



MPTL'20 International Conference on
**Multimedia in Physics
Teaching and Learning**



September 9–11, 2015, Munich, Germany



The impact of ICT and multimedia used to flip the classroom (Physics lectures) via Smart phones and tablets

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1. Introduction (ICT - definition)

Information Communication Technology



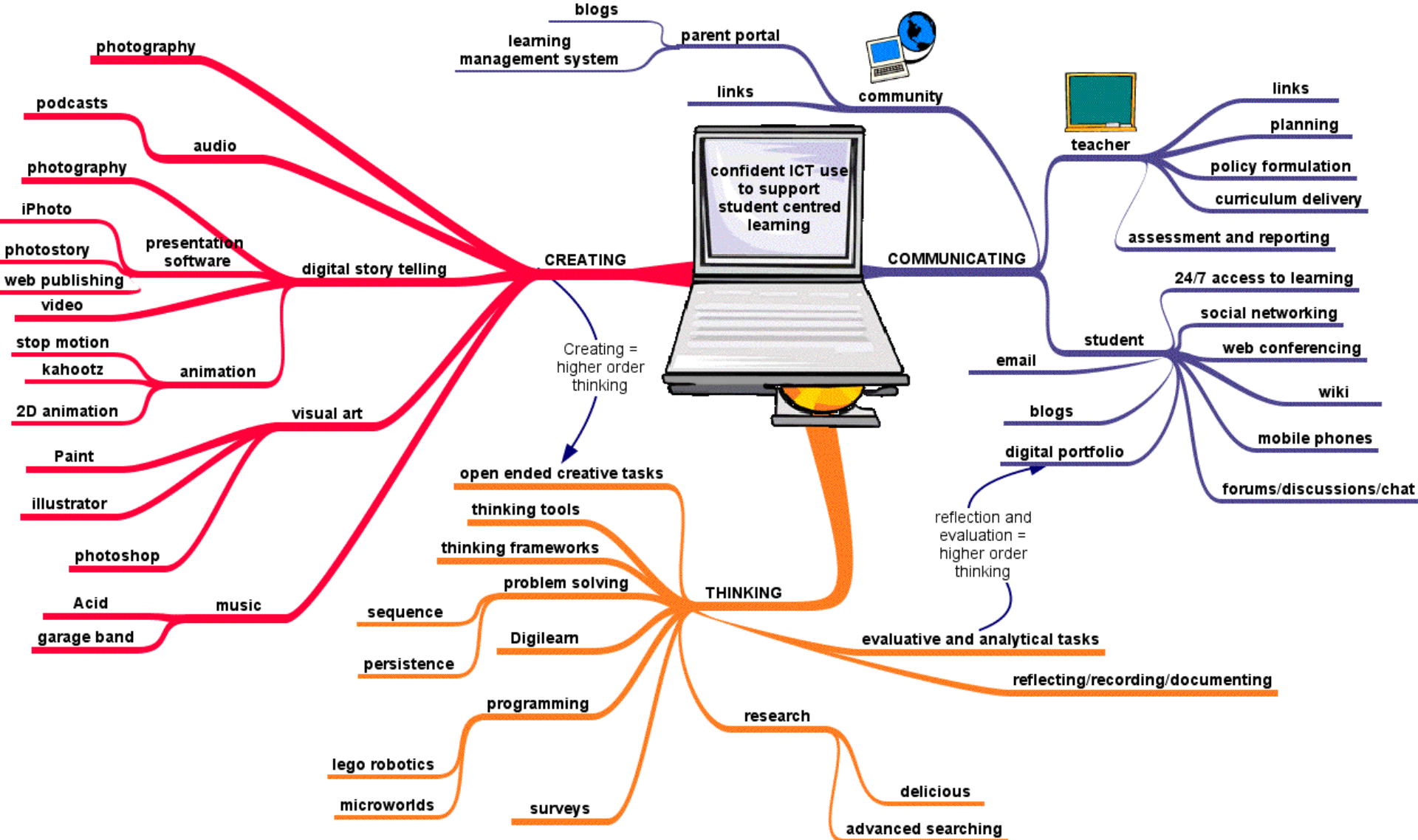
unified communications

- integration of telecommunications
- computers
- necessary enterprise software
- storage
- audio-visual systems

focus to enable users to:

- access,
- store,
- transmit,
- manipulate information.





