



Teaching with Technology Guide

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Authors – teachers from: Poland, Sweden, North of Macedonia, Reunion - Island

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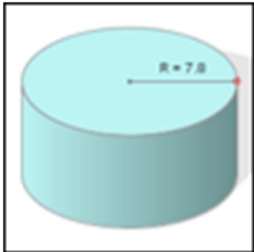
Teaching with Technology

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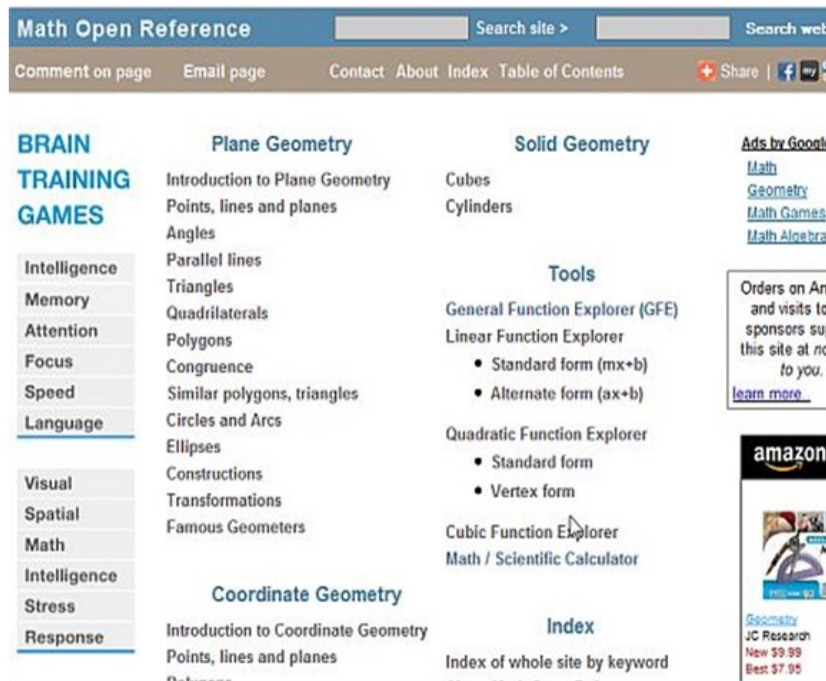
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Math Open Reference



Math Open Reference is a freeware programme that allows teachers make the teaching process better and students better understand the material they learn. It is available from the website <http://www.mathopenref.com>. It is aimed at mathematic education in the high school and it consists a lot of mathematics topics that are grouped into modulus: Plane Geometry, Coordinate Geometry, Solid Geometry, Trigonometry, Calculus and Tools.



Modulus are created in such way that provide:

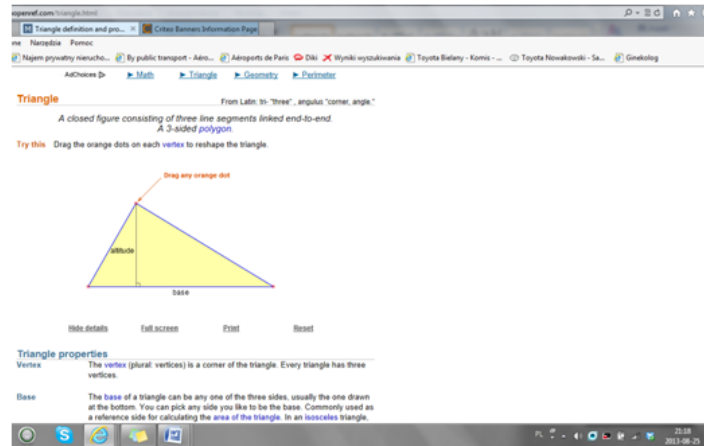
- introduction / definition / basic information to the topics
- vocabulary needed to understand the material
- theorems and samples
- explanations supported by illustrations
- tasks
- exercises to control learning progress
- games.

The programme is interactive for users. This means you can change some values in the object to observe the results of your doing. English is the language of the programme so apart from learning Mathematics both teachers and students can improve their language skills by using it.

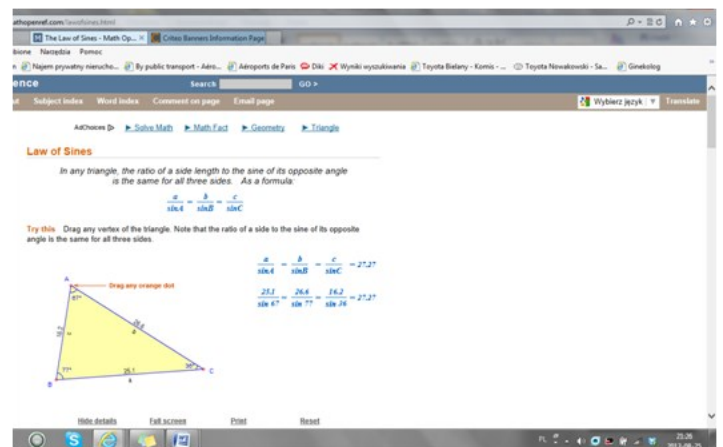
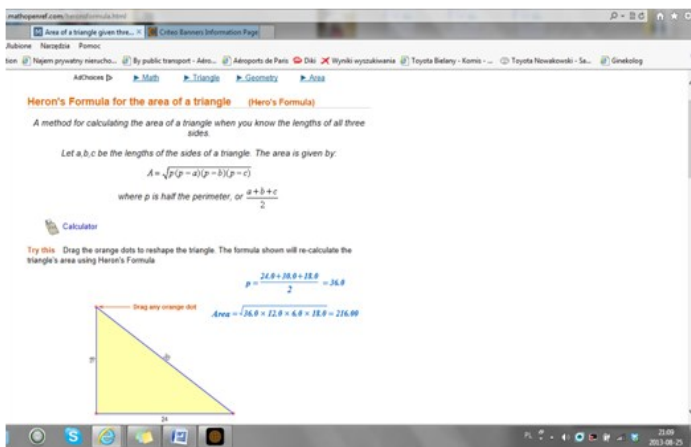
Math Open References is an useful tool to teach especially Geometry – an area of Mathematics that integrates numbers and calculations with the real world.



