

**Science Education in School Focused on Inquiry Based Science Education
Bucharest October 2-3 2009**

MODERN APPROACHES OF TEACHING SCIENCE THROUGH CONSTRUCTIVIST EDUCATION

Florentina IOFCIU –School No.22 Mexic &School No195 Bucharest

Florentina IOFCIU- Science Education in School Focused on Inquiry Based
Science Education Bucharest October 2-3 2009

The Information Age

The goal of education in this new age is to prepare students to use their skills to solve real-world problems

Learning Theories

Constructivism.

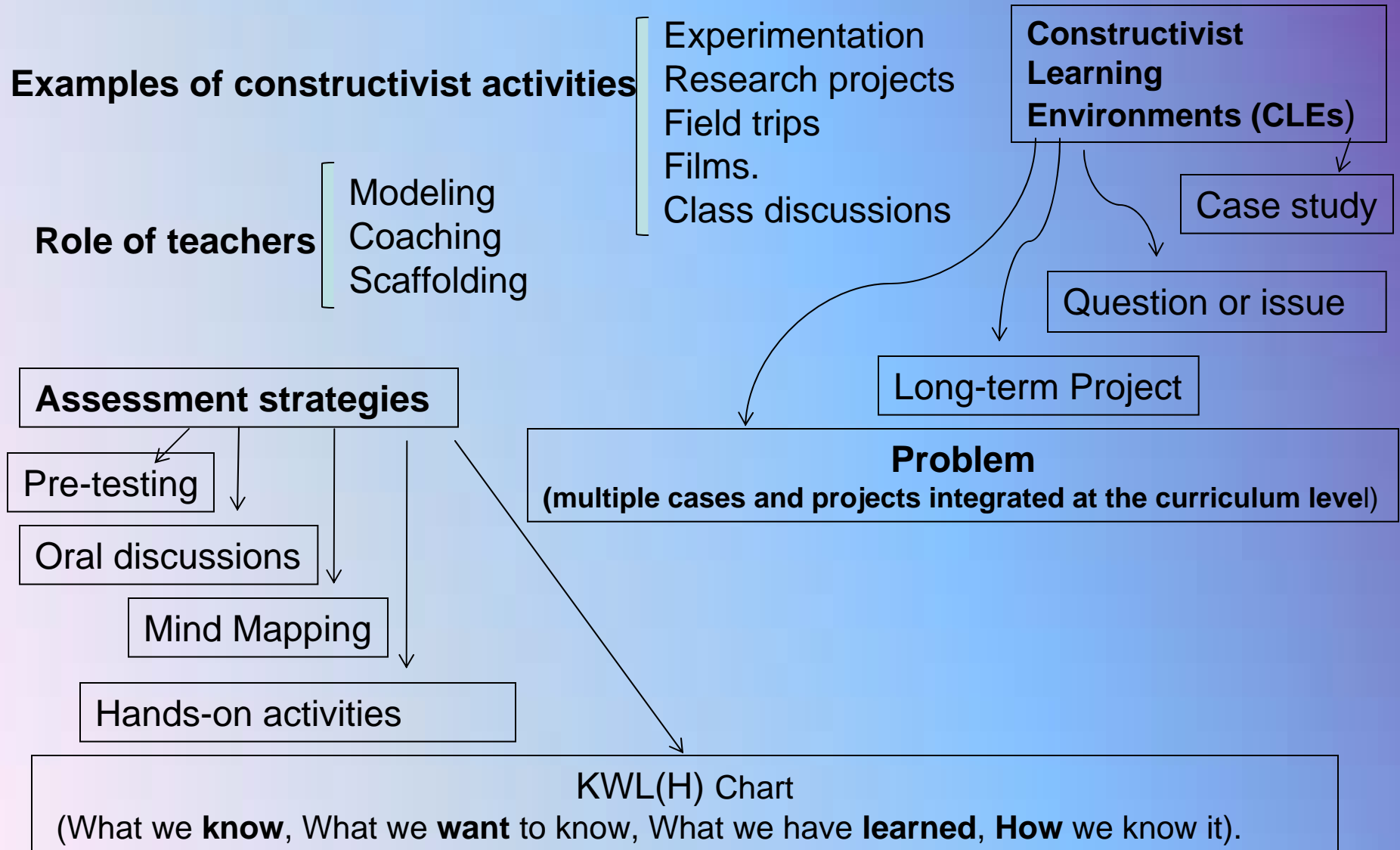
Behaviorism.

