

Chapter 1:

Introduction to digital education

Drill & Practice

Online education platforms

Learning Management System

Classroom participation systems

Simulations

Microworlds

Teamwork support

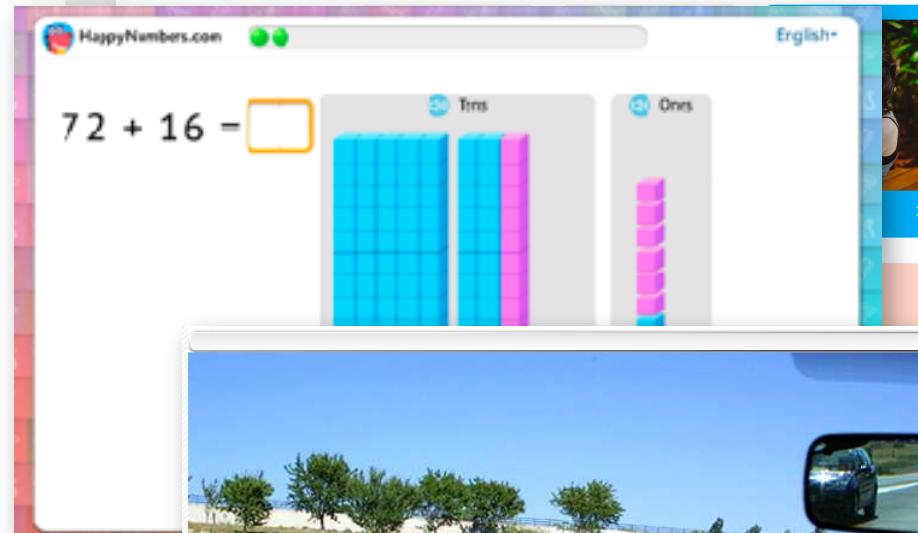
Augmented reality

Virtual reality

Serious Games

Education Robotics

Choisis la traduction de "homme"



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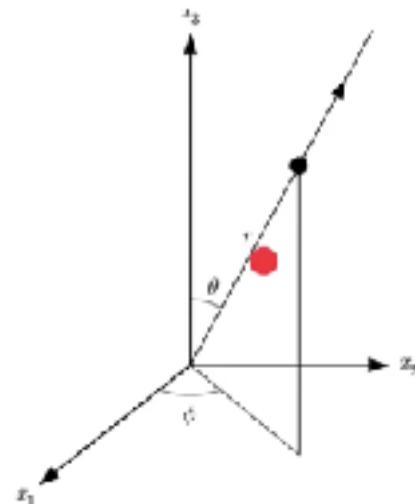
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Définition : lignes de coordonnées (c. sphériques)



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EdX

Coursera

<https://www.epfl.ch/education/continuing-education/moocscatalogue/>

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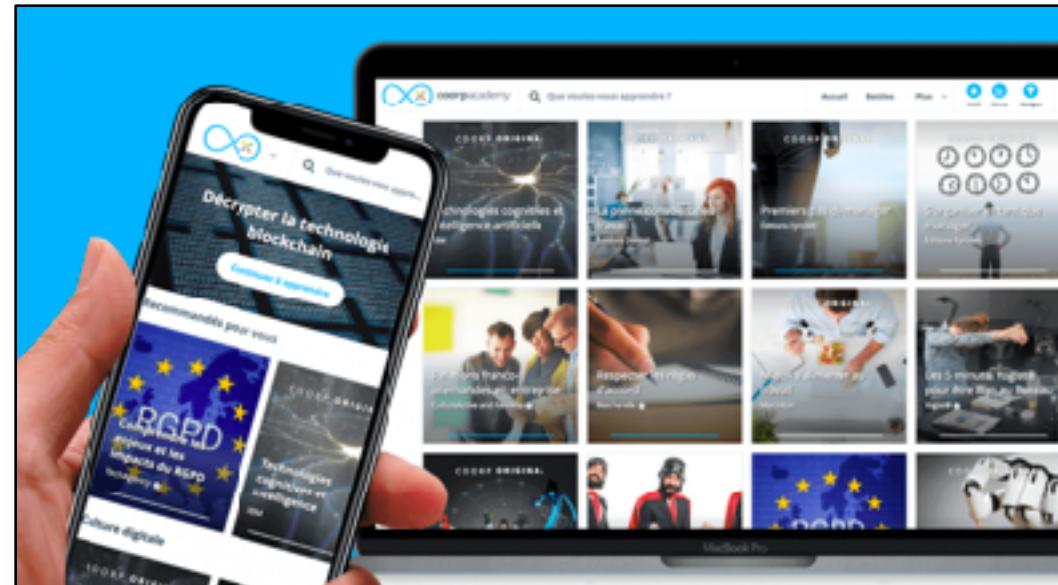
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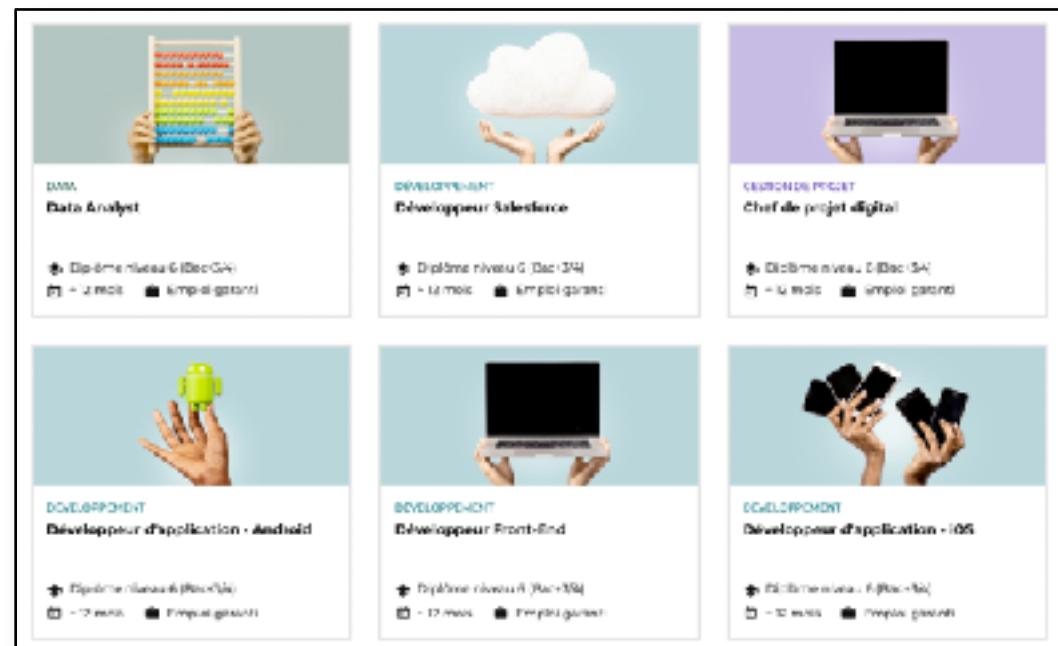
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CoorpAcademy