Teachers and students do not need a textbook at all to be familiar with the topic “Triangles” for example. It is possible to start teaching or learning knowing nothing about these mathematics objectives because the first chapter provides the definition of triangle.



The more the students know the more difficult issues can be done.



Math Open References is the programme that is worth using in the classroom. It is very supportive for everybody who is interested in teaching or learning Mathematics on the level of secondary education.

By Aneta Popiołek, Poland

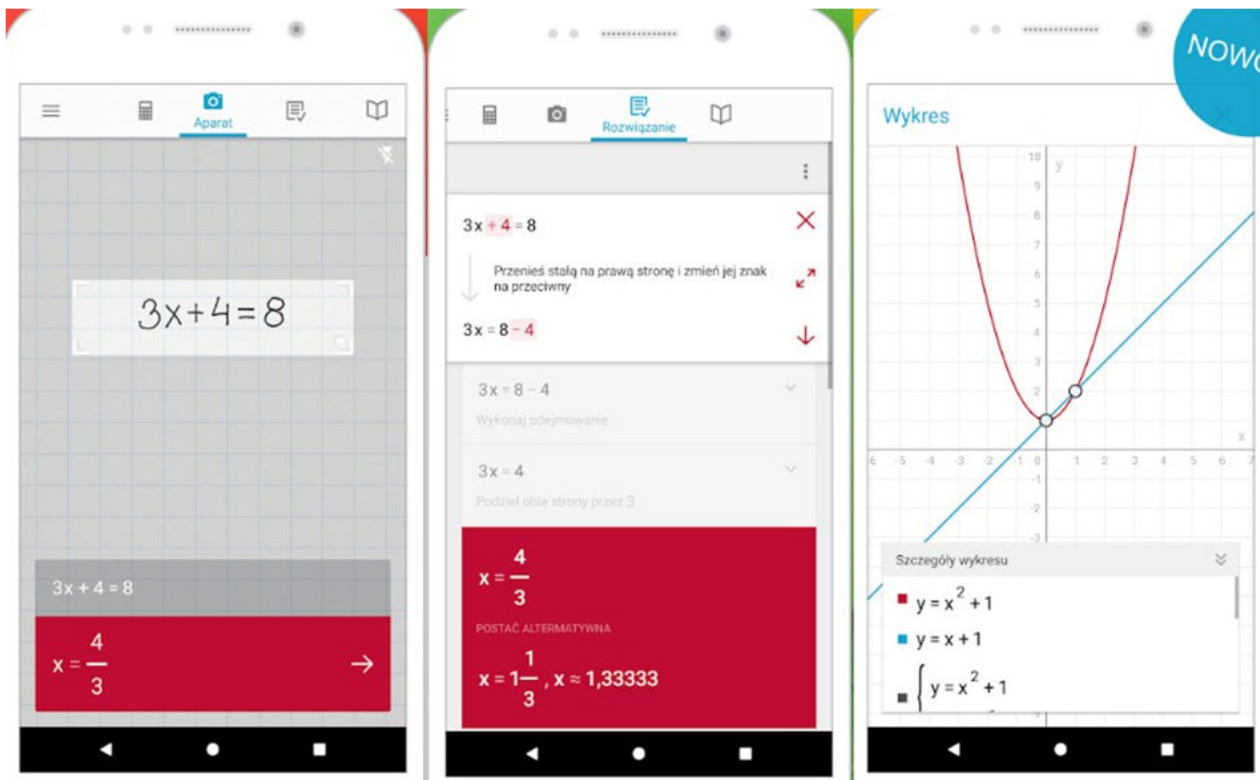


PhotoMath



photomath
smart camera calculator

PhotoMath is a mobile application for Android smart phones and tablets used to perform math tasks. It works close to the calculator, but does not require manual development of the activity. Just point your phone camera at the equation and PhotoMath will display the result.



PhotoMath is quick help in solving mathematical operations - both the simplest and more complex. The application deals with equations, systems of equations and linear and quadratic inequalities. PhotoMath performs operations not only on integers, but also on fractions and roots. What's more, we can solve tasks related to logarithms, trigonometry, exponential functions, derivatives or integrals using the application. The program, apart from the result, will display all stages of calculations, thanks to which it will be easier for us to understand the given task. PhotoMath can be invaluable when solving more difficult examples, especially since it recognizes both printed and handwritten text.