Concept Map of ICT (*Source: <http://amirrulez92.blogspot.hu/>*)



2. Meaning of ICT in Education?

- can improve student's learning
- lecturers can use better methods

Educational ICT 3 categories:

Knowledge Comprehension

Practical skill

Presentation skill

INPUT SOURCE

Visualiser/
Document
Camera

PC



Application
Software



OUTPUT SOURCE

Projector

Interactive
Whiteboard

Display:
Monitor,
TV..etc.

OTHERS



Digital
Recorder

Other
technology

(Source: <http://www.elmoglobal.com/en/html/ict/01.aspx>)



3. Hypothesis based by papers: *e-Skills EU Newsbrief, March 2010, etc.*

- to improve the memory of students (Inquiry-based learning)
- to improve their understanding (*Nicol, D. & Boyle, J. T. ; 2003*)
- to create interactive classes (use of the [simulation](#))
- to make the lessons more enjoyable
- to flip the classroom
- to improve concentration of the students,
- to rise up the students,
- to evaluate students using diff. methods of ICT ([see more](#))



<https://www.youtube.com/watch?v=HsIxVhucqI0#t=13>



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4. How ICT should be use ?

learn with peer instructions

SCORM materials

wLearning

mLearning

eLearning



use smart phones (QR code)



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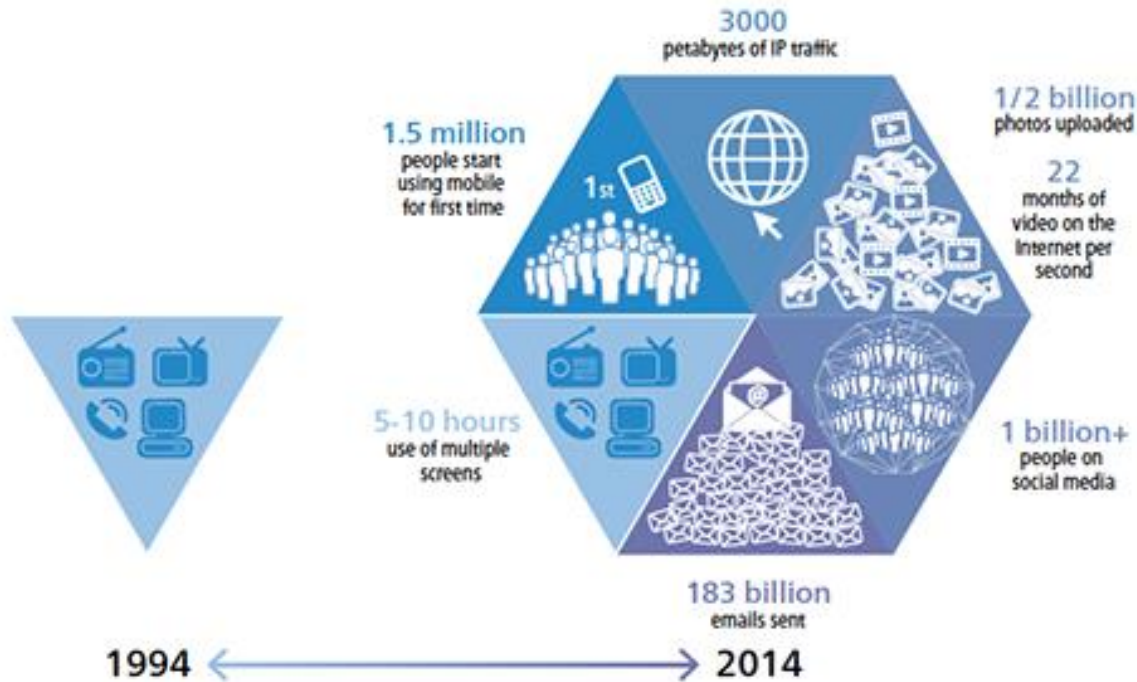


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1

A typical day in the digital world



Source: ITU.