OpenClassroom



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Learning Management System

Classroom participation systems

Simulations

Microworlds

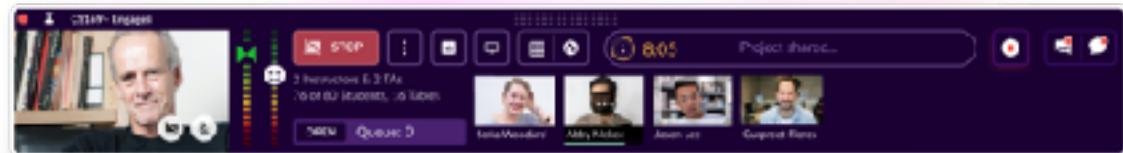
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Virtual reality

Serious Games

Education Robotics



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Online education platforms

Learning Management System

Classroom participation systems

Simulations

Microworlds

Teamwork support

Augmented reality

Virtual reality

Serious Games

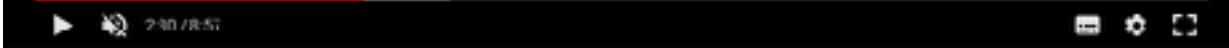
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$$\mathcal{L}\{f'(t)\} = p\mathcal{L}\{f(t)\} - f(0)$$

$$\mathcal{L}\{m_n(at)\} = \frac{a}{p^2 + a^2}$$

$$\mathcal{L}\{\cos(at)\} = p\mathcal{L}\left\{\frac{1}{a} \sin(at)\right\} - \frac{1}{a} \sin(0)$$

$$= \frac{p}{a} \mathcal{L}\{m_n(at)\} =$$



Khan Academy

Vidéo suivante

Comparer des fractions qui n'ont ni le même numérateur ni le même dénominateur

Compare les fractions suivantes en utilisant les symboles $>$, $<$, ou $=$.

$$\frac{5}{3} \quad > \quad \frac{10}{8}$$

Bravo ! Pour aller plus loin.

Signaler un problème



Excellent travail !

Continuez. [Voyez comment nous avons répondu.](#)

Réussissez 5 questions sur 7 pour passer à Familiar

Question suivante...

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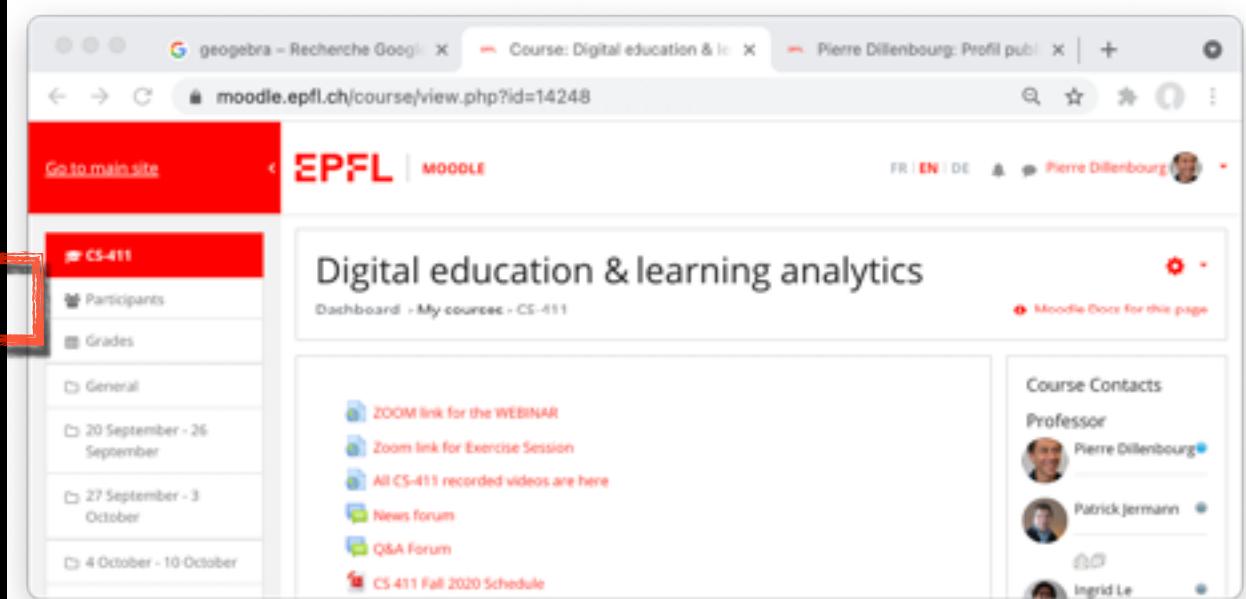
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Serious Games