By Bożena Szymańska-Pakos, Poland



Quizizz – online tool - <https://quizizz.com/>

Quizizz is an online free tool for teach and learn anything, on any device, in-person or remotely and that tool allows to teachers and students to create and use one another's quizzes. This tool commonly is used for assessment the students or to check their knowledge gained in a particular area. After providing students with a unique access code, a quiz can be recorded live as a timed competition or used as a homework with a specific deadline. After the quizzes have been completed, students can review their answers. Furthermore, the resulting data is compiled into a spreadsheet to give the teacher a clear visual of the students' knowledge in order to analyze trends in which areas might need the most focus in the future. This immediate feedback can be used by teachers to revise future learning activities and altar the focus of material by putting a larger emphasis on concepts where students gained a lower level of knowledge.

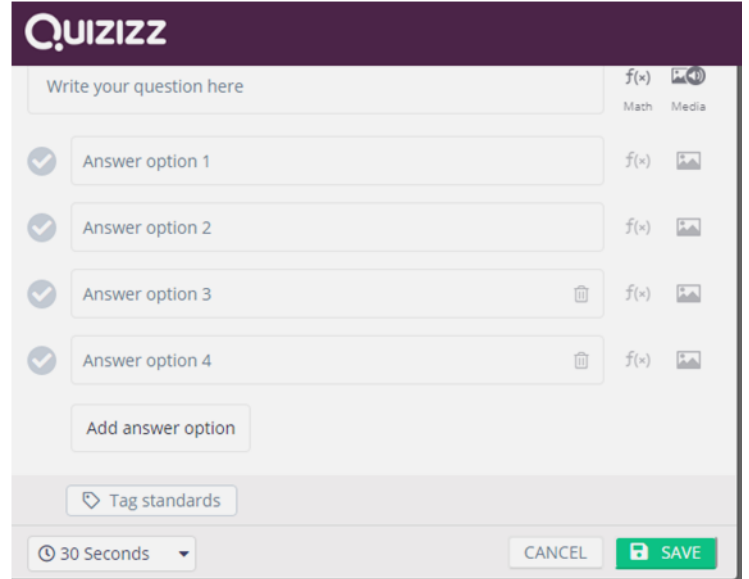
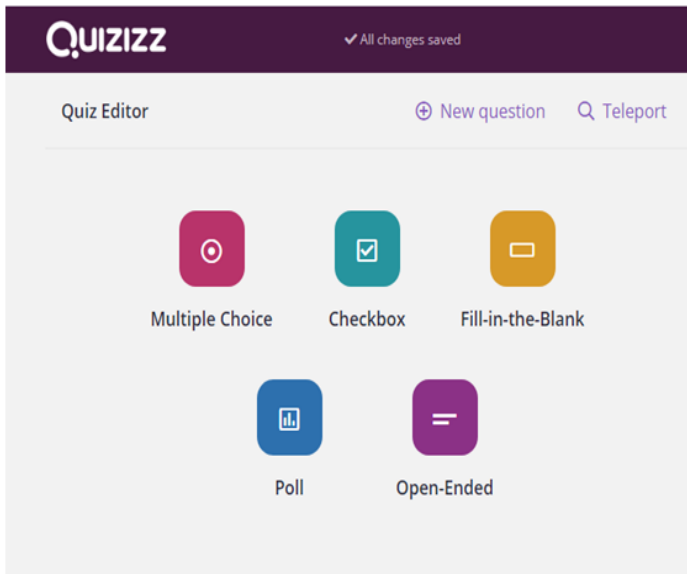
Also on the website of this tool there are a large number of free created quizzes from teachers in different fields such as: Mathematics, English and Language Arts, Social studies, Science, Computer Science and Skills for which do not required a special access code to start the quiz.



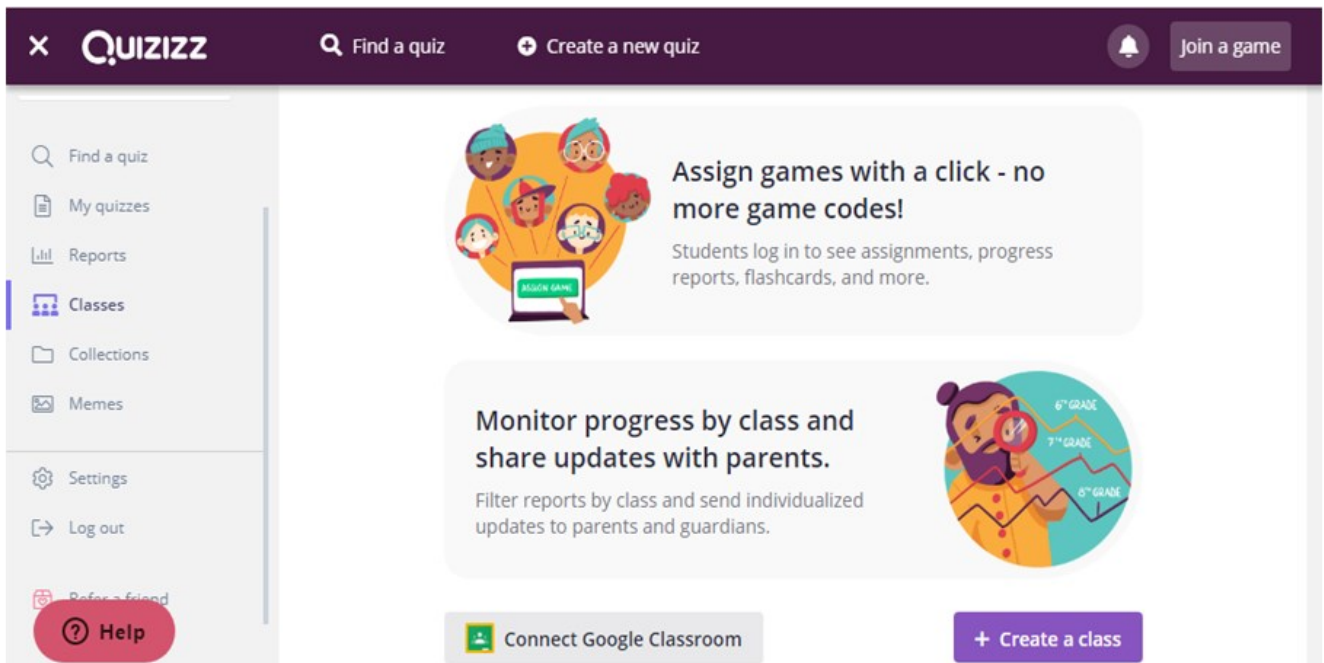
Explore millions of teacher-created quizzes



