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Norwegian University of Science and Technology

Department of

Computer and Information Science

- Kodeløypa is one of the six established science frameworks at NTNU, (Mathematics, Energy, Physics, Chemistry, Biology)

- Official goal is student recruitment

et prosjekt

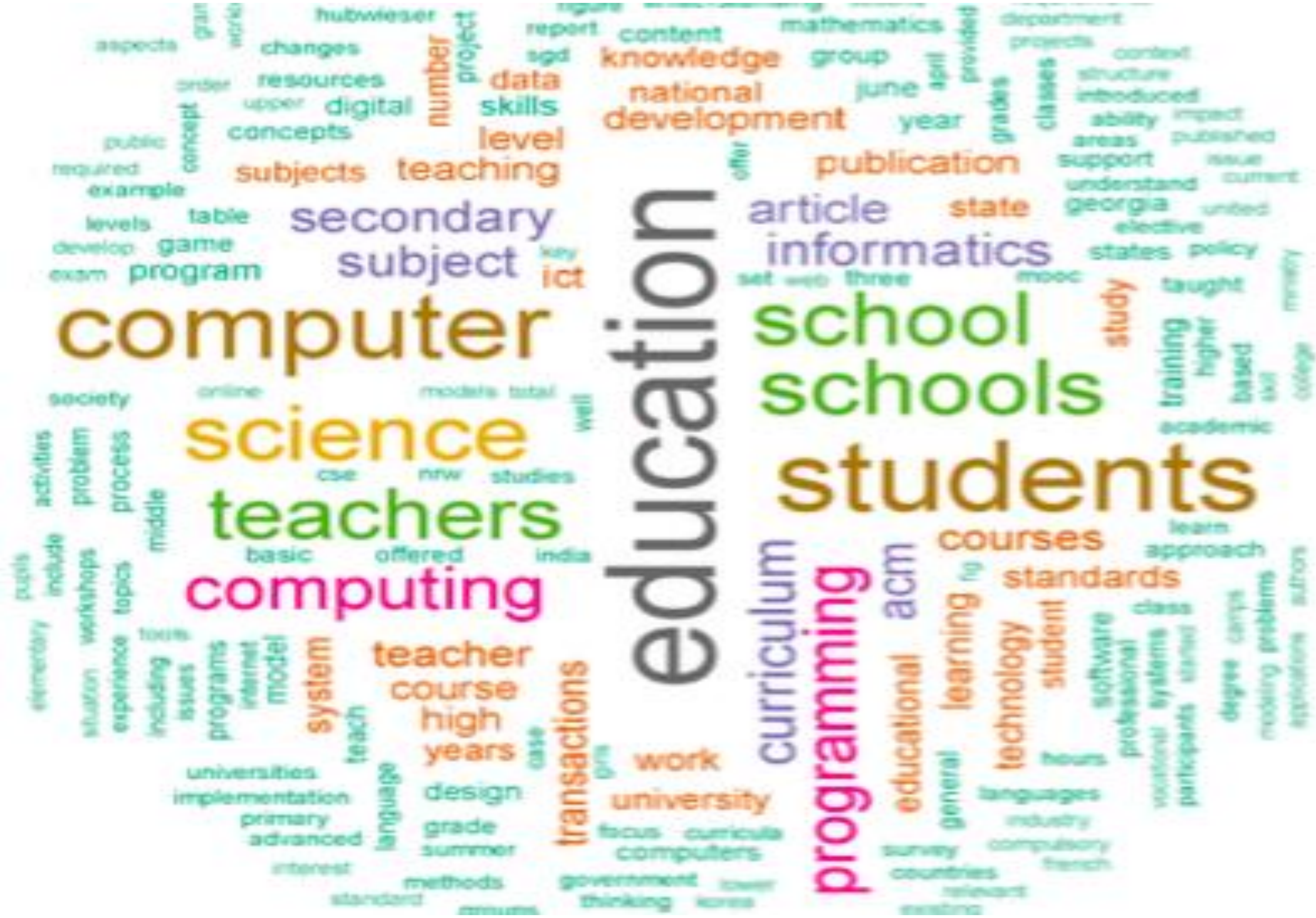
for å få 15-åringer

interessert i

programmering og data

Barack Obama / code.org – video

https://www.youtube.com/watch?v=6XvmhE1J9PY


education
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students
