr)



About us

What we do

For Communities & outside of schools

Public Relations Officer

## What we do

**Dissemination of the culture of science and technology**

- Policy research and distribution of accomplishments
- Events and activities of science culture and technology
- Supporting science culture activities for local communities
- Youth science discovery program
- Media and content of science technology culture
- Vitalization of the science culture industry

**Development of creative talents**

- Establishment and distribution of policies for future creative talents
- Science and mathematics education
- SW·AI education
- Integrated education for creativity and STEAM
- Development of science prodigies
- Support for student activities

For Schools



모든 한국인을 위한 과학적 소양  
미래세대 과학교육표준

Scientific Literacy for All Koreans  
Korean Science Education Standards for the Next Generation

역량

지식

참여와 실천

교육부  
Ministry of Education

과학기술정보통신부  
Ministry of Science and ICT

한국과학창의재단  
Korea Foundation for the Advancement of Science & Creativity

Number of supported leading schools for science and math education (2019)



Science Core High School

124



Mathematics-sharing schools

773



The model school of creative convergence science laboratory

120



The Lead Schools of Student Participatory Science Class

95



ladder project

100

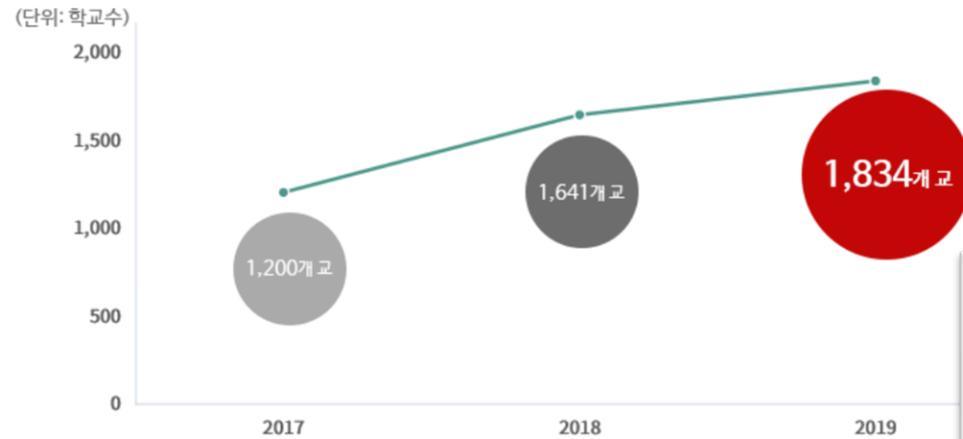
## | SW·AI education



We support the essential software education for elementary, middle and high school students, and develop talented individuals with software skills by forming a culture where all citizens have basic software skills.

## Reinforcement of software education inside and outside schools

Support for reinforcement and stable implementation of software education inside and outside schools  
[SW Education Leading Schools]



Increasing accessibility to software education outside schools and opportunities to experience it  
[SW education festival]



## Strengthening of teacher competencies

Job training for strengthening of teacher competencies in software and AI education

Remote training, training of core teachers, specialized training, workshops for best teachers, etc.

Operation of teacher study groups for AI education

Strengthening of competencies of pre-service teachers in software education

Project to strengthen software education in teachers colleges (SWEET)

Operation of software Edu-thon



## Enhancement of access to software education by all people

Operation of software education experience week (hosting of software education festival, global conference)

Operation of online coding parties

Operation of software-centered social portal

Support for Esoft (EBS online platform)



## | Integrated education for creativity and STEAM



We closely study, investigate and analyze learning environments in schools in order to support the development of education policies related to creativity, STEAM, and convergence education according to the changing environment of the future society, contributing to the development of future talented individuals

## Current status of support for teachers' research society (accumulated)

Creative education  
executed

159



지속가능발전교육

246개



STEAM education

1,347

## Operational status of Crezone



체험프로그램

19,173개



체험자원

62,983개

Pieces of education  
related data

31,379

## | Events and activities of science culture and technology



We hold science festivals in which youth, students, parents, and ordinary citizens can participate according to their interests, and use communication methods such as busking and performances to make programs that allow communication between science and the public.