For to create a quiz for the first time, it is needed to create an account with the Sign Up option. After log in, select the option Create a new quiz, put the name of the quiz and choose relevant subject . This tool offers the ability to create a quiz with different types of questions such as: Multiple choice, Checkbox, Fill-in-the-Blank, Poll etc. Also in the question or in the answers have a possibility to add math equation, image or audio. For each question you can choose the time allotted to solve the question.



Quizizz tool offers the opportunity to create classes with students, who will receive quizzes to be solved with one click, their progress will be monitored and shared this information with parents.



By Ankica Stevanoska Jancheska
Republic of North Macedonia



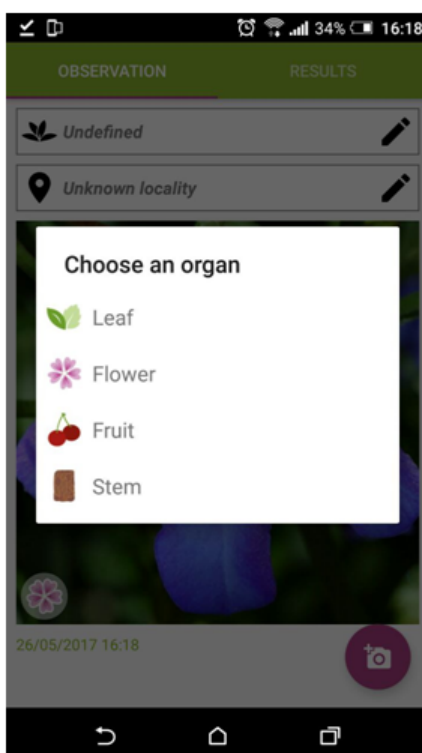
PlantNet - mobile application



Pl@ntNet is a free mobile tool that allows the user to share and view plant identification information. To use this tool, an internet connection is required to enable the tool to get the appropriate data from the database.

Pl@ntNet is a research and educational initiative on plant biodiversity supported by Agropolis Foundation since 2009. Using the tool, the user can search for new plants added to the database, browse for plants at a specific area located in the database, and identify the plant through a photography. The tool gathers information through the collaborative impact of scientists and researchers across the countries who contribute to the growth of available information in the database through their photographs and observations. Therefore, it can be said that this is a system that is still developing which is actually visible at the moment when a plant identification area is selected which does not currently cover all areas of the earth.

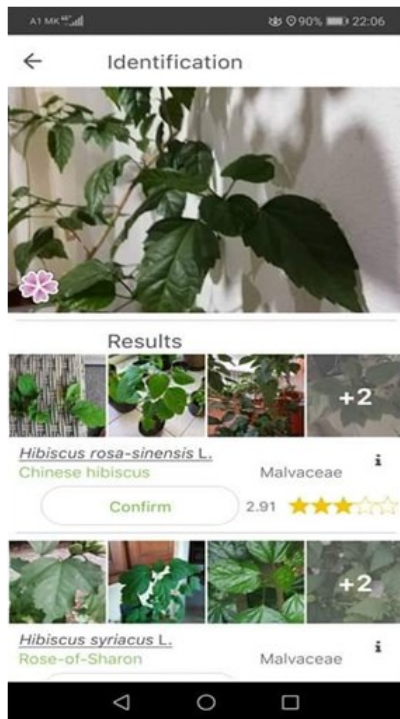
The tool is practical for teaching in nature or project assignments, especially for teaching in biology, nature and society and ecology. In this way, students can get to know the plants around them, at home, in the meadow or in the forest. With this tool, plants that are otherwise put into herbarium can be digitally recorded, and all students and teachers can contribute to the global database through their research.



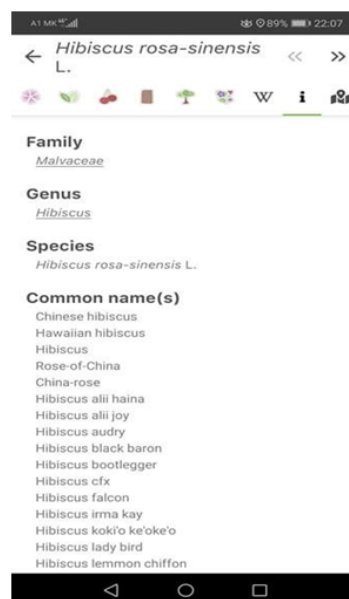
The photo can get as a existing from the gallery or taken at the time when this tool is used.