school
schools
science
teachers
computing
programming
curriculum
secondary
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informatics
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high
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transactions
courses
standards
development
publication
teaching
subjects
level
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concepts
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countries
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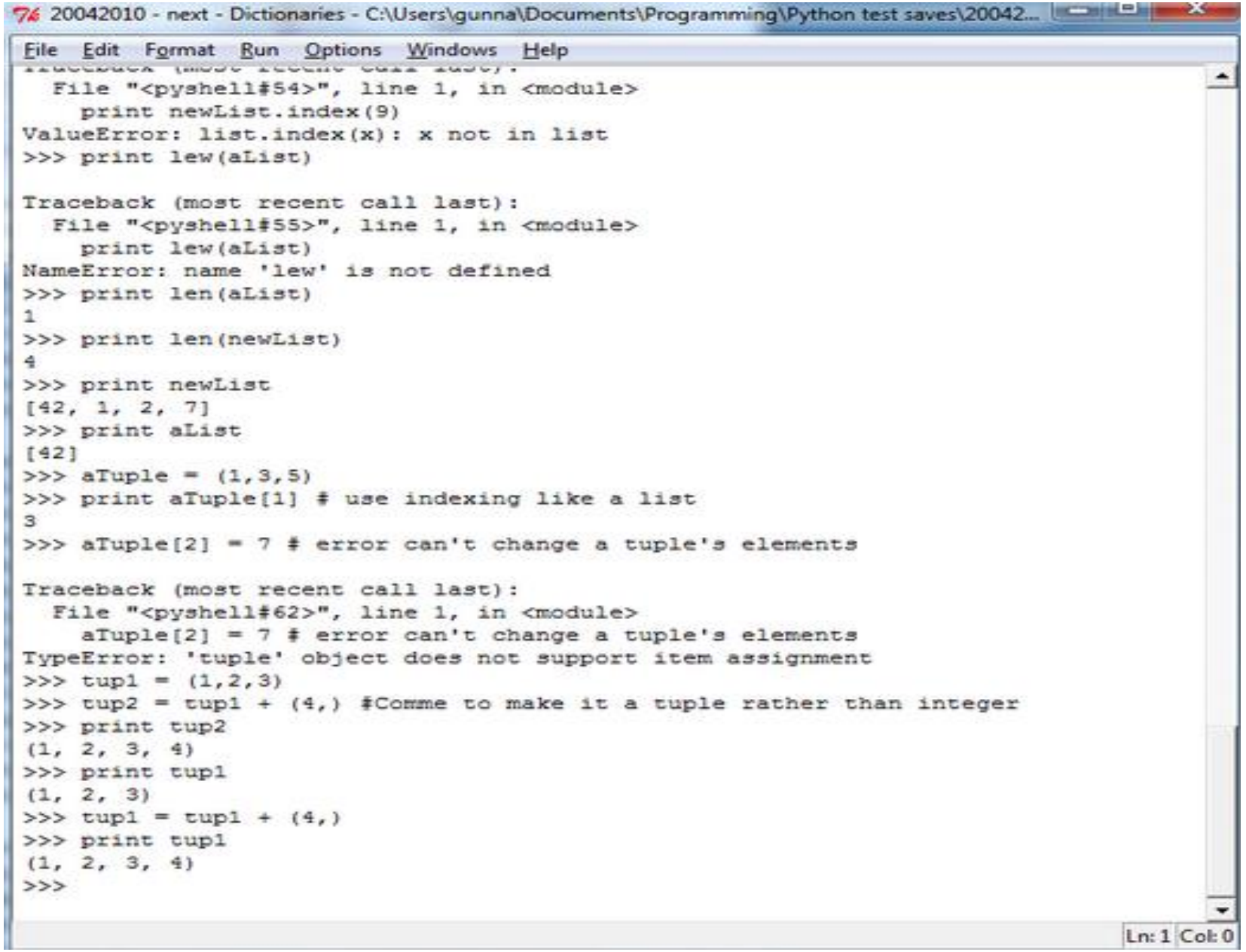
general

