

Statistics and Informatics Curriculum in Indonesia



Dr. Wahyudi



Statistics and Probability in the curriculum of Indonesia

- Started in grade 9
- Collecting, organizing, and representing data; interpreting chart and diagram; calculating measures of central tendency
- Empirical and theoretical probability

2004

- Started in grade 9
- Collecting, organizing, and representing data; interpreting chart and diagram; calculating mean, median, and mode
- Empirical and theoretical probability

2006

- Started in grade 8
- Topics are similar to 2006 syllabus, plus analyzing type of data and how to represent it; making decision, conclusion and prediction using data.
- Theoretical and empirical probability

2013

Statistics and Probability in the curriculum of Indonesia

- In high school, the students learn about measure of spread (quartiles), as well as representing data in frequency table, and histogram.
- Counting principle (permutation and combination)
- Probability for exclusive and independent events

2004

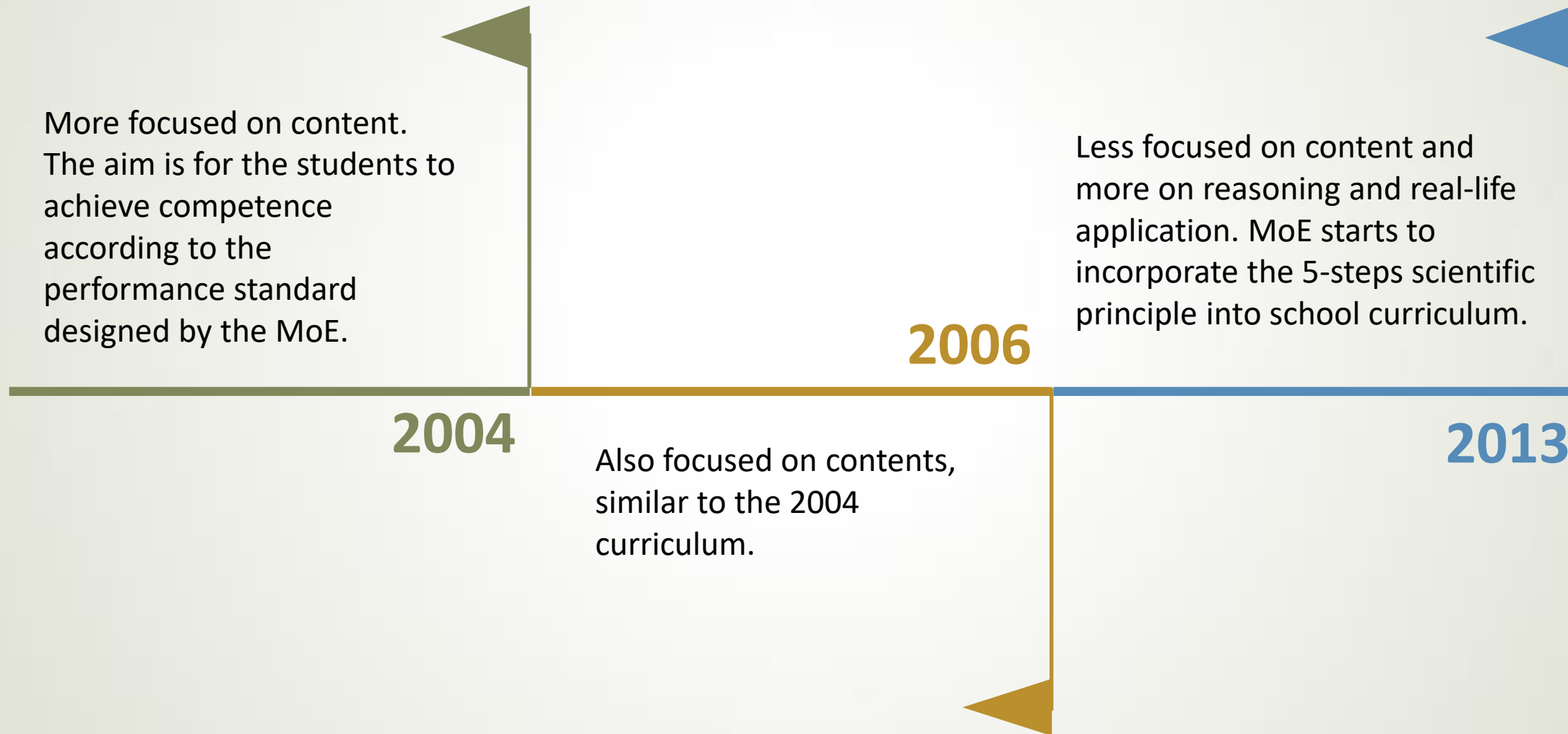
- In high school, the students learn about quartiles, grouped data, frequency table, and histogram.
- Counting principle
- Probability for exclusive and independent events