Education Robotics



Go to main site

EPFL MOODLE

FR | EN | DE

Pierre Dillenbourg

CS-411

Participants

Grades

General

20 September - 26 September

27 September - 3 October

4 October - 10 October

ZOOM link for the WEBINAR

Zoom link for Exercise Session

All CS-411 recorded videos are here

News forum

Q&A Forum

CS-411 Fall 2020 Schedule

Digital education & learning analytics

Dashboard > My courses > CS-411

Moodle Docs for this page

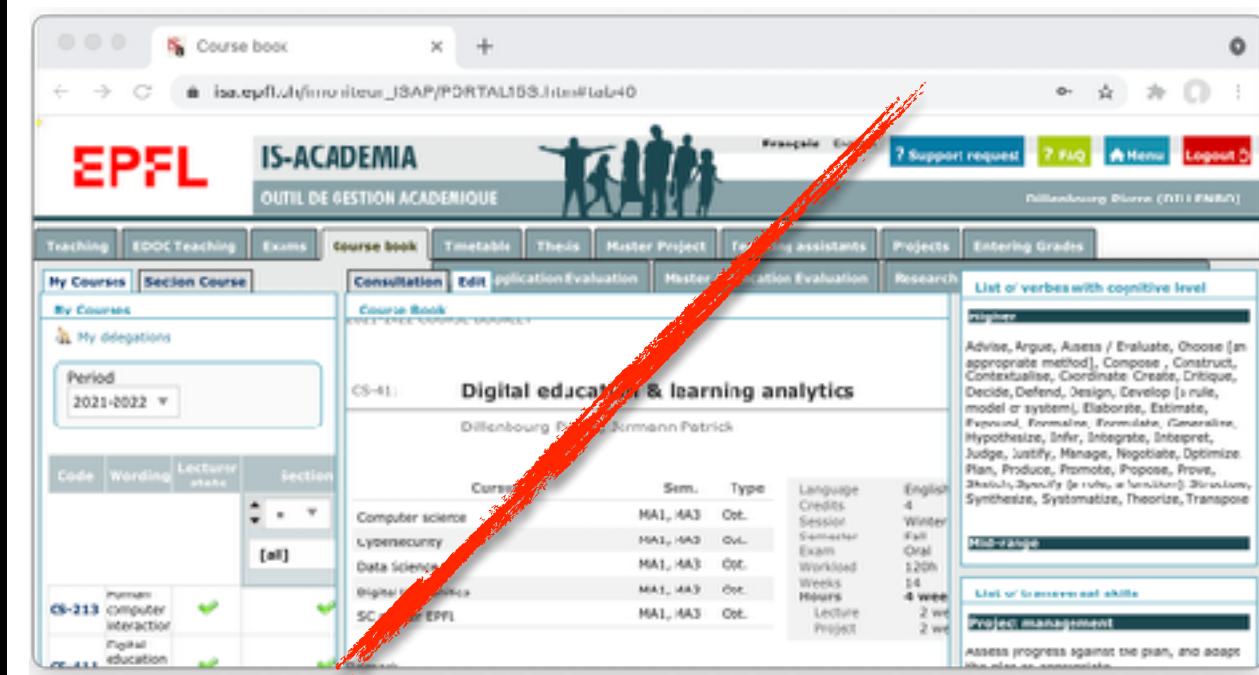
Course Contacts

Professor

Pierre Dillenbourg

Patrick Jermann

Ingrid Le



Course book

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My Courses Section Course

Period: 2021-2022

CS-411: Digital education & learning analytics

Dillenbourg, Pierre Jermann, Patrick

Code	Wording	Lecturer name	Section
CS-213	Human-computer interaction		[all]
SC-411	Digital education		

Course: CS-411

Sem.: MA1, MA3

Type: Oct.

Language: English

Credits: 4

Sessions: Winter

Semester: Fall

Exam: Oral

Workload: 120h

Weeks: 14

Hours: 4 weeks

Lecture: 2 we

Project: 2 we

List of verbs with cognitive level

Higher

Advise, Argue, Assess / Evaluate, Choose (in appropriate method), Compose , Construct, Contextualize, Coordinate, Create, Critique, Decide, Defend, Design, Develop (a rule, model or system), Elaborate, Estimate, Explain, Formulate, Formulate, Generalize, Hypothesize, Infer, Integrate, Interpret, Judge, Justify, Manage, Negotiate, Optimize, Plan, Produce, Promote, Propose, Prove, Reflect, Synthesize (a rule, a function), Synthesize, Systematize, Theorize, Transpose

Mid-range

Assess progress against the plan, and adapt the plan as necessary

List of transversal skills

Project management

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Learning Management System

Classroom participation systems

Simulations

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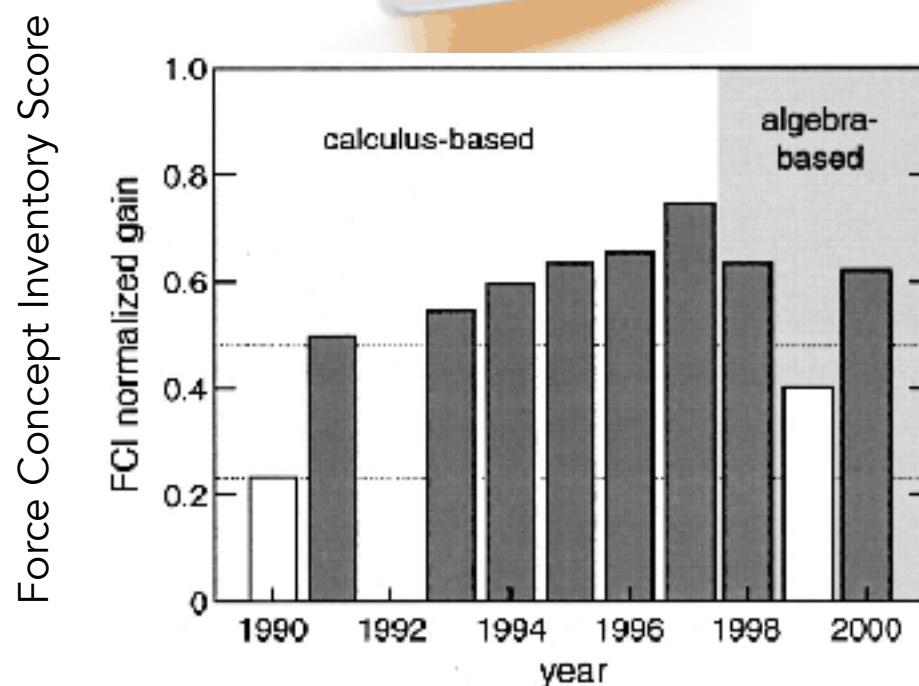
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Virtual reality

Serious Games

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Crouch, C.H., & Mazur, E. (2001). Peer Instruction: Ten years of experience and results. *American Journal of Physics*, 69, 970-977.