Cognitivism

guidelines of current views of constructivism encompass the following criteria:

1. Learning is an active process
2. Knowledge is constructed, rather than innate, or passively absorbed.
3. Knowledge is invented not discovered
- 4a. All knowledge is personal and idiosyncratic.
- 4b. All knowledge is socially constructed.
5. Learning is essentially a process of making sense of the world.
6. Effective learning requires meaningful, open-ended, challenging problems for the learner to solve.

Constructivism



Inquiry Based Learning (IBL)

Is a project oriented pedagogic strategy based on constructivist and socio-constructivist theories of learning (Eik & Reed)

Problem Based Learning (PBL)

Is a student-centered instructional strategy in which students collaboratively solve problems and reflect on their experiences

Project-Based Learning (PjBL)

Is defined as instruction relating questions and technology relative to students everyday lives to classroom projects.

Students form their own investigations of their own group allowing students to develop valuable research skills

The students engage in design, problem solving, decision making and investigate activities.

The students may work in groups and come up with ideas and realistic solutions

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School Project based on NASA Educational Resources

The EDL System Design

COORDONATOR:

- prof. Florentina IOFCIU - fizică
absolventă NASA Space Academy for Educators 2007

COMITETUL DE ORGANIZARE-INDRUMARE:

- prof. Radu CIHODARIU
director
- prof. Ștefania VOICU
director adjunct
- prof. Doina MILITARU - matematică
- prof. Monica CORBUȘ - matematică
- prof. Laurențiu CÎRȘTEA - fizică
- prof. Adriana DUȚĂ - biologie
- Artemiza VĂRZARU - administrator

COLABORATORI:

- Carmen TOADER - bibliotecar
- Viorica CEPOI-SCARLEŢIA - secretar

ȘCOALA NR. 195
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 Sector 3, București
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INTERNATIONAL YEAR OF ASTRONOMY 2009
YURI'S NIGHT 2009
PARTY IN SCHOOL NO. 195
BUCHAREST, ROMANIA

MISIUNEA SPAȚIALĂ 195
 4-12 aprilie 2009
LANȘAREA: VINERI, 10 APRILIE 2009



YURI'S NIGHT 2009 - PARTY IN SCHOOL NO. 195 - BUCHAREST, ROMANIA
MISIUNEA SPAȚIALĂ 195 - PROIECT DE INVESTIGARE EXPERIMENTALĂ
ECHIPELE PARTICIPANTE

CLASA A VI-A A

IRITABLE EGG	Laura Barbu, Ana Maria Breten, Francesca Maria Neagu, Ioana Raluca Trașcă
COMMET	Cezara Pavelescu, Irina Popa, Cristian Budică, Ilinca Baruch, George Vasiliu, Cătălin Taipalaru
GREEN TEAM	Emma Maria Ene, Corina Pirleci, Claudia Florina Manea, Ligia Maria Stăniloiu, Ioana Raluca Ungureanu, Teodora Baltasiu
FOX FIRE	Natalia Maria Câmpeanu, Alexandra Bobaru
SPACE KIDS	Zhang Alexandru, Radu Pompilian, Răzvan Mihăilescu, Mihai Ionescu, Bogdan Gherasim
BOOM	Andreea Ioana Ilie, Andreea Mavrodin

CLASA A VI-A B

C4 ROCKET EGG	Marius Olinescu, Alexandru Floroiu, Mihnea Manole
ROLLING EGGS	Ruxandra Eftimie, Teodora Tatu, Simona Stan, Andreea Cintă-Bine
SPIN EGG PROJECT	Iuliana Dura, Andreea Ursea
F.A.Q. EGG	Bogdan Băjenaru, Răzvan Ciobanu, Bogdan Popa, Alexandru Ivan
EGG	Ioana Matei, Andra Onaș, Ana Maria Drăgan