2006

- Students in high school started to learn about grouped data, frequency table, and histogram.
- Counting principle, exclusive and independent events
- Using statistics and probability to solve real-life problem

2013

Statistics and Probability in the curriculum of Indonesia ---- AN OVERVIEW ----





Statistics in Current Mathematics Textbook



3. Diagram lingkaran di bawah ini menunjukkan penjualan mobil di beberapa kota besar.
- Jika semua mobil yang terjual sebanyak 41.300, tentukan berapa banyak mobil yang terjual tiap-tiap kota?
 - Apa kesimpulan kalian tentang banyaknya mobil yang terjual dari kota besar tersebut?



“The following pie chart shows car sales in different cities in Indonesia. If the total sales 41,300, how many car are being sold in each city? What conclusion can you make about the number of cars sold in each city?”

Aside from applying the knowledge about pie chart in context (in this case, car sales), the students are encouraged to make sense of the data and make conclusion.

The textbook incorporate project based learning by assigning a small project in the end of the chapter where the students can apply statistics in real life situations.



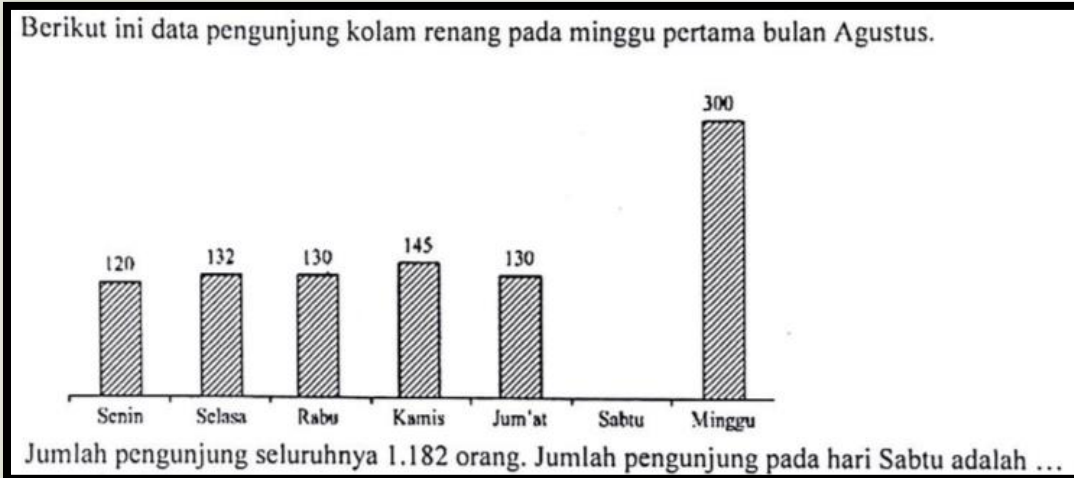
Tugas Projek 6

Kalian sudah bisa membuat diagram batang, diagram garis dan diagram lingkaran dengan menggunakan komputer. Nach, sekarang coba kalian bekerja secara kelompok yang terdiri dari 5 orang untuk mengumpulkan data, mengolah data, dan menyajikan data dalam bentuk diagram batang, diagram garis dan diagram lingkaran.

Ayo lakukan kegiatan berikut.

- Kalian bentuk kelompok yang terdiri dari 5 orang
- Setiap siswa mengumpulkan data tentang 5 jenis makanan dan 5 jenis minuman yang paling disukai anggota keluarga (ayah, ibu, adik, kakak, dan saya sendiri) di rumahmu
- Kumpulkan data dari masing-masing siswa dalam satu kelompok
- Buatlah tabel tentang 5 makanan dan 5 minuman yang paling disukai
- Sajikan data pada tabel dalam bentuk diagram batang, diagram garis, dan diagram lingkaran.
- Buatlah kesimpulan terhadap hasil penyajian data dalam bentuk diagram batang, diagram garis, dan diagram lingkaran.