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Online education platforms

Learning Management System

Classroom participation systems

Simulations

Microworlds

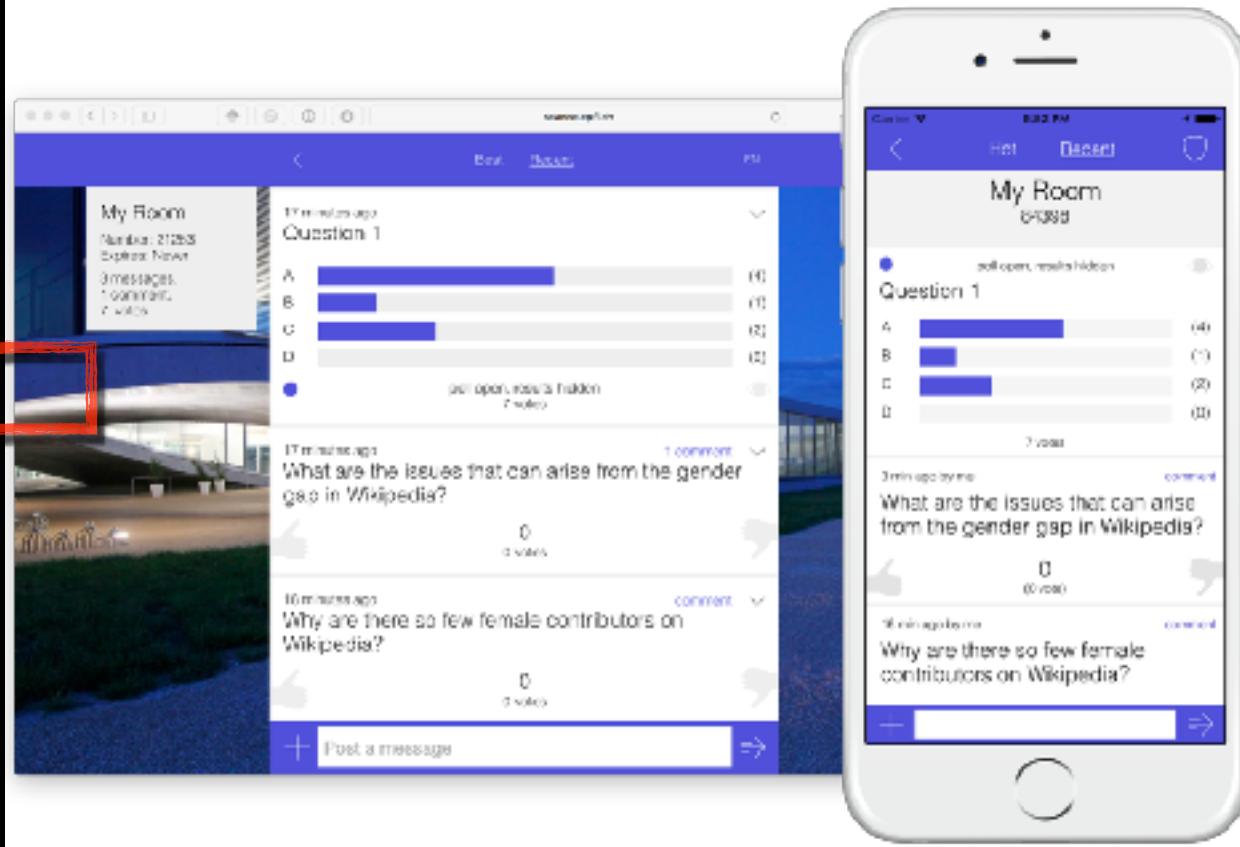
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Augmented reality

Virtual reality

Serious Games

Education Robotics



Speak Up

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Online education platforms

Learning Management System

Classroom participation systems

Simulations

Microworlds

Teamwork support

Augmented reality

Virtual reality

Serious Games

Education Robotics

ed. Playground - Discussion

Q. Search: Filter: Normal

COURSE: CS101, CS102, CS103, CS104, Python, COURSES, CATEGORIES: General, Features, Tutorials, Resources, Assignments, Modules, Exam

Quadratic equation

Anonymous 2 hours ago in Lessons - 91

Replies 1000 Edit Delete 242 views

Hi all,

Handle the equation $ax^2 + bx + c = 0$

Comment Edit Delete Unsubscribe

1 Answer

5 Scott M. 2 hours ago

Quadratic equation You can use the quadratic formula

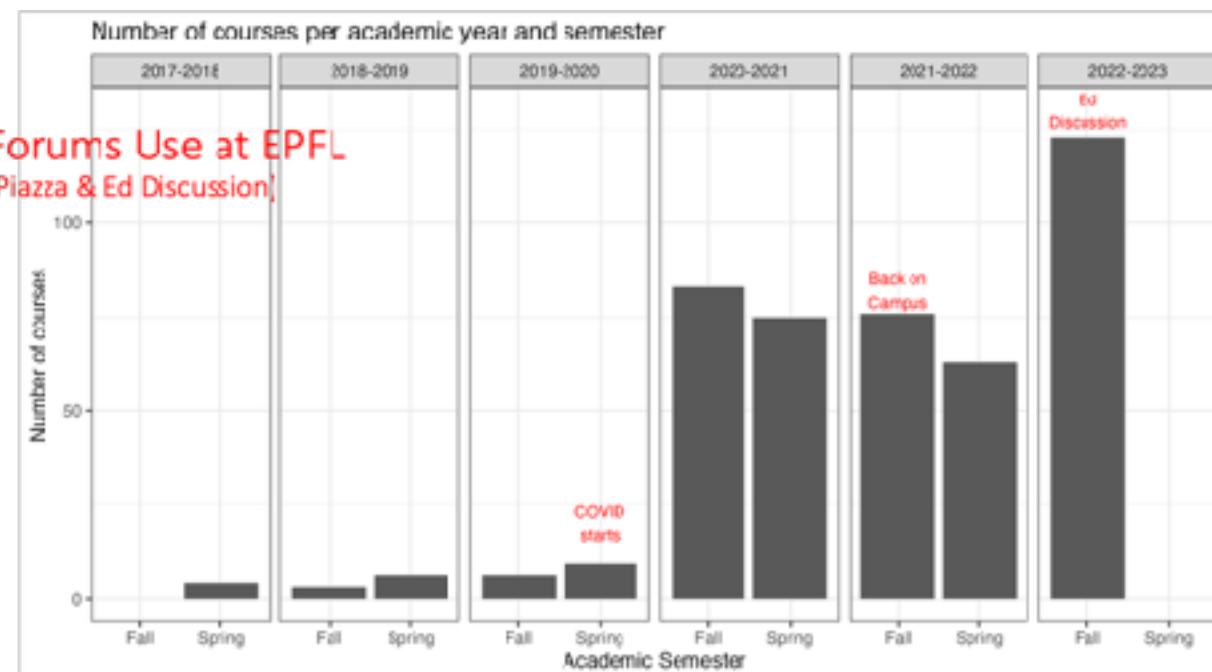
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Comment Edit Delete Unsubscribe