Source: <https://itunews.itu.int/En/6023-Trends-in-Telecommunication-Reform-Report-2015.note.aspx>

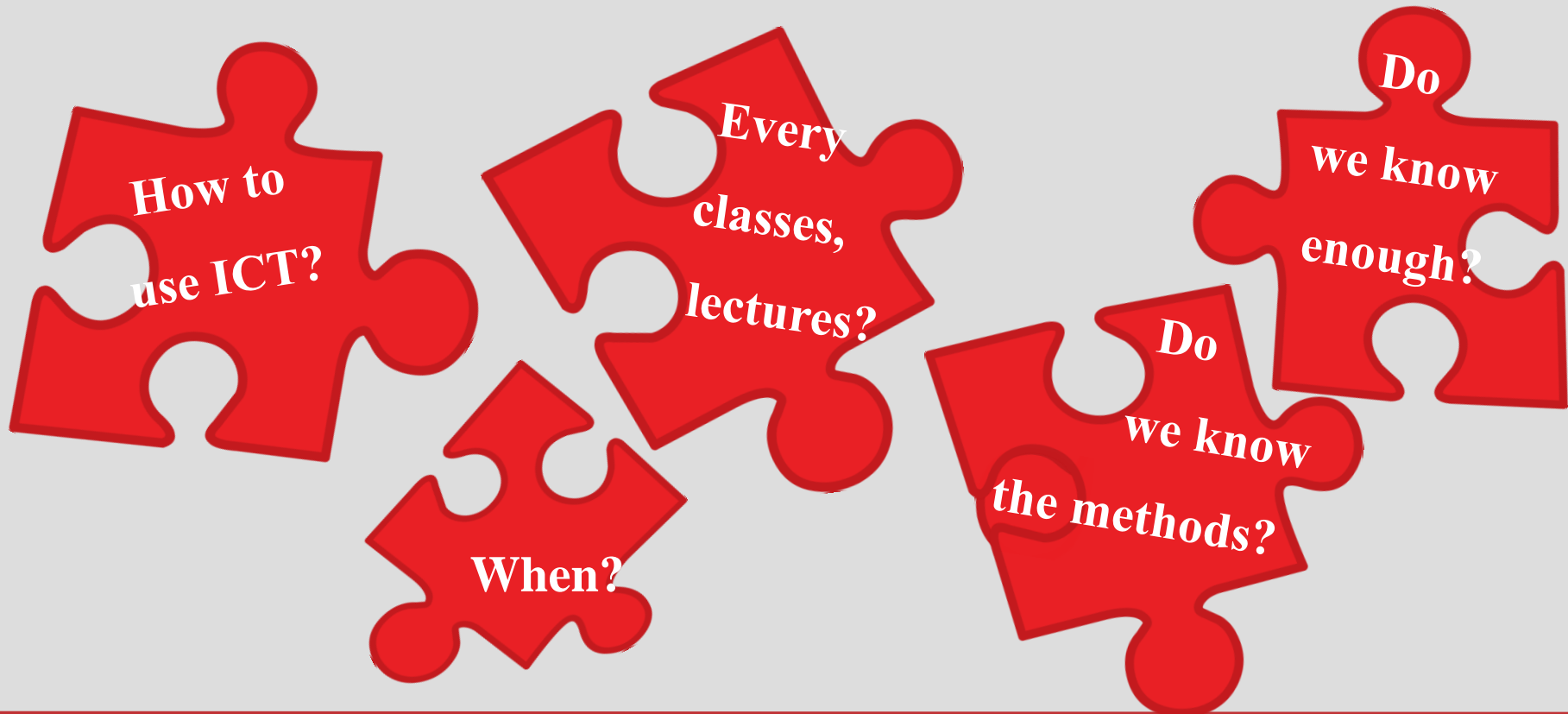


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5. Possibilities for use of ICT in Education





Key question: Are we teaching the right thing?