Junior high school



"The following graph shows the data of visitors during the first month of August. The total number of visitor is 1.182 people. The number of visitor on Saturday is ..."

High school

Kuartil bawah dari data pada tabel distribusi frekuensi di bawah adalah

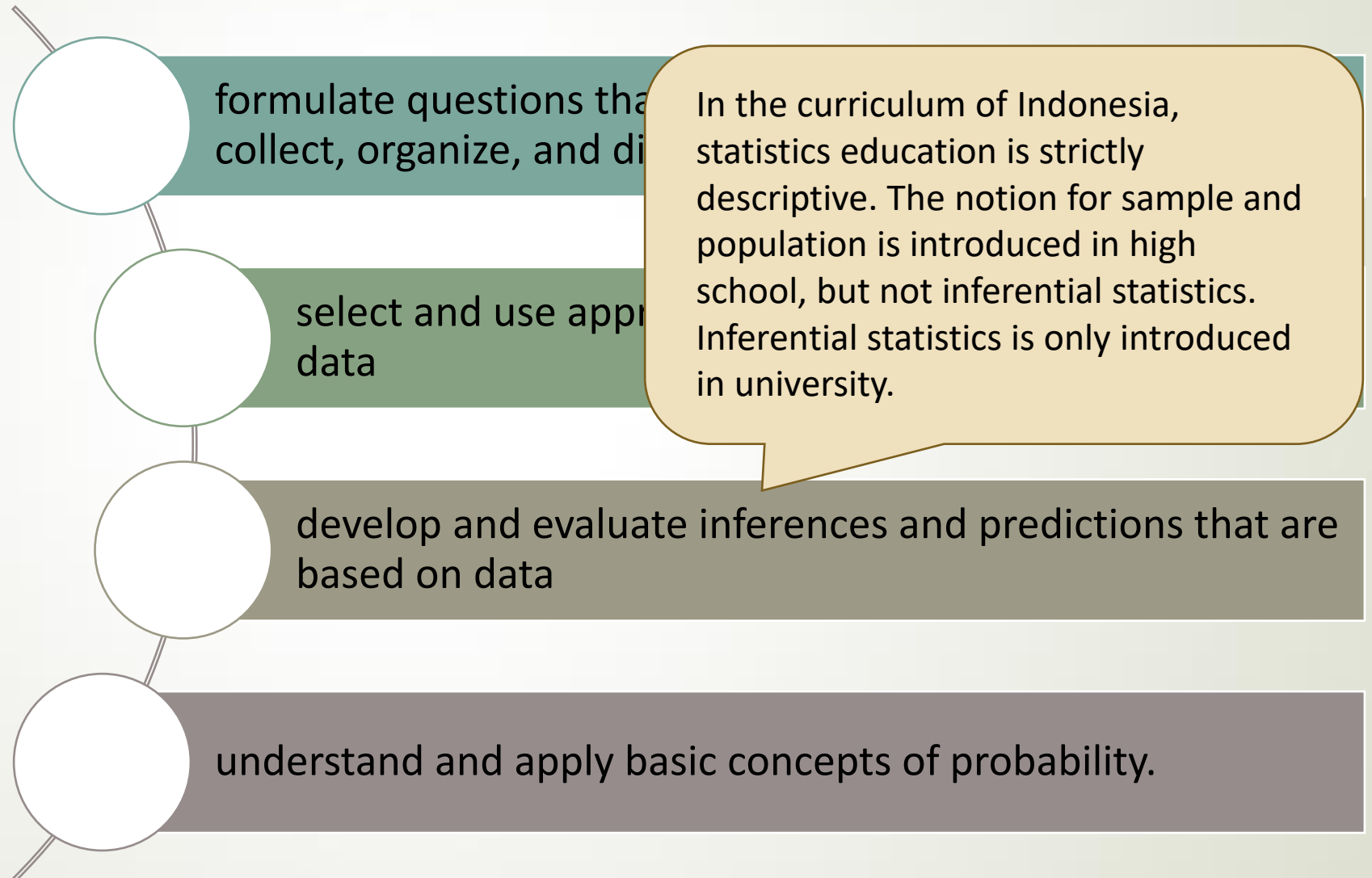
Interval	frekuensi
40 – 44	12
45 – 49	20
50 – 54	15
55 – 59	30
60 – 64	12
65 – 69	11

"Lower quartile of the following frequency table is ..."