Andy D. 2 hours ago

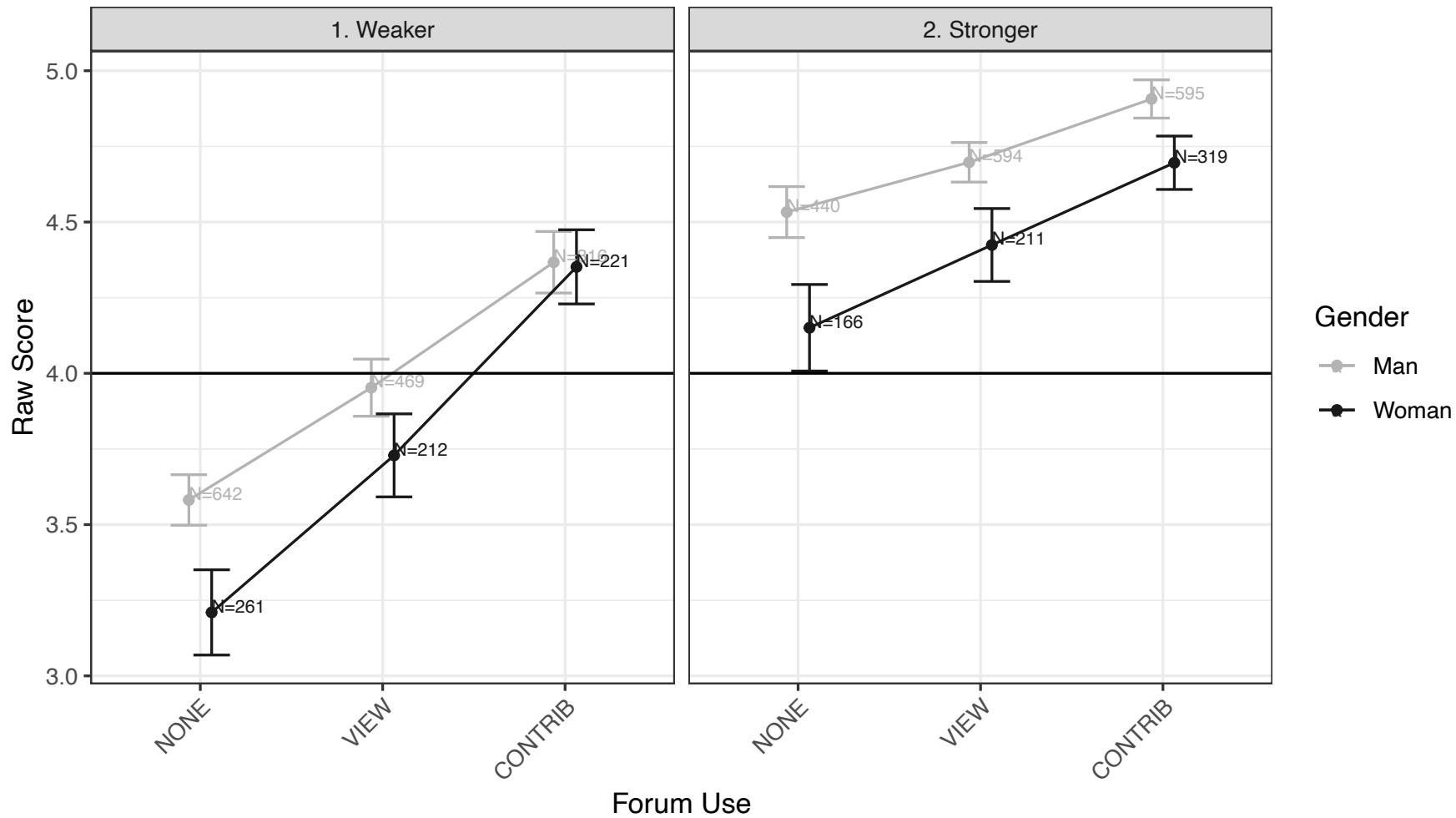
After plotting the graph of a quadratic function, it is called a **parabola** and has the general shape





Means and CI for exam grades

(N=4'446 observations, N=2'940 students, N=19 Courses)



Education is a data science

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Online education platforms

Learning Management System

Simulations

Microworlds

Classroom participation systems

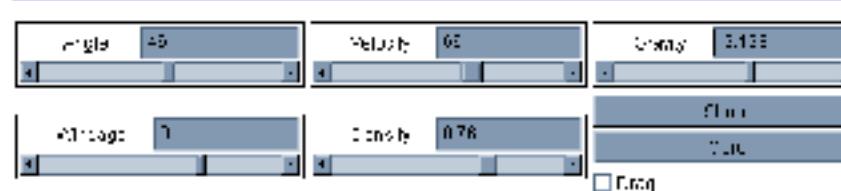
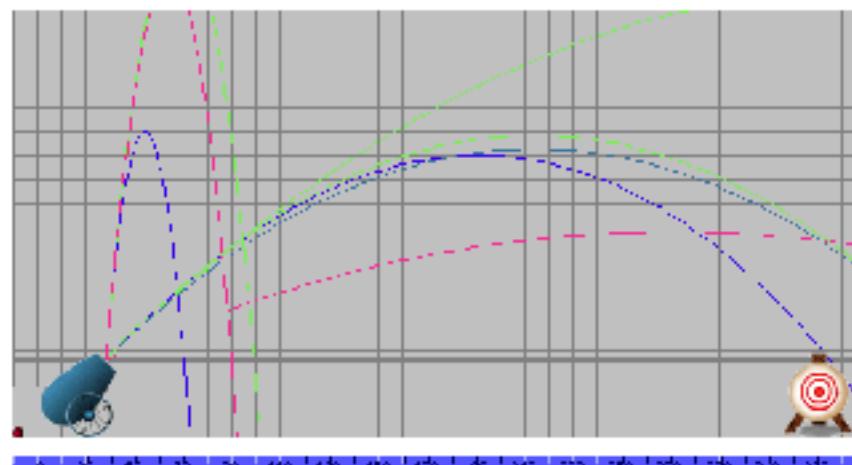
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Augmented reality

Virtual reality

Serious Games

Education Robotics



Jupyter Notebook



Prof. Cecile Hebert, EPFL

<https://www.epfl.ch/education/educational-initiatives/jupyter-notebooks-for-education/>