*Source: Understanding or memorization by **Eric Mazur**, in Conference on the Introductory Physics Course, Ed. Jack Wilson, pp. 113-124 (Wiley, New York, 1997). CRLF*



- the **first winner of the Minerva Prize** for Advancements in Higher Education development of “**peer instruction**” an **innovative teaching method**

(*Source*: <http://news.harvard.edu/gazette/story/2014/05/eric-mazur-wins-minerva-prize/>)

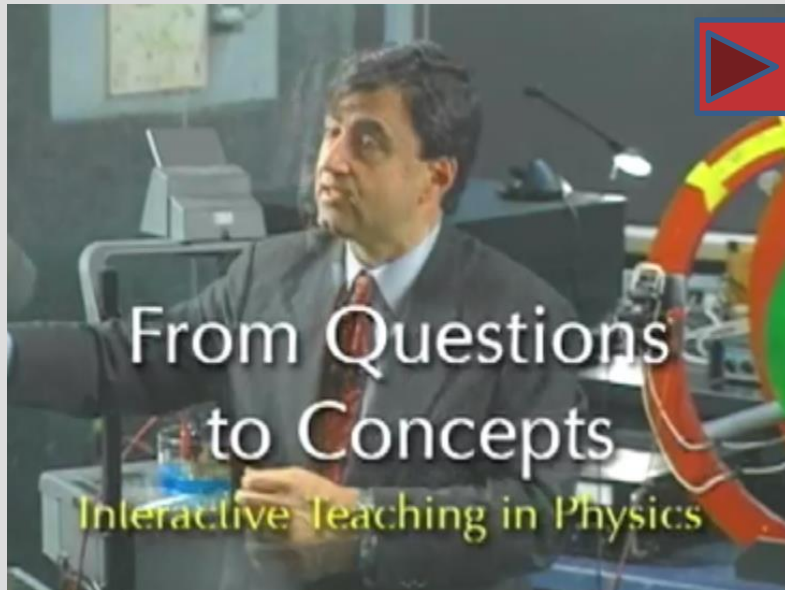


6. Peer Instruction

- developed by Eric Mazur,
since more than 20 years ago

AIM:

- the instructor “**flips**” the classroom,
- motivate students
- students prepare for class by reading or watching videos

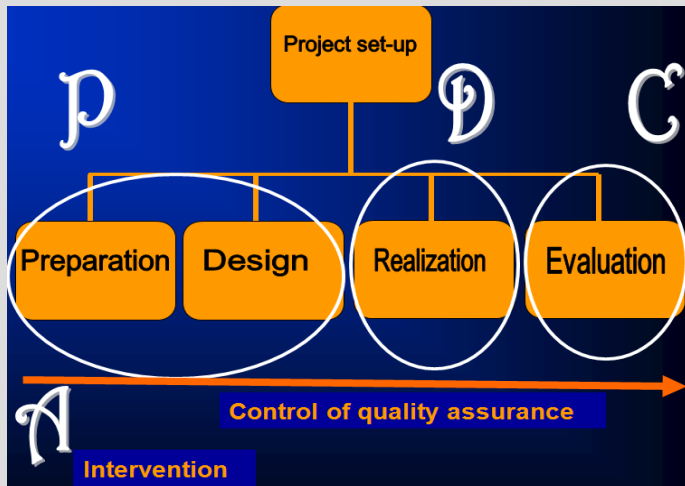


Source: <http://blog.peerinstruction.net/2012/03/15/peer-instruction-101-what-is-peer-instruction/>



7. Methods to use ICT in Education

Project method



Cooperation method



Turn to Your Neighbor



Source 1; <http://www.slideshare.net/jeena.aejy/project-as-a-method-of-teaching-presentation>

Source 2: <http://blog.peerinstruction.net/2014/07/11/peer-instruction-for-computer-science-the-neighborhood/>