Despite the attempt to incorporate scientific thinking and reasoning into the curriculum, the national exams are still very much content based.

How statistics in Indonesian curriculum measure up to Global Statistics Education

NCTM Principles and Standards for School Mathematics (2000) stated that instructional programs in Data Analysis and Probability from pre-kindergarten through grade 12 should enable all students to:



How statistics in Indonesian curriculum measure up to Global Statistics Education



According to GAISE (Guidelines for Assessments and Instructions in Statistics Education) the main goal of statistics education is **statistical literacy**

3 features of statistics

(that sets it apart from mathematics)

The Nature of Probability

"...the ability to understand and critically evaluate statistical results that permeate our daily lives – coupled with the ability to appreciate the contributions that statistical thinking can make in public and private, professional and personal decisions."
(Wallman, 1993)

quantifying the variability in the data.

The role of Context

- Statistics requires a different kind of thinking, because *data are not just numbers, they are numbers with a context.* In mathematics, abstract concepts obscures statistical data analysis provides more

In the 2013 curriculum of Indonesia, the emphasis on thematic-integrative means that we are on our way for statistical literacy, even though it is not yet explicitly stated as the goal of statistics education.

Probability and Chance Variability

- When randomness is present, the statistician wants to know if the observed result is due to chance or something else.

Information Technology (IT) in the curriculum of Indonesia

IT is offered as a standalone albeit as local content. The content usually revolves around operating computer, word processing, etc.

2004

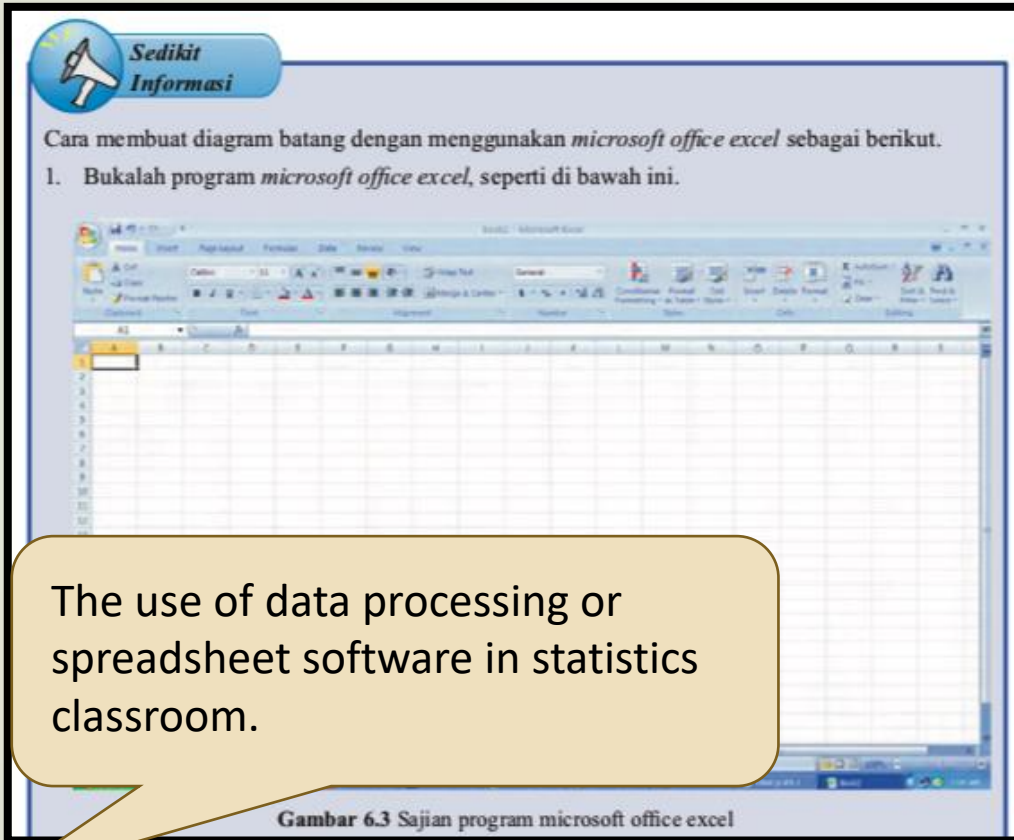
IT is offered as a standalone and local content. The content does not change much from 2004 curriculum, but in this period it started to incorporate internet.