Computer studies in schools

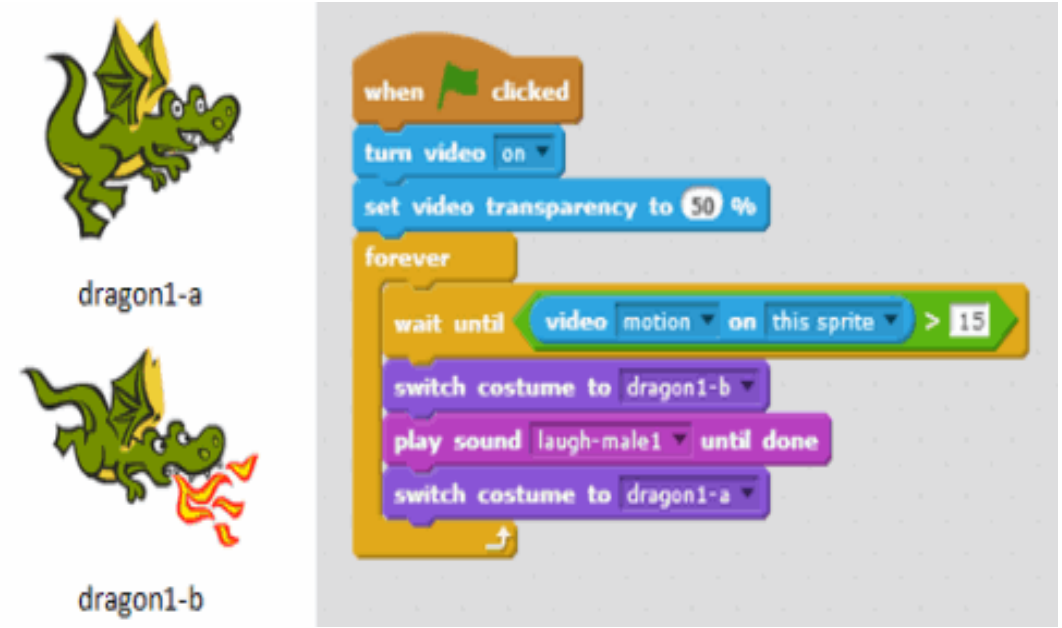
- United Kingdom:
  - **Key Stage 1 (5-6 year-olds):** Children will be learning what algorithms are, which will not always involve computers.
  - **Key Stage 2 (7-11 year-olds):** Slightly older primary-school children will be creating and debugging more complicated programs
  - **Key Stage 3 (11-14 year-olds):** Once children enter senior school they will be using two or more programming languages