When a plant is identified by a photography, one element must be selected:

- Leaf
- Flower
- Fruit
- Stem



After that you get a list of results - links. At the appropriate link you will be see the other pictures and information about that plant. Also, with selecting the w option will open a suitable page on Wikipedia where there are additional information about the plant and with selecting the option i you can see the basic information for plant.





Erasmus+

Teaching with Technology



Google classroom



Google Classroom

Google classroom is one of the most popular software to make teaching more productive, collaborative and meaningful.

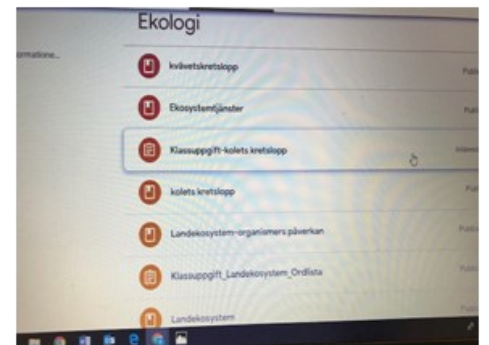
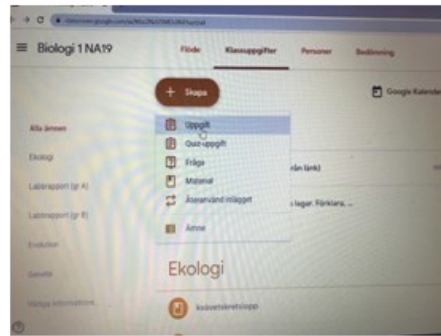
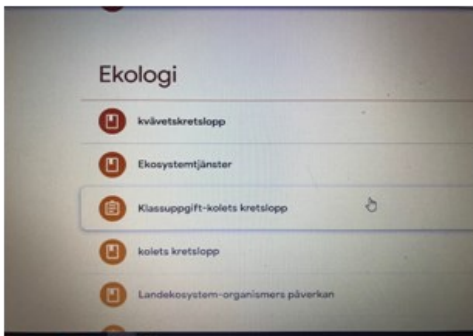
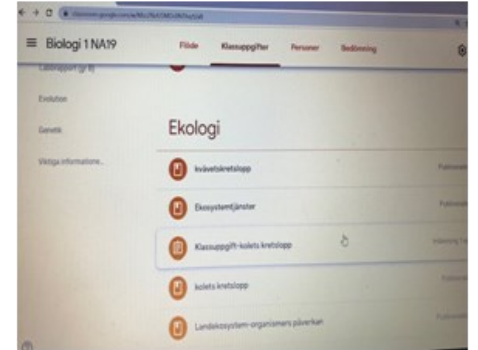
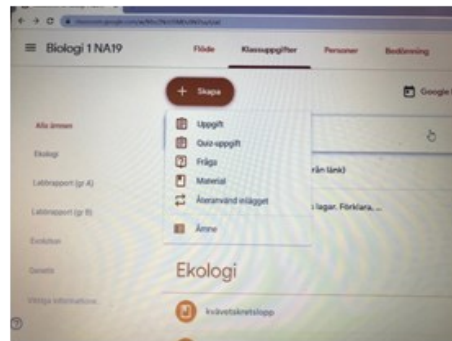
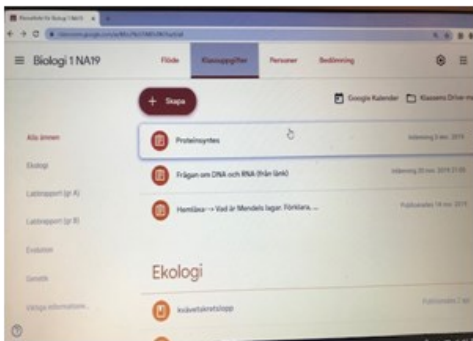
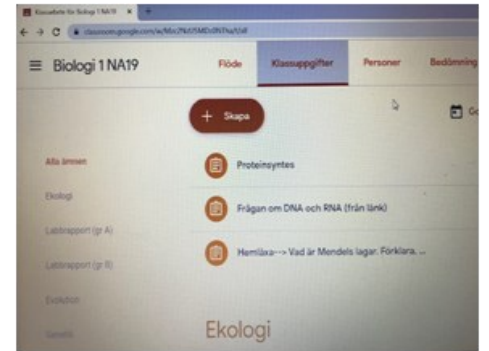
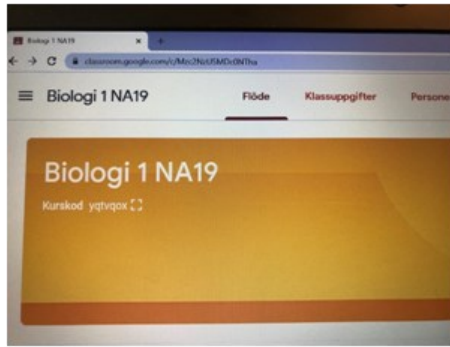
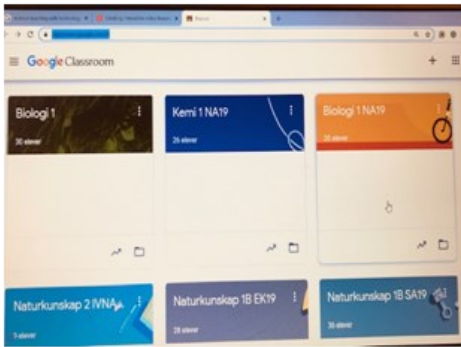


Fig. A google classroom with different function



Google classroom is a smooth and easy-to-use tool that helps teachers manage school assignments. With Google Classroom, teachers can create classes, share homework, send feedback and see everything in one place as it is shown above.