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Online education platforms

Learning Management System

Simulations

Microworlds

Classroom participation systems

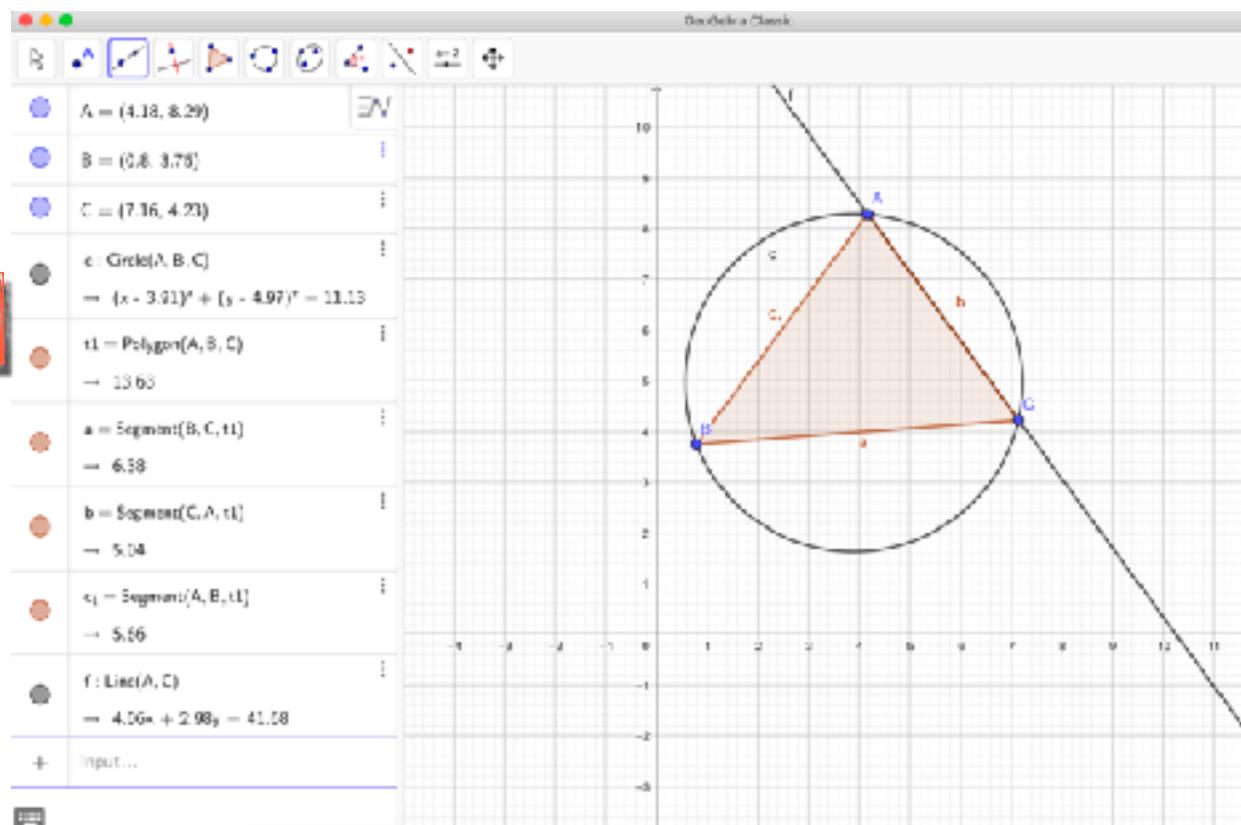
Teamwork support

Augmented reality

Virtual reality

Serious Games

Education Robotics



Geogebra

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Online education platforms

Learning Management System

Classroom participation systems

Simulations

Microworlds

Teamwork support

Augmented reality

Virtual reality

Serious Games

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Minecraft

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Online education platforms

Learning Management System

Classroom participation systems

Simulations

Microworlds

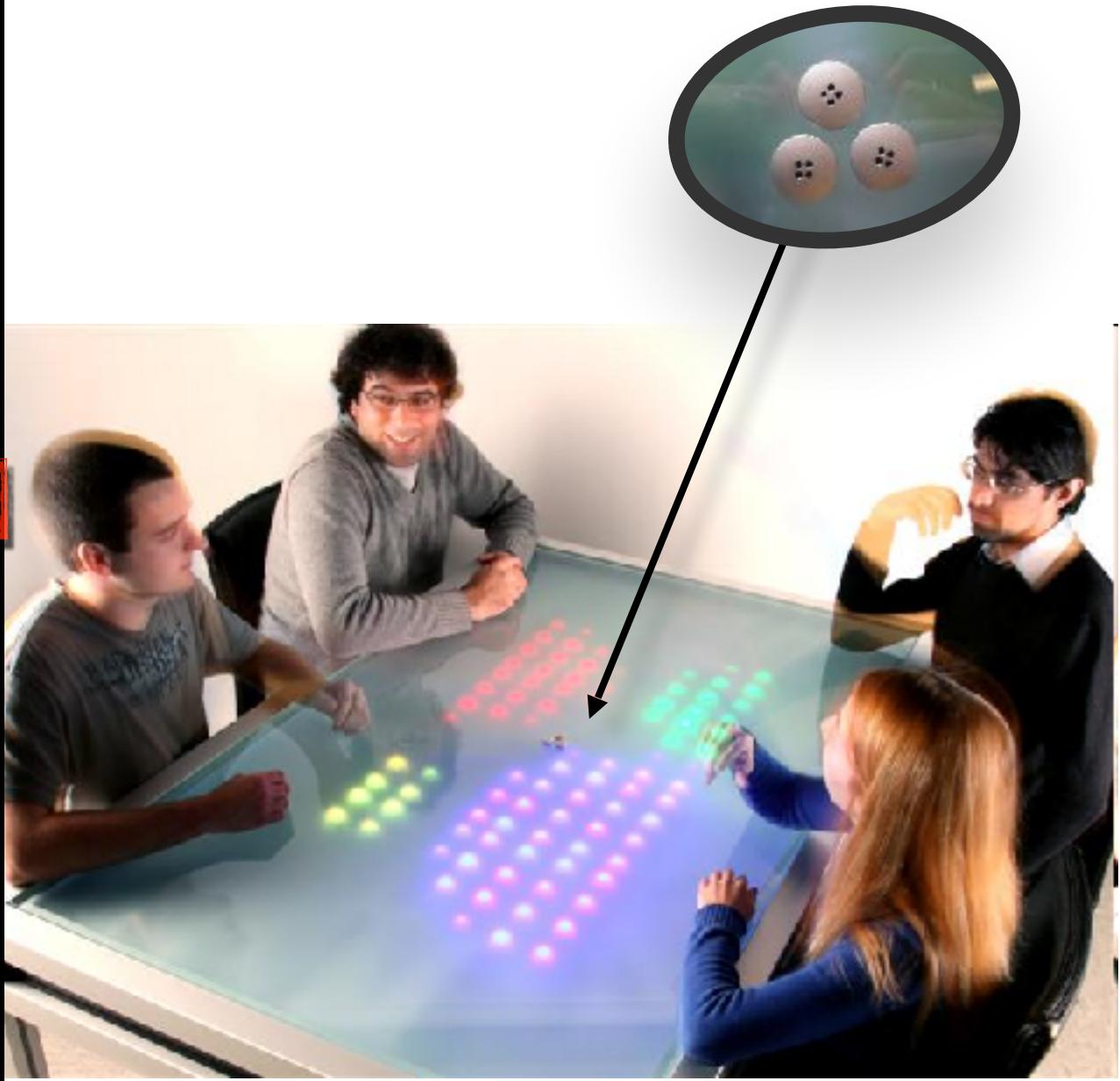
Teamwork support

Augmented reality

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Serious Games

Education Robotics



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Online education platforms

Learning Management System

Simulations

Microworlds

Classroom participation systems