Kodeløypa informasjonsvideo:
https://www.youtube.com/watch?v=Wbzg2-T9G7k


20042010 - next - Dictionaries - C:\Users\gunna\Documents\Programming\Python test saves\20042...
File Edit Format Run Options Windows Help
File "<pyshell#54>", line 1, in <module>
print newList.index(9)
ValueError: list.index(x): x not in list
>>> print lew(aList)
Traceback (most recent call last):
File "<pyshell#55>", line 1, in <module>
print lew(aList)
NameError: name 'lew' is not defined
>>> print len(aList)
1
>>> print len(newList)
4
>>> print newList
[42, 1, 2, 7]
>>> print aList
[42]
>>> aTuple = (1,3,5)
>>> print aTuple[1] # use indexing like a list
3
>>> aTuple[2] = 7 # error can't change a tuple's elements
Traceback (most recent call last):
File "<pyshell#62>", line 1, in <module>
aTuple[2] = 7 # error can't change a tuple's elements
TypeError: 'tuple' object does not support item assignment
>>> tup1 = (1,2,3)
>>> tup2 = tup1 + (4,) #Comme to make it a tuple rather than integer
>>> print tup2
(1, 2, 3, 4)
>>> print tup1
(1, 2, 3)
>>> tup1 = tup1 + (4,)
>>> print tup1
(1, 2, 3, 4)
>>>
Ln: 1 Col: 0

SCRATCH


PROJECTS
PEERS
PASSION
PLAY


dragon1-a
dragon1-b
when clicked
turn video on
set video transparency to 50 %
forever
wait until video motion on this sprite > 15
switch costume to dragon1-b
play sound laugh-male1 until done
switch costume to dragon1-a