Using different methods we should not forget: **Multimedia!**



8. Definition of Multimedia (review)

Multimedia is any combination of

- text,
- graphic art,
- sound,
- animation,
- video,
- interactivity

delivered by computer or





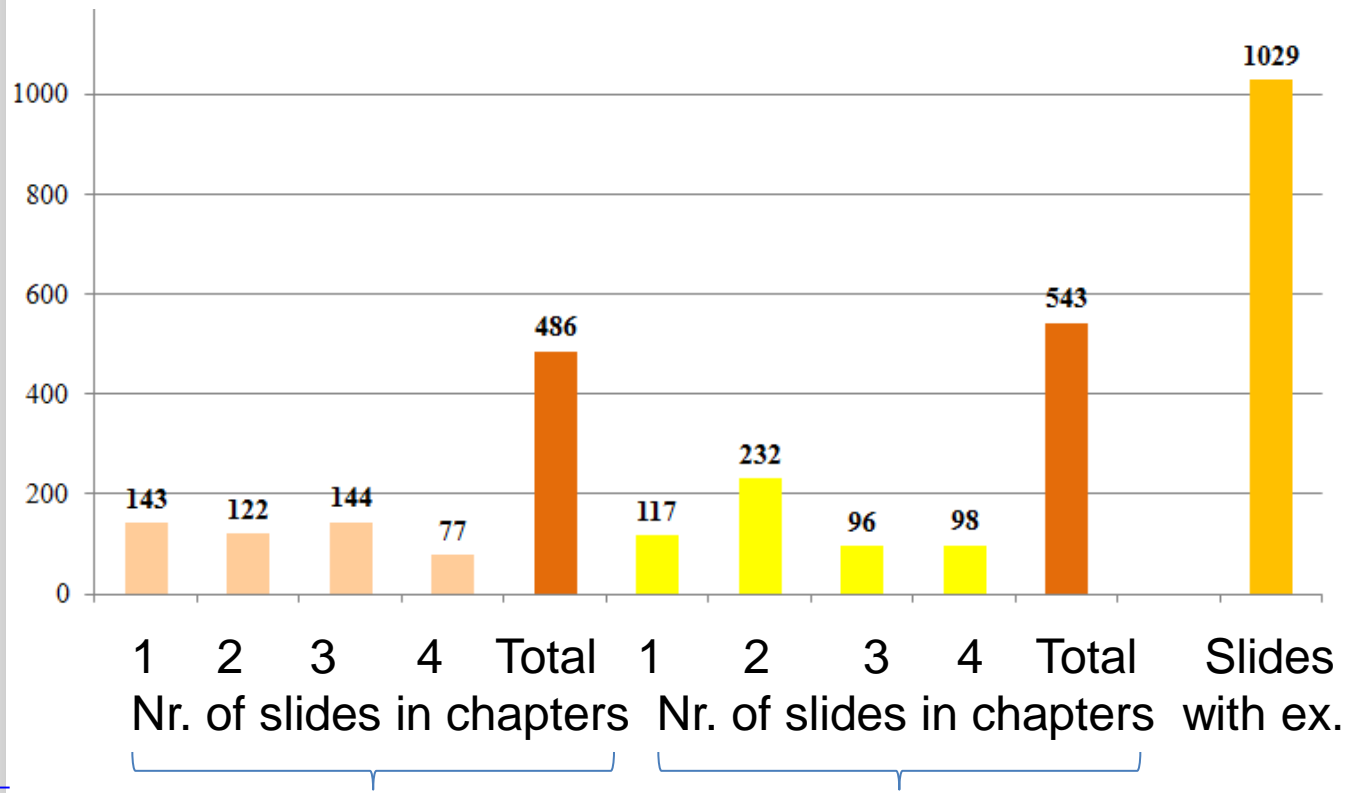
9. Possibilities to flip the classroom

- create e-learning courses (use ILIAS E-learning platform)
- use of e-learning courses by the students
- use peer instruction method during the lecture (tablets, mobile devices) +
use qr code + students smart phone or tablets
- use of free simulations
- use video based experiment
- use Virtual Labs.



Example: e-learning course (Electricity course: 45 hour lectures + 15 hours lab.)