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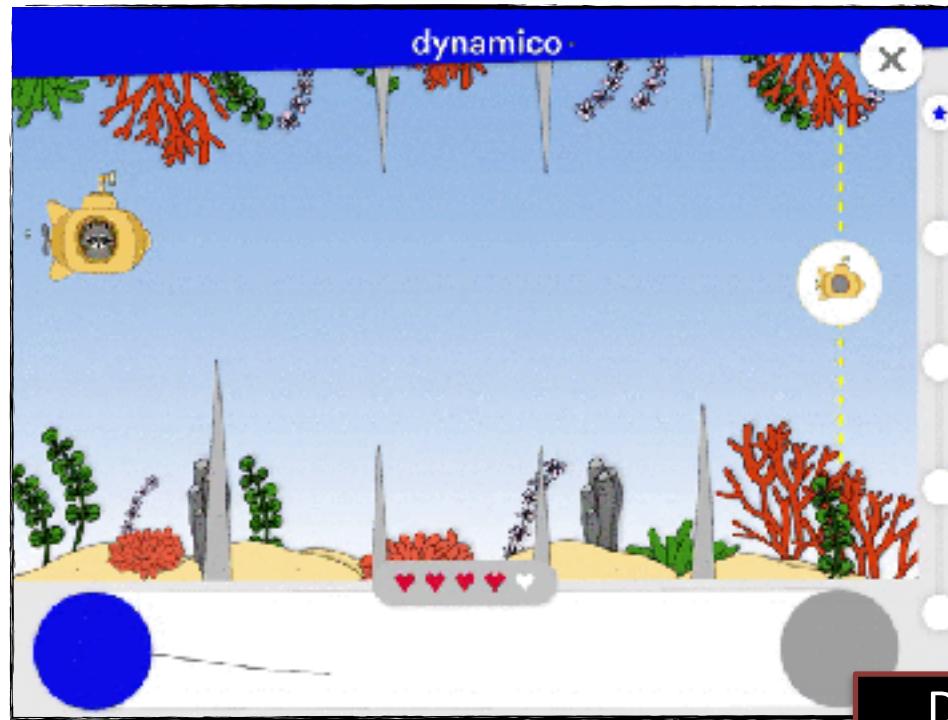
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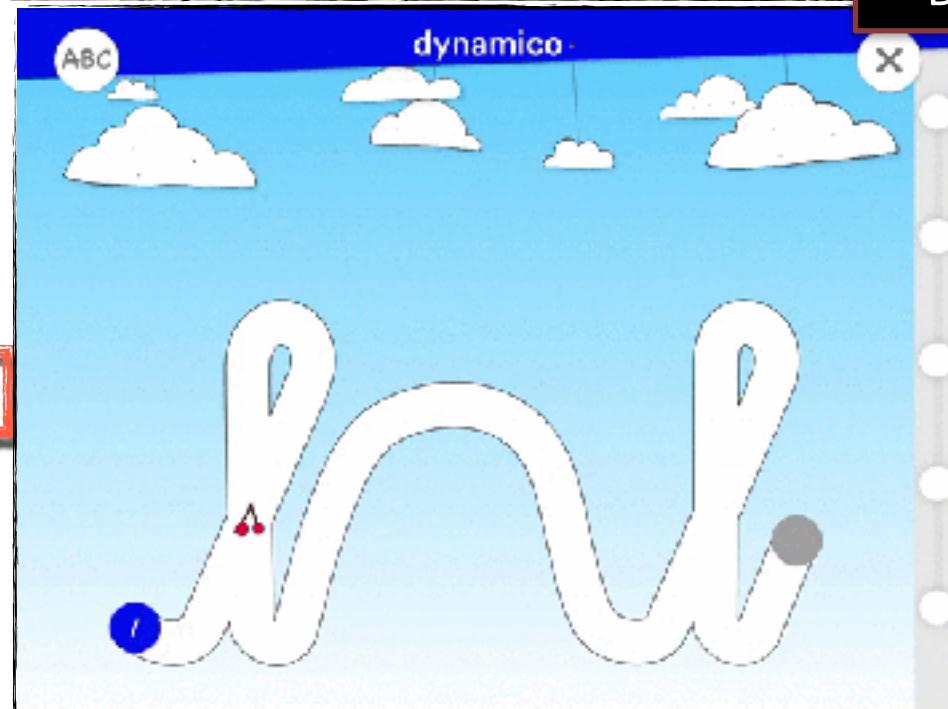
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- Drill & Practice
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- Education Robotics



Dynamico



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Online education platforms

Learning Management System

Simulations

Microworlds

Classroom participation systems

Teamwork support

Augmented reality

Virtual reality

Serious Games

Education Robotics



thymio



Cellulo



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Online education platforms

Learning Management System

Classroom participation systems

Simulations

Microworlds

Teamwork support

Augmented reality

Virtual reality

Serious Games

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many technologies !

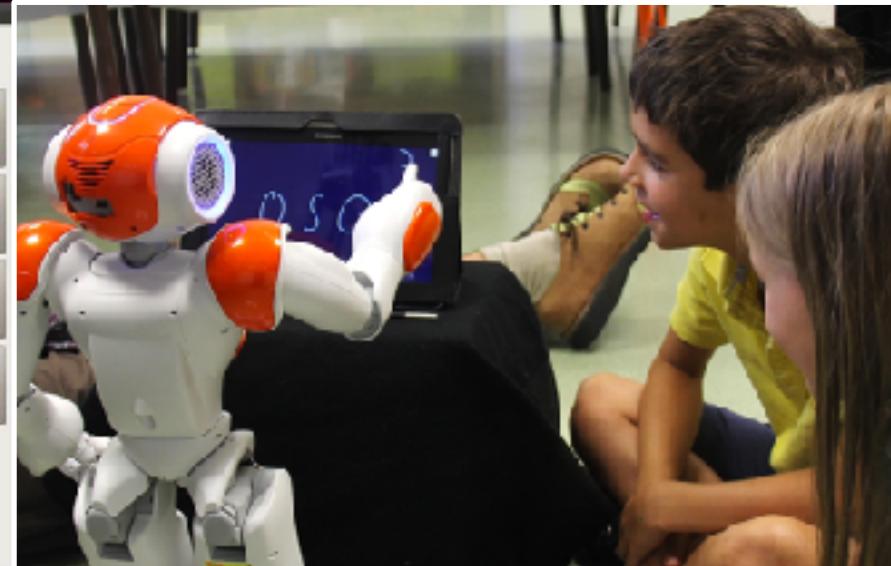
how do they support learning ?

how do we learn ?

Learning what ? Digital Skills

Learning **how** ?