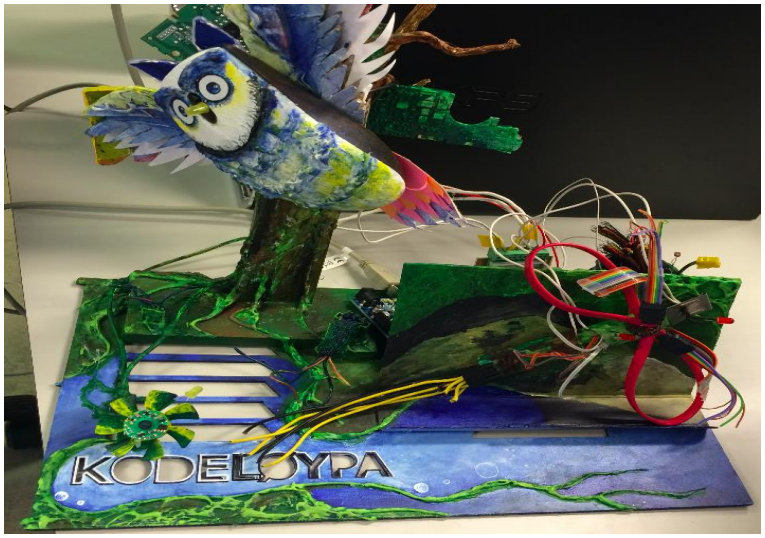
Workshops

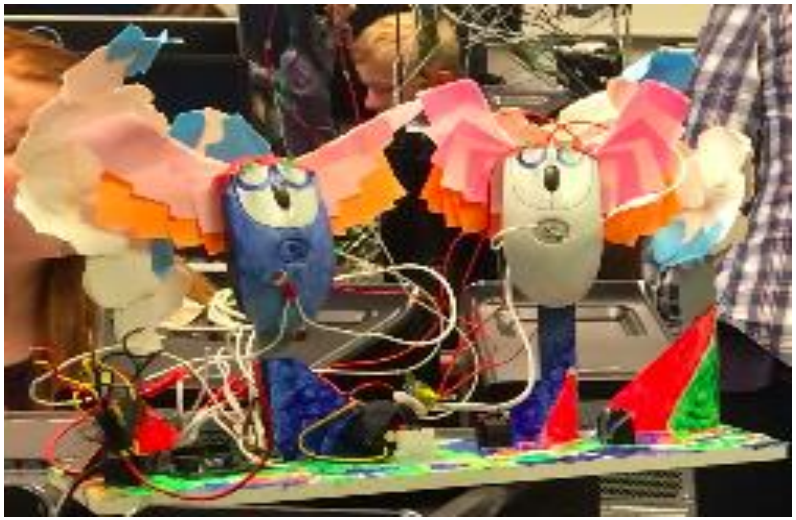




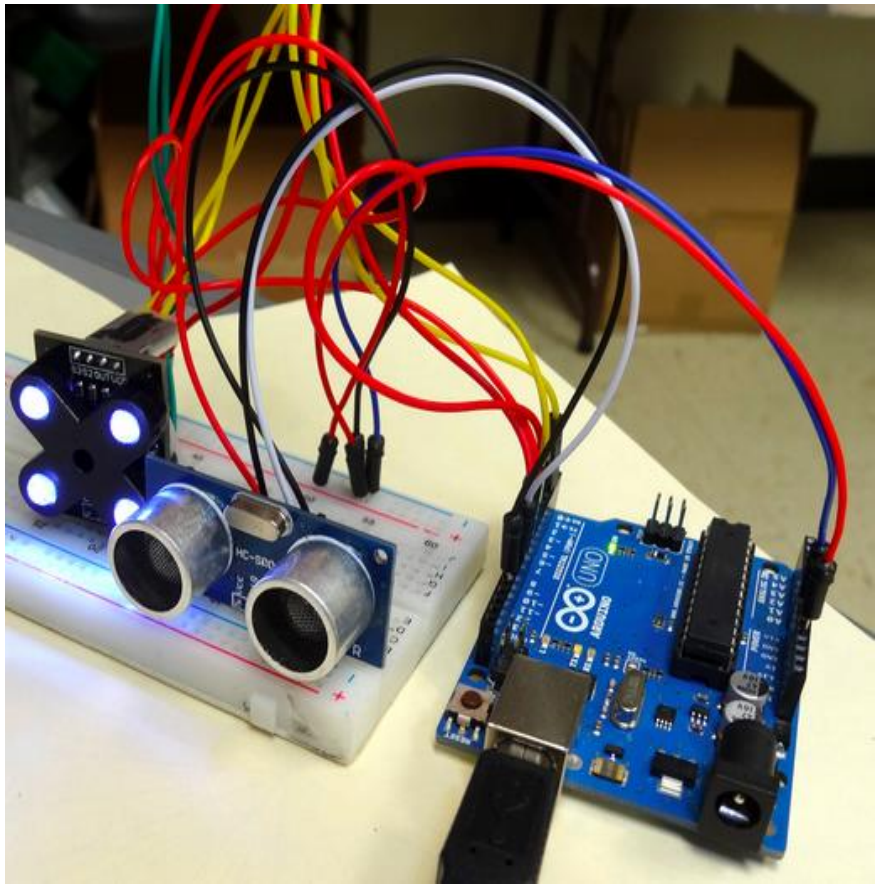


Digital art-Robots





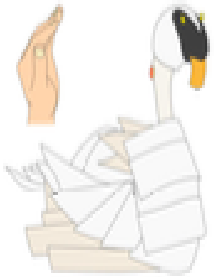
Tools used: Scratch and Arduino

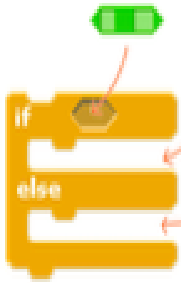


Microcontroller

Interaction with the digital art-robots

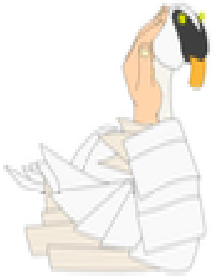
REAKSJON





Dette skjer hvis
den grønne blokken er true

Dette skjer hvis
den grønne blokken er false



Fest blokker på innsiden av "if"
for å få noe til å skje

OPPGAVE

Få roboten til å lyse når dere holder hånda over lyssensoren
Bruk forever-blokken rundt "if" for at Scratch skal sjekke
verdien til sensoren hele tiden

Creation of Games

Figurer

For å slette katten, høyreklikk på den i det gråe området, og velg "delete".