Slides used in the material



<http://youtu.be/Dy9gGAKzSew>



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- **Example:** use peer instruction method during the lecture (tablets, mobile devices + qr code)



<http://b.socrative.com/#>



10. Flip the classroom (Physics lectures) via Smart phones and tablets

- Teach one chapter and use the quiz questions via smart phone
- Requirements

SMART PHONE (for each student)

FREE WIFI

QRDROID apps ([Link to download](#))

LAPTOP for teacher

Pre-prepared quiz

Printed QR code (prepared) or apps



Room name



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Room name: **f862bde5**

Source: <http://www.socrative.com/>



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TEACHER

jarosievitz@gdf.hu

.....

SIGN IN

or



Sign in with Google

Forgot your password? • Get a **FREE** account



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Dashboard Manage Quizzes Live Results



START A QUIZ



QUICK QUESTION



SPACE RACE



EXIT TICKET

Select an option below to end the activity and save the reports.



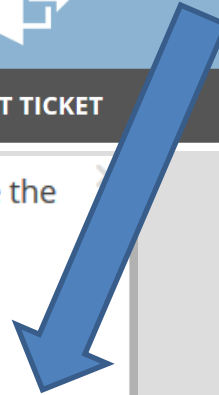
Get Reports



View Chart



To Dashboard



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TEACHER'S VIEW

socrative

ROOM: f862bde5

GET REPORT

Elektromosságtan - Tue Feb 25 2014

Dashboard

Name	Score	1	2	3	4	5	6	7	8	9	10	11
Anon 682b6	55%	C	A	A	A	B	B	True	True	False	True	False
Anon 965e0	82%	C	A	D	B	C	C	True	True	False	True	False
Anon 9e8ae	64%	C	A	A	C	A	B	True	True	False	True	False
Anon a3958	55%	C	A	A	A	B	C	True	True	False	True	True
Anon b872f	73%	C	A	C	C	C	A	True	True	False	True	False
Anon e9d43	64%	C	C	A	C	A	C	True	False	True	True	False
Class Total		100%	17%	17%	50%	33%	50%	100%	83%	83%	100%	83%



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TEACHER'S VIEW



Room: **F862BDE5**

FINISH

Dashboard Manage Quizzes Live Results

0 Refresh

Demo Quiz (from version 1)