CLASA A VI-A D

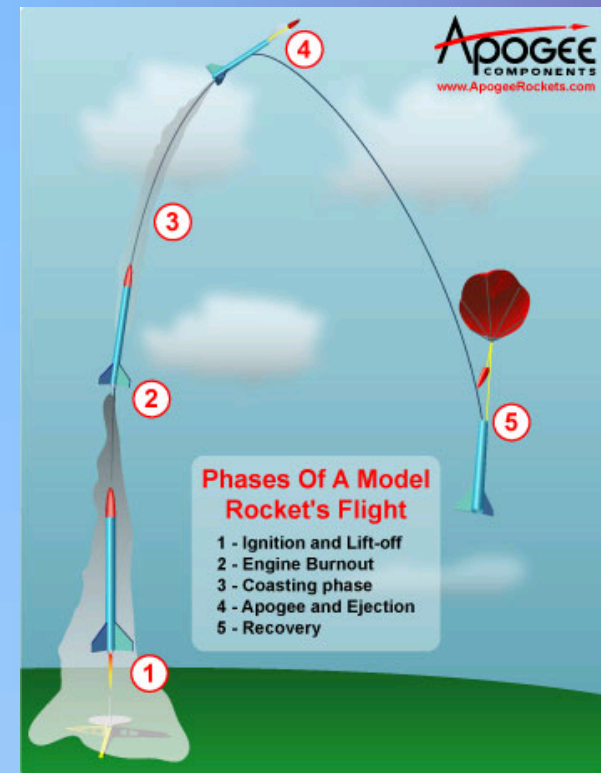
3V TEAM	Vlad Andrei Tatomir, Valentin Măgureanu, Vlad Radu
SPACE FIGHTERS	Mihai Bogdan Ene, Alexandru Balaci, Eduard Stănescu, Robert Tiseac, Roberto Iscru
OUR LIGHTY GALAXY	Andrada Duță, Miruna Voiculescu, Laura Boldojar, Mădălina Pitrop, Ioana Matei
OUR EGG WILL SURVIVE	Costin Cumpătă, Robert Tudorache, Yamato Zaharia

Activity dedicated to International Astronomy Year 2009
 School No 22"Mexic" and School No 195 Bucharest Romania

TASK

Students has to simulate the last flight phases of a rocket and make an Entry, Descending and Landing (EDL) system. The shuttle is represented by an egg. Each crew has a patch representing the team.

Students are allowed to use any materials they need to protect their EDL design during the landing process as the “crew” come safely in the longest time they can.



Question:

How can we use our observations and prior knowledge to design an EDL system that will safely land our egg rover? What must our lender have? Write your hypothesis below (A hypothesis is your best guess)

Hypothesis:.....

Experiment:

After reading the instructions for the lab, write out or draw your team's EDL design and explain the reasons for the design choices

Analysis

What design modifications were made to your team parachute prior to attaching it to the lender? What made you to make the changes and how did you anticipate they would improve your design?

What was your descent time or your EDL design? How did it compare with the others' group designs?

Conclusion

Using the date collecting and observations made during testing of all EDL designs, what do you believe is the greatest determining factor in manipulating descent time?

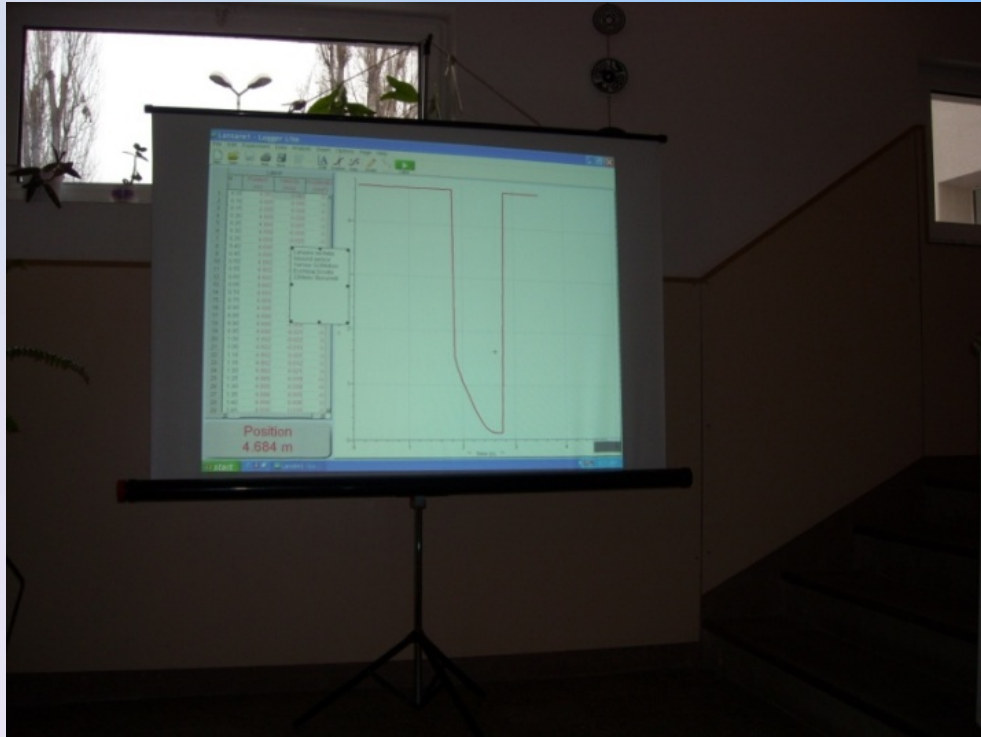
If given the design challenge again , what would you change in your design to lengthen your descent time?