Note: I used my google classroom as example (above). Since the teaching medium is in swedish language, the google classroom is in swedish version.

For making easy for the reader, some swedish words are translated here into english:

<u>Swedish words</u>	<u>Englis hwords</u>
Skapa	Create
Uppgift	Assignment
<u>Swedish words</u>	<u>Englis hwords</u>
Klassuppgifter	Class tasks
Ekologi	Ecology

Source

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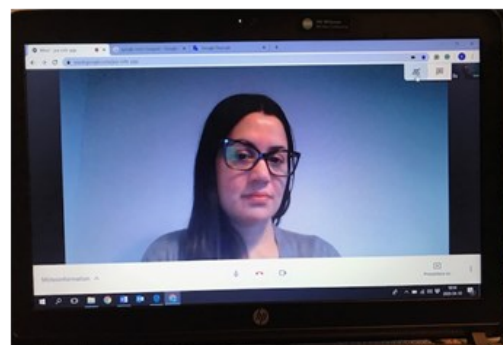
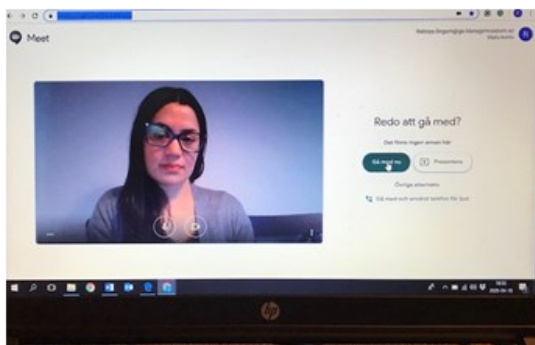
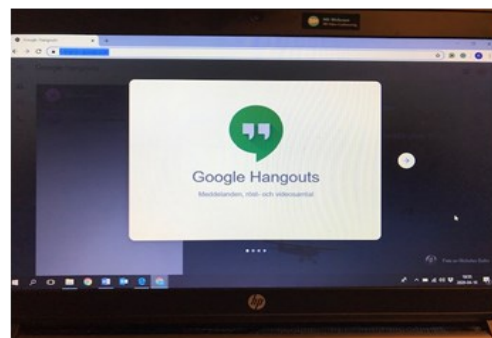
By Rabeya Begum , Sweden



Google Hangouts Meet



Google Hangouts Meet is one of the Google's paid video conferencing software. It supports live conversations with high resolution video and quality sound. Google Hangouts Meet is more or less similar to the other video chat service, but it supports more participants.



Figures. Process of Google hangouts meet

Process

The initial set up is easy and simple. A google email account is pre-requisite to join the platform. The program can be found at www.meet.google.com. The apps allow the users to join pre-schedule meeting by choosing the link. Clicking on that link will provide the access to the video conference. Same link will be invited to other participants and participants will get an option, "go with" (last picture, left hand side "gå med"-in swedish) to attend in the same conference room with their own live video and sound. The platform shows the complete list of the participants and they will provide an option to write at the same time in their message box which pop up at the bottom of the computer. During the conference a teacher can teach by presenting his/her power point presentation which will be shown to every participants/students computer's or mobile's screen.

Sources

<https://zapier.com/blog/google-hangouts-meet-guide/>

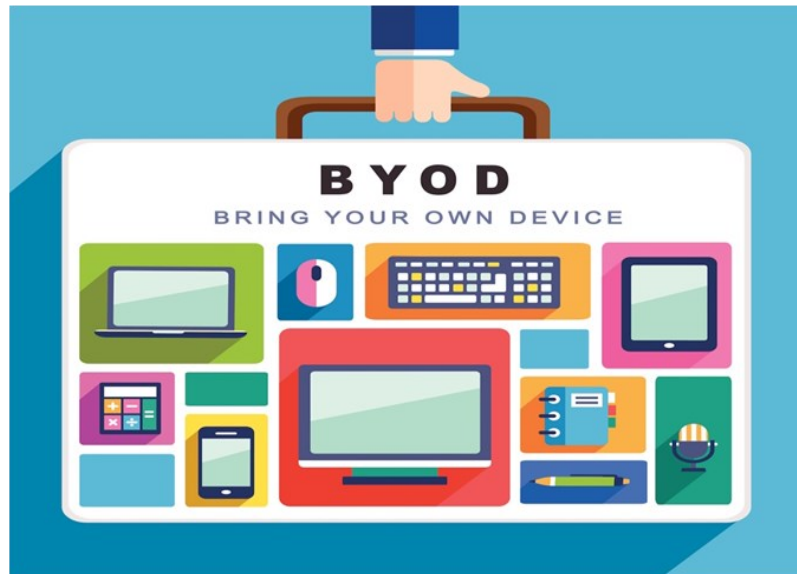
<https://support.google.com/a/users/answer/9282720?hl=sv>

By Rabeya Begum, Sweden



BYOD : By Your Own Device

Using our own digital device in the classroom is a practice which is growing rapidly in school, in particular in Physical Education. Coming from USA, it's called BYOD: "Bring Your Own Device".