## Science festivals in Korea, by numbers (1997~2019)



Accumulated visitors

**5.1** million



Accumulated participation institutions

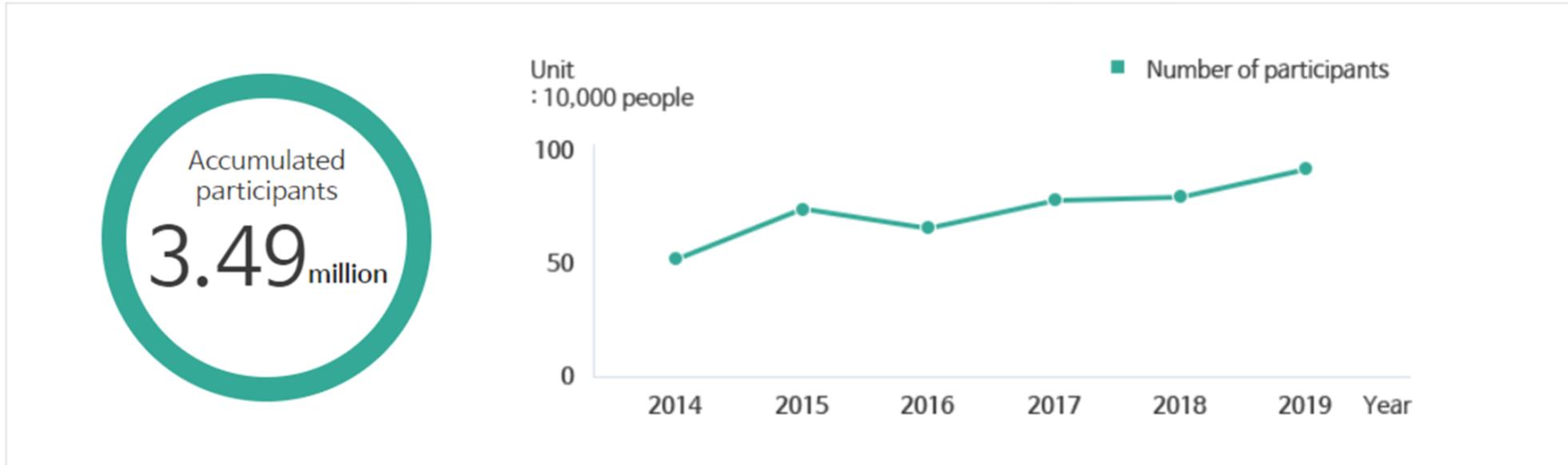
**3,616**



Explore our programs

**5,468**

## Local Science Festivals (2014~2019)



# 02-1 Science Festivals

Communicative activities for science technology culture

### Science Busking



Number of performances

119 times

Beneficiaries

92,600

### Science Night Live (SNL)



Number of events

59 times

Beneficiaries

8,796

### Dadeul Baeum



Number of events

705 times

Beneficiaries

61,258

## | Supporting science culture activities for local communities



We launch science events in which youth, students, parents, and ordinary citizens can participate according to their interests, and use communication methods such as busking and performances to make programs that allow communication between science and the public.

Operational status of Infinite Imagination Room (2019)