Hide Student Responses

Name	A-Z	Progress	#1	#2	#3	#4
Class Total						

Click on Question #s or Class Total %s for a detailed question view

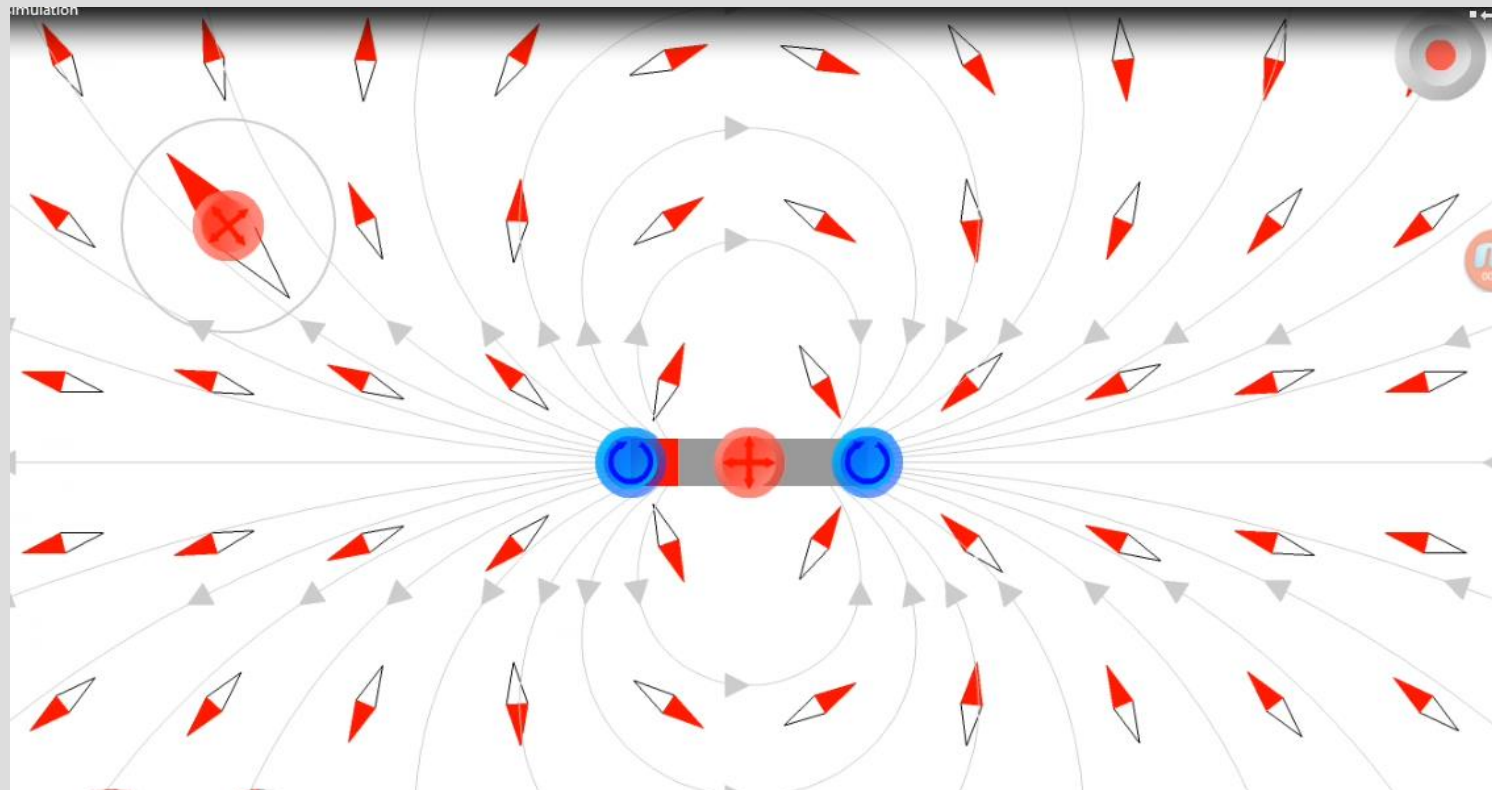


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- **Example:** use of free simulations



Source: <http://www.vascak.cz/>

<http://youtu.be/zro8dYSZAFk>



11. Impact of ICT and Multimedia

- ❖ modernize teaching
- ❖ rise up students' motivation, interest
 - ❖ follow the mobile revolution
 - ❖ use mobile for good purposes
- ❖ follow the different high-tech developments



12. Conclusions

"It is difficult and maybe even impossible to imagine future learning environments that are not supported, in one way or another, by Information and Communication Technologies (**ICT**). When looking at the current widespread diffusion and use of ICT in modern societies, especially by the young – the so-called **digital generation** – then it should be clear that ICT will affect the complete learning process today and in the future."

(Yves Punie, Dieter Zinnbauer and Marcelino Cabrera, 2012)



13. Referencies

1. Beáta Jarosievitz (2011): ICT, Multimedia used in the national and international educational projects, In: Informatika, nr.: 38., 2011., page 22.
http://www.gdf.hu/sites/default/files/informatika_38_6.pdf ;
2. Beáta Jarosievitz (2009): ICT use in science Education, In: „Research, Reflections and Innovations in Integrating ICT in Education” Vol. 1 (Editors: A. Méndez Vilas, A. Solano Martín, J. Mesa González, J. A. Mesa González, ISBN Vol1.: 978-84-692-1789-4) , page: 382-386, Language: English <http://www.formatex.org/micte2009/book/382-386.pdf> ;
3. Vaughan, Tay, 1993, Multimedia: Making It Work (first edition, ISBN 0-07-881869-9), Osborne/McGraw-Hill, Berkeley, 3.o.
4. MISHRA, Punya y KOEHLER, Matthew (2006) Modelo TPACK. Recuperado el 26-4-2012 en <http://www.tpack.org/>
5. Yves Punie, Dieter Zinnbauer and Marcelino Cabrera (October 2006), "A Review of the Impact of ICT on Learning". Available at: <http://ftp.jrc.es/EURdoc/JRC47246.TN.pdf>. (Accessed on: November 19, 2012)