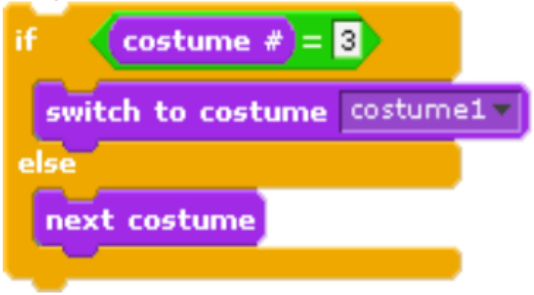
For å få en ny figur, klikk på  . Dere kan også tegne deres egen figur, med å trykke på  . Pass på å ikke bruke for mye tid på det.

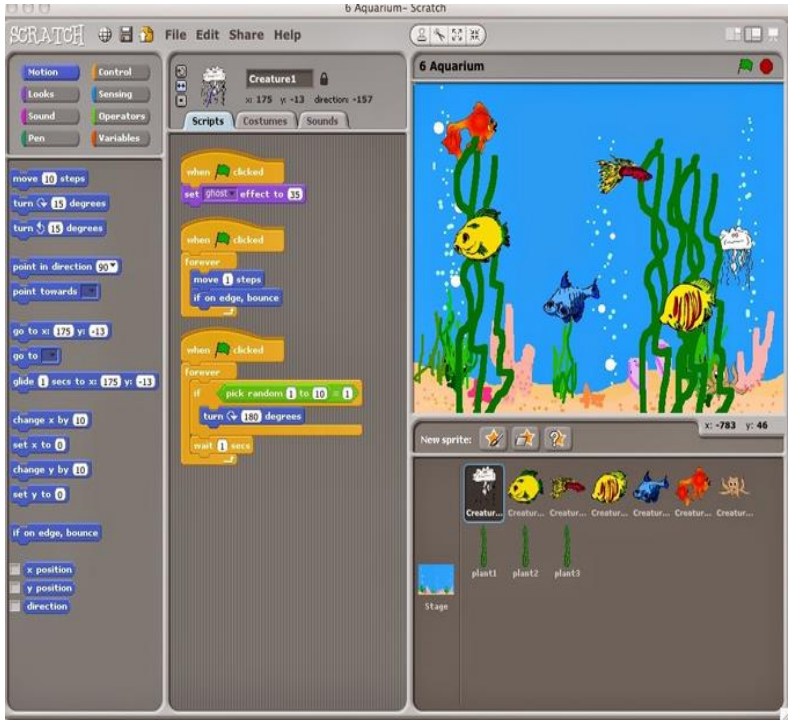
Figurer i Scratch har flere kostymer. Et kostyme er et utseende til en figur. Dere kan bytte mellom dem ved å bruke 

eller

.

En animasjon mellom de tre første kostymene til en figur kan for eksempel se slik ut:



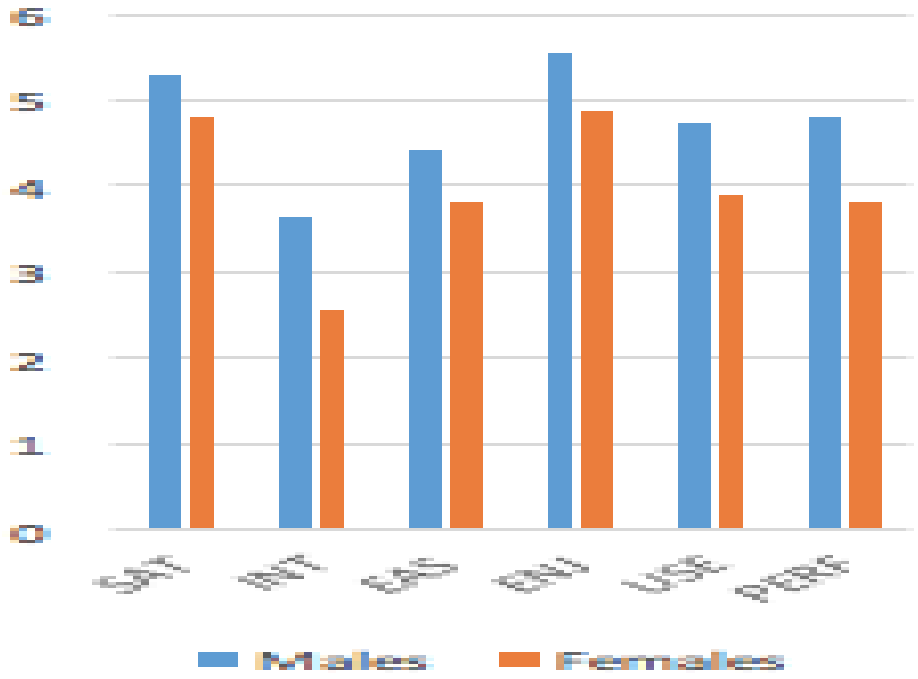


NTNU

Evaluation Autumn 2015

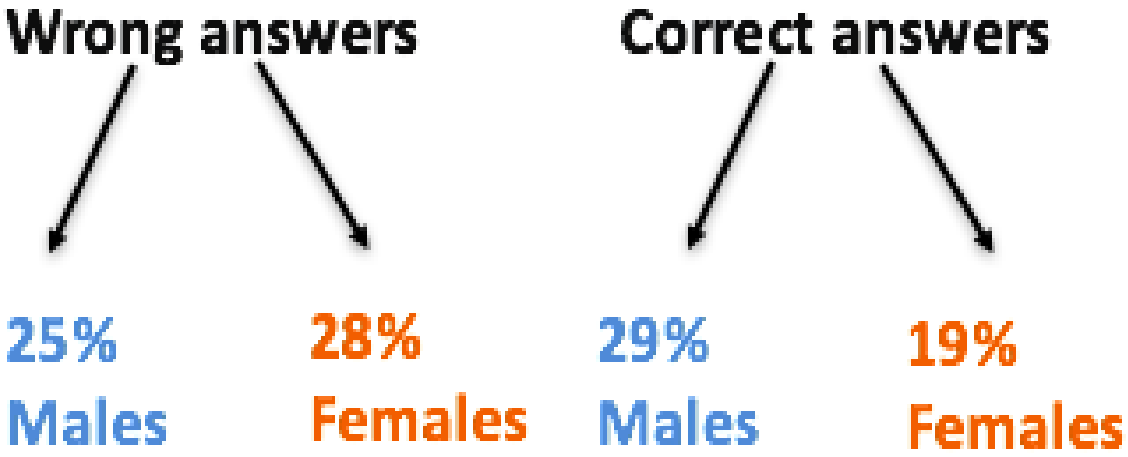
- Autumn 2015 →128 students, 68 males, 60 females
- 7 workshops
- Post - questionnaire
  - Satisfaction
  - Intention to use
  - Enjoyment
  - Easiness
  - Usefulness
  - Confidence of performance
- 105 responses

Results-Attitudes



Differences between males and females

Results-Learning outcome



Snippet of simple Scratch code to test if students could understand basic loops

Future plans

UMI-Sci-Ed

The project title of the new EU project is **Exploiting Ubiquitous Computing, Mobile Computing and the Internet of Things to promote STEM Education**.

The aim of the UMI-Sci-Ed project is to motivate young boys' and girls' to choose science education and increasing the chance of them choosing a career within the areas of pervasive, mobile computing and the Internet of Things (IoT).

Kodeløypa is one of the many case studies in the project.

The grant period is from 2016–2019.

From our department the following people are involved:

- Professor Letizia Jaccheri
- Associate Professor Michail Giannakos
- Professor Monica Divitini

Norway
Greece
Italy
Belgium
Ireland
Finland

Thank you!

Questions-Suggestions?