It consists on a reverse class practice: users (pupil, teachers...) bring their personal materials to the professional school learning environment. This phenomenon simplifies the organization of participation, motivates and values work. The following remarks are taken from the work of Vincent Tocquin, a physical education teacher in France.

BYOD, what are the supposed benefits:

- the data collected are on the student's equipment. They can therefore access it at any time.
- There are also no more problems about storage on external machines.
- Motivation, values work, simplify the organization of the classroom.

BYOD, what are the problems with its implementation:

- What type of data can be exchanged
- How to guarantee the security and the respect of personal data
- Which software tools to guarantee data exchanges
- How to set the limit in the learning tool and personal use when entering the classroom

One of the models for integrating digital technologies and the "BYOD" is the SAMR. Developed by Robert R. Puentedura, taken over and developed in Physical EDUCATION BY Thomaszower and Lacroix (2015), this model explains how digital technology can really impact teaching and learning.



He distinguishes 4 levels of integration:
Substitution / Increase / Modification / Redefinition

Level 1: Substitution

At this first stage of integration, digital technologies replace existing tools and are used to perform the same tasks as before: for example, collect data in digital rather than paper format.

Level 2: Increase

Digital technologies bring here a complement to more efficiently carry out common tasks: take information on pupil performance to extract a usable analysis.

Level 3: Modification

Technologies modify existing tools by transforming and enriching usual school tasks.

Level 4: Redefinition

Technologies are helping at this stage to create or redefine new tasks that were previously impossible: for example, the use of the slow motion or “replay” function when watching videos; or the storage functions allow you to collect and memorize data on the performance of each student.



By Rivière Guillaume, Reunion



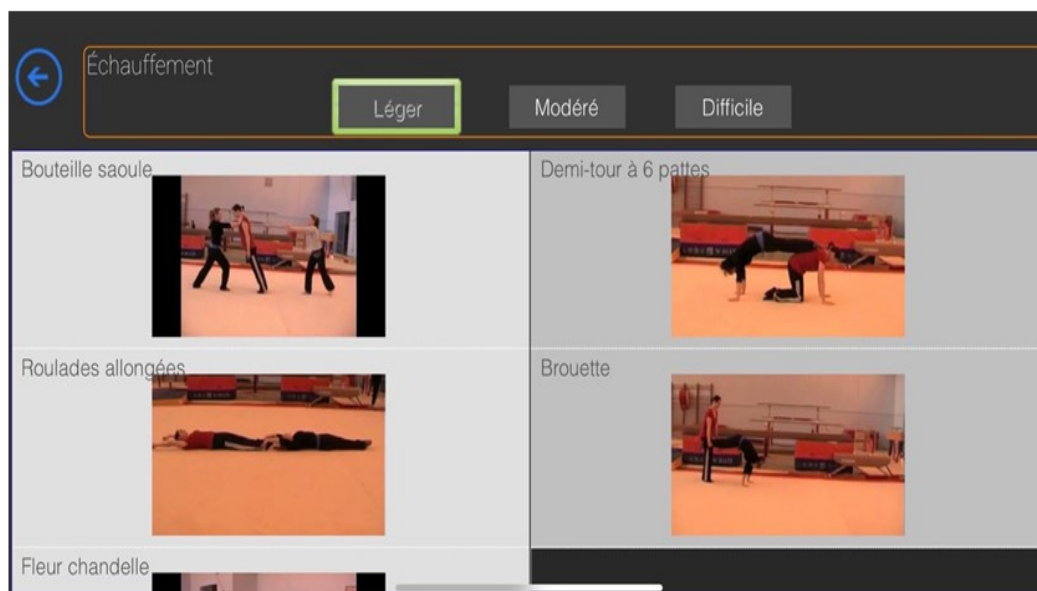
AcroEPS



AcroEPS is a program developed for teaching acrosport. It's a form reproduction activity where pupils need to work in groups (3, 4 or 5). From sheets given by the teacher, the different groups must choose the elements which will constitute their final service.

Thanks to this application, the teacher will be able to put students in autonomy in work. His intervention will only serve to improve their productions.