무한상상실

이용자수

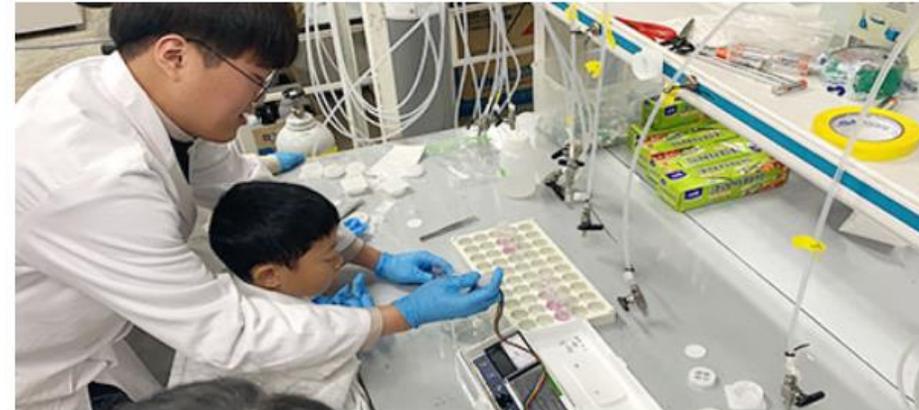
431,877

창작물 수

158,889

이용자만족도

94점



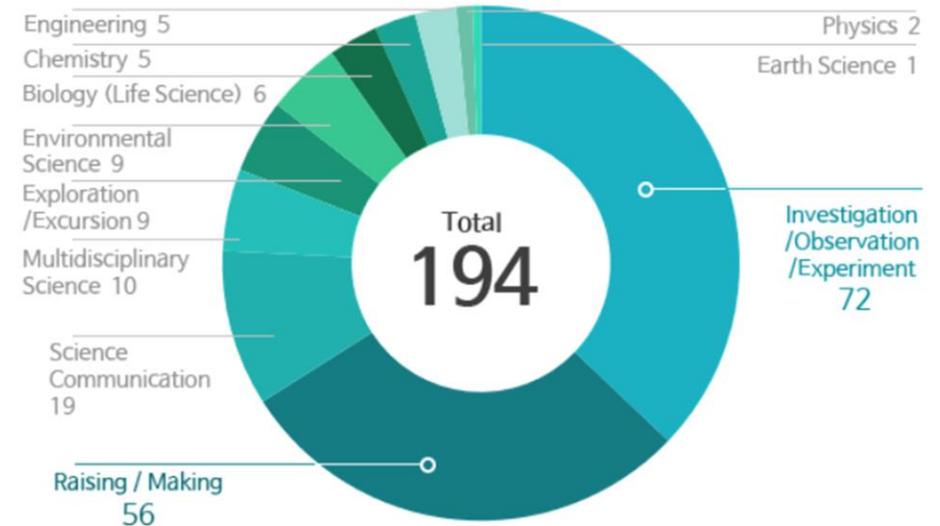
# 02-4 Youth Science Clubs



We support elementary, middle, and high school students in self-directed exploration and research activities outside the school on science topics to stimulate interest in science and establish the foundation for future science technology talents



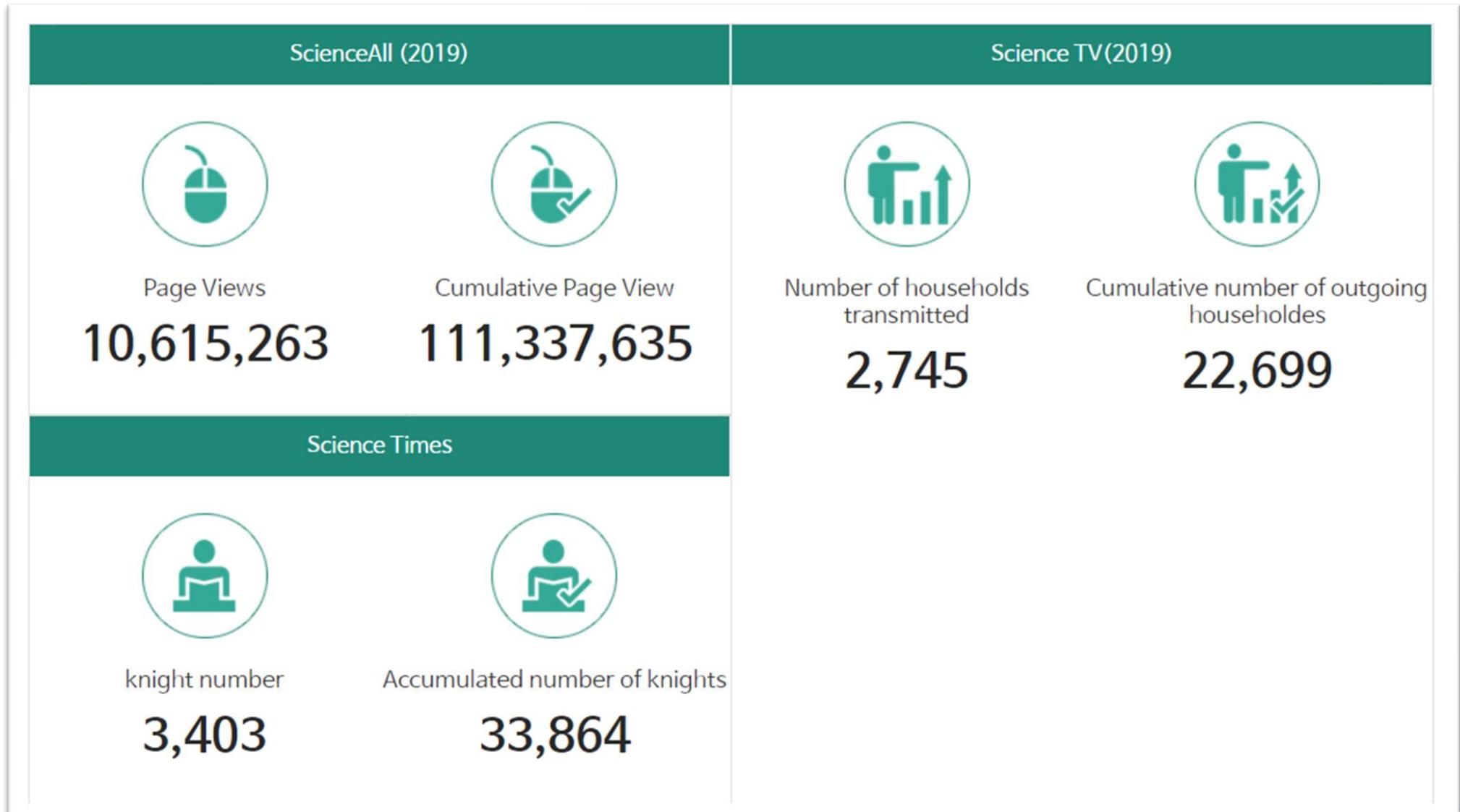
Status of Exploration Project(2019)