2006

IT as a subject is omitted. Reason: 1) IT should be integrated in other subjects, 2) IT is not applicable in remote parts of Indonesia; and 3) the difficulty to provide required facility.

2013

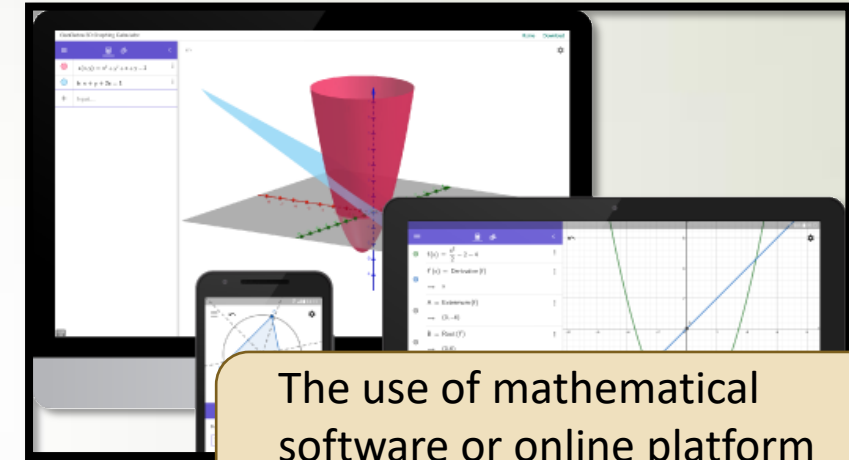
Information Technology incorporated in Indonesian classroom



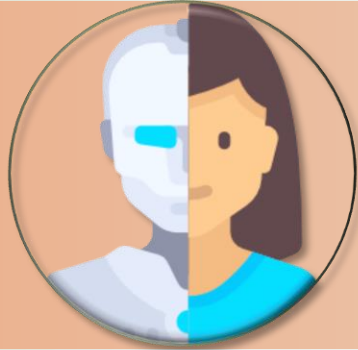
The use of data processing or spreadsheet software in statistics classroom.



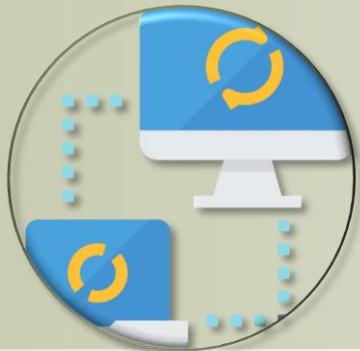
The use of scientific calculator.



The use of mathematical software or online platform such as Geogebra and Desmos



Education with a focus on developing 21st century skills (critical thinking, creativity, communication, collaboration) to support the competitiveness of our students when they enter the future workforce.



IT is to be introduced again as a subject in 2019, as *Informatics*. Not only learning about computer software, this subject also includes problem solving and critical thinking. There are 5 competencies in *Informatics* to support students to face Industry 4.0 namely computer engineering, computer network, data analysis, social impact of informatics, and programming.



Statistics education should incorporate the use of real-life large-sized data in the classroom. The students should learn how to assess the credibility of the source of data (what organization and how the data is collected) and use it to understand complex phenomenon in the world.



рахмат
danke

謝謝

ngiyabonga

teşekkür ederim

Баярлалаа
спасибо

thank you

gracias

tapadh leat

bedankt

dziękuję

sagolun

sukriya

kop khun krap

taiku

go raibh maith agat

obrigado

mesì

didi madoba

kam sah hamnida

terima kasih

tanemirt

grazie

arigatō

takk

dakujem

trugarez

তোমাকে ধন্যবাদ

감사합니다

xiexie

ευχαριστώ

merci

ehokrane

tenki