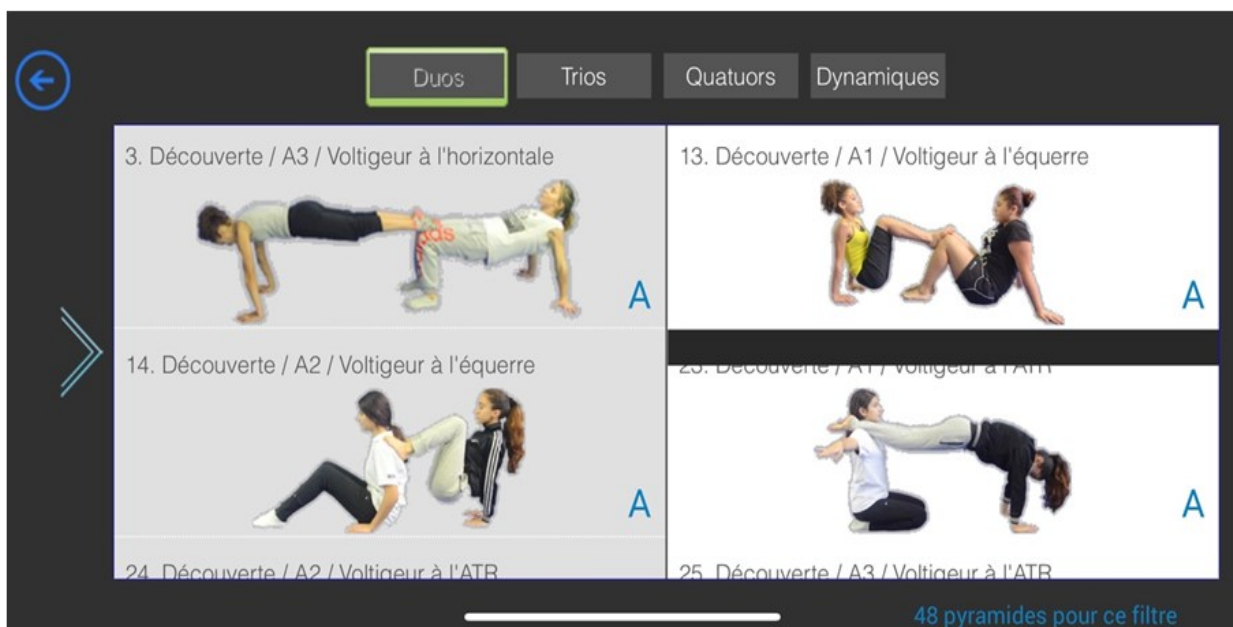
It starts when warming up. According to the teacher's instructions, each group can choose from 3 levels of difficulty (light, moderate, hard) in the menu. Pupils see each video and must repeat the exercise. They are forced to discuss among themselves, analyze the videos and choose the exercises they want to do.





Then students will have access to 3 menus of items. According to their successes or their failures, they will be able to choose more or less easy elements.

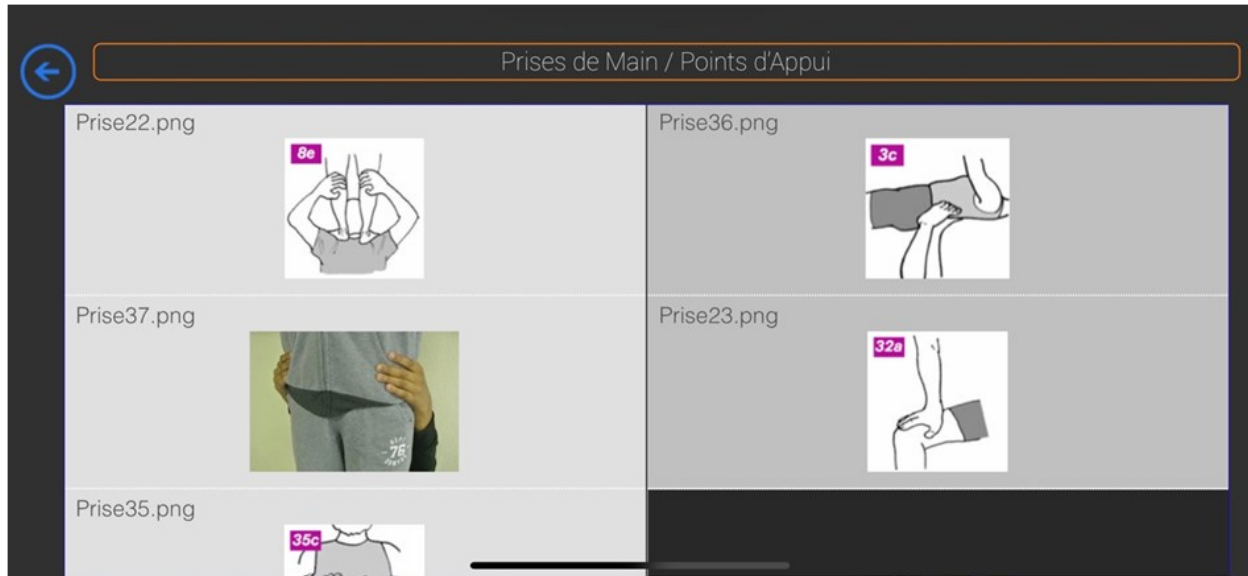
In the first menu (easy elements), they will find a lot of pictures represented elements they have to do and how they have to do it. There will be figures for 2, 3 or 4 pupils. The teacher can impose certain elements and he can leave pupils to choose by themselves others. The only thing they have to do is to reproduce exactly what they see. They can use the device to take pictures of their productions and compare it with the model in the menu. From there, they can discuss of what needs to be improve or not. The teacher will also give them his opinion and give then the means to achieve it.



Other items are available to help pupils:

- Grip and support points
- Aids and displays

Are all points that will facilitate the teacher's task by giving meaning to the learn.



Analysis of this practice using the SIMR model:

- Substitution of paper sheets with explanatory videos.
- Increased knowledge of the result for the student who can relate the observation of his posture to the picture support of the element.
- Modification of the task by simplifying or making it more difficult.
- Redefinition of the task: pupils can learn to relate the criteria of motor performance given by the teacher with the observation made with the pictures.

By Rivière Guillaume, Reunion