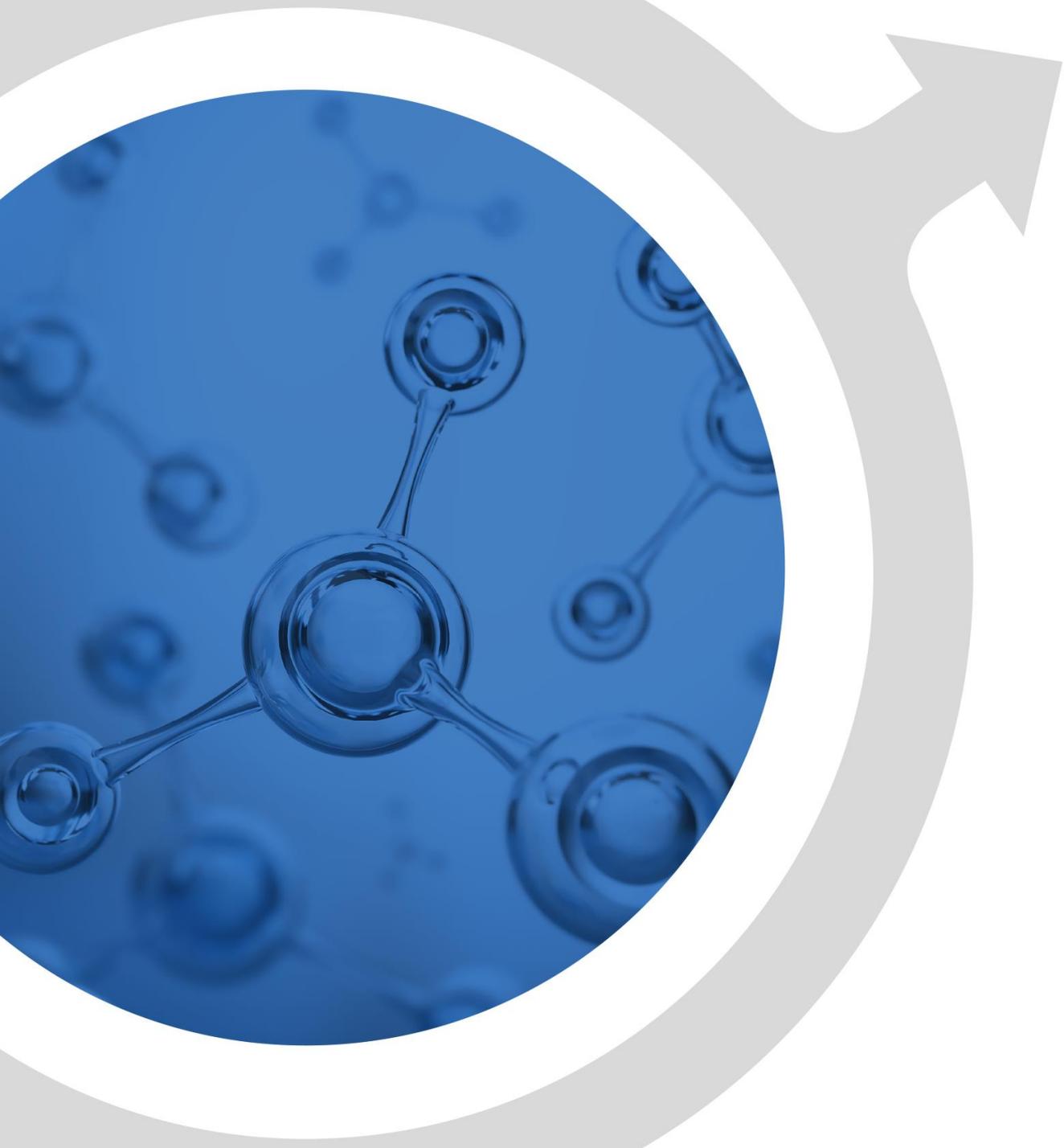


## | Media and content of science technology culture



We develop science culture content in tune with the latest science technology and ICT trends, and use the Internet and broadcasting platforms so that any citizen can access science technology information and content.





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# Suggestions

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- **To promote STEM learning, careers, perceptions on STEM professionals, etc.**
  - Formulate the culture of science, not restricted to school science
  - Expose students to diverse activities in schools and outside of schools
  - Collaborate with parents and teachers, community residents, etc.
  - Supported by policies, governments, or organizations.