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Preparing for the launch



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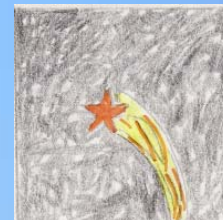
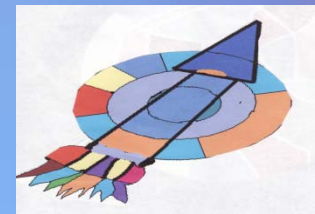
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The EDL design is prepared for register



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Mission Patches



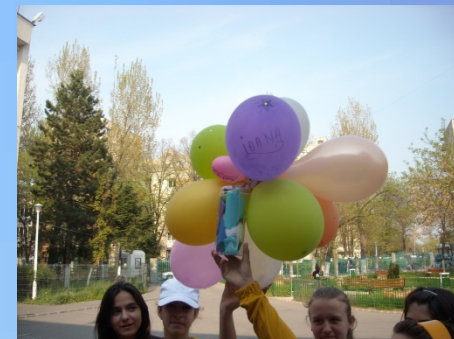
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In the mean time, the *scientists* have to do inquiry investigations and hands on activities on the” board”.



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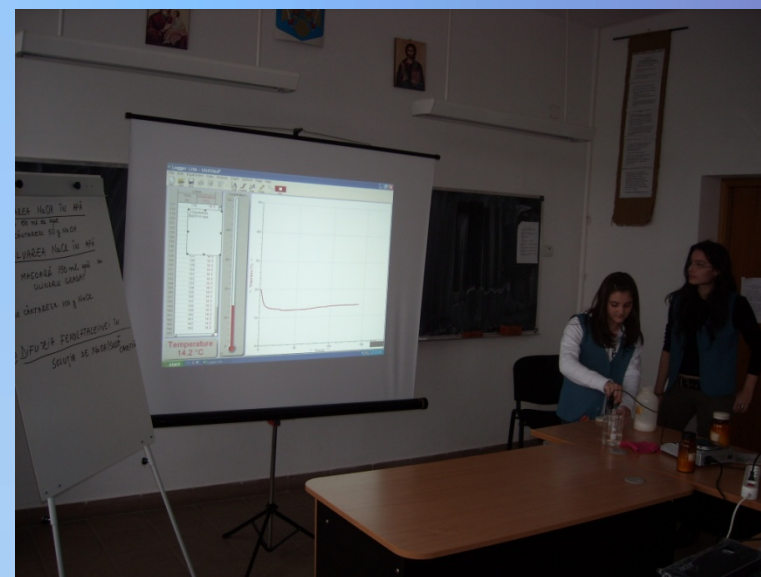
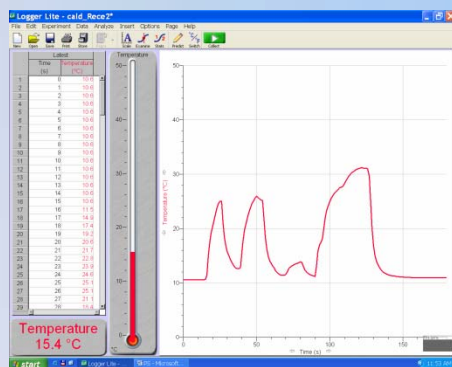