Digital Tools

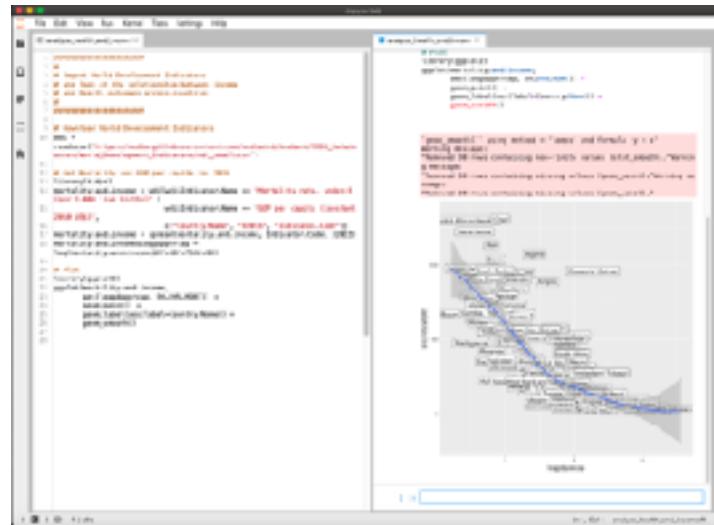
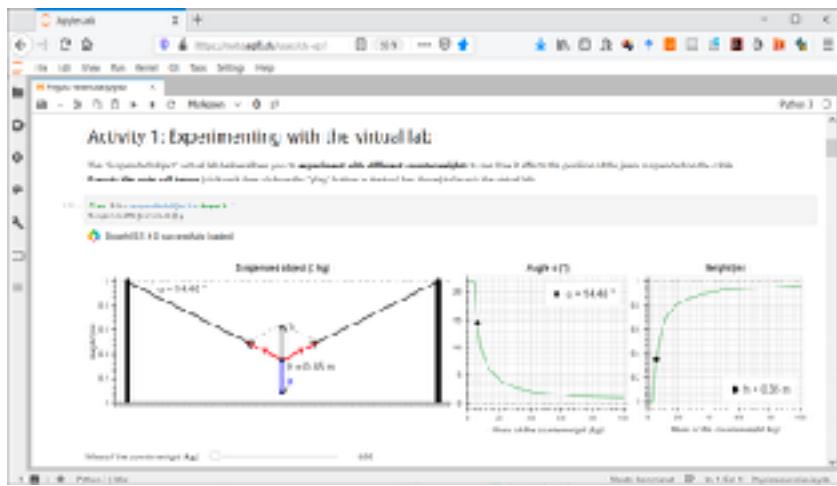


Learning how ?

Physics

Learning what ?

Data Sciences



Digital Tools

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Simulations

Microworlds

Classroom participation systems

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Serious Games

Education Robotics



Digital Skills

Computational thinking

Coding

Data analyses

Makers spaces

Additive manufacturing

Sensors

IOT

Networks



Digital Kills

Computational thinking

Coding

Data analyses

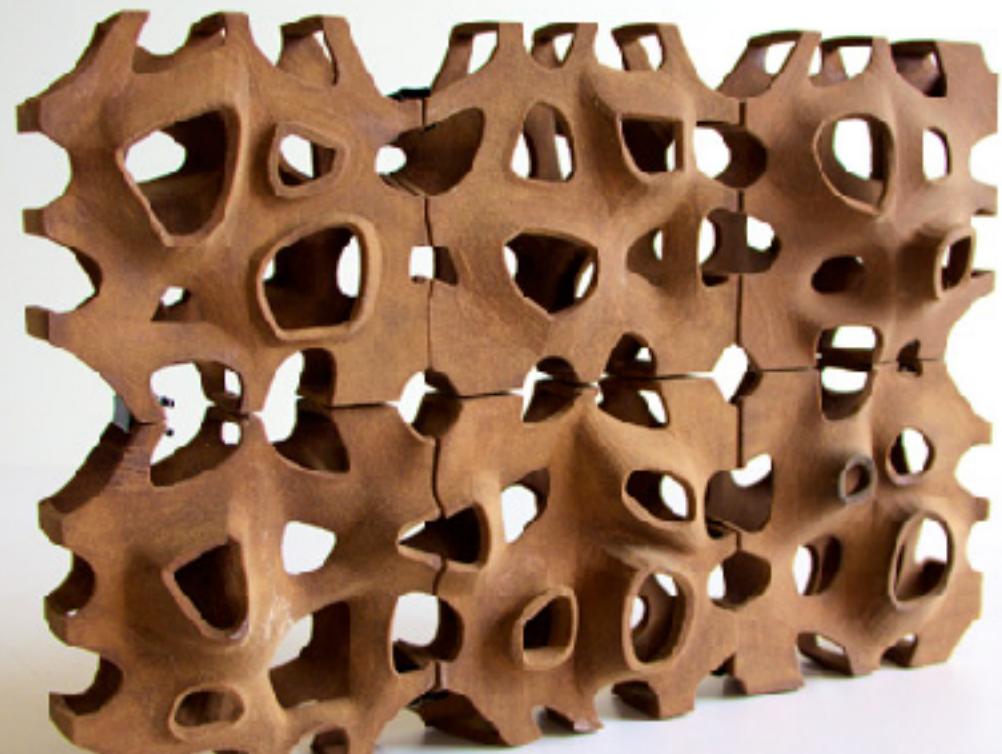
Makers spaces

Additive manufacturing

Sensors

IOT

Networks



Week	CS-411	
	Course (Friday 10:15 – 10:00 in COViZ)	Project (Friday 12:00-14:00 in INF 119)
W1 21/02	Chapter 1: Learning technologies	Experience a PS-I approach (form groups, share all resources)
W2 28/02	Chapter 2: Memory & Learning	Decide project idea
W3 07/03	Chapter 3: Mastery Learning	Analyze the learning tasks (identify learning goals, tasks, interventions, blah)
W4 14/03	Chapter 4: Discovery learning	Design scenario
W5 21/03	Chapter 5: Designing Experiments	Implement the scenario
W6 28/03	Chapter 6: Social Cognition	Implement the scenario
W7 04/04	Chapter 7: Augmented reality	Implement the scenario
W8 11/04	Chapter 8: Statistical analysis <i>Patrick Jermann</i>	Implement the scenario
18/04 25/04		Easter Break
W9 02/05	Chapter 8: Statistical analysis <i>Patrick Jermann</i>	Run experiments
W10 09/05	<i>Chapter 9: Maker Spaces</i>	Run experiments
W11 16/05	<i>Chapter 10: Computational thinking skills</i>	Analyse Data
W12 23/05	<i>Chapter 11: Generative AI in Education</i>	Support for Statistical analysis <i>Patrick Jermann</i>
W13 30/05		

CS-411 : 6 credits !!!

- Written Exam: see next year exam on Moodle
- Project : Design an I-PS vs PS-I experiments
 - Teams of 3
 - Select a difficult topic to understand
 - Analyse de tasks
 - Design the PS and I learning Activities
 - Run the experiment
 - Run the statistical analysis
 - Write the report

All instructions on Moodle and at 12:30

What will learners learn ?

(not something trivial)

Some of the topics you can choose from include:

1. Bayes' theorem
2. Recursion
3. Entropy in physics
4. Information entropy
5. Gradient Descent
6. Gerrymandering

Other topics are acceptable, but please discuss with one of the TAs first before submitting.



Final Report

(not something trivial)

1. **Introduction (½ page)**
 - a. Introduce the topic
 - b. Introduce the target audience as defined in the tasks
2. **Learning Goals (½ page)**
3. **Task Analysis (1-2 pages)**
4. **Lesson Design and Activities (1-2 pages)**
5. **Experimental Design (1 page)**
6. **Implementation (1-2 pages)**
7. **Participants, Data, and Analysis (1-2 pages)**
8. **Conclusions and Reflection (½-1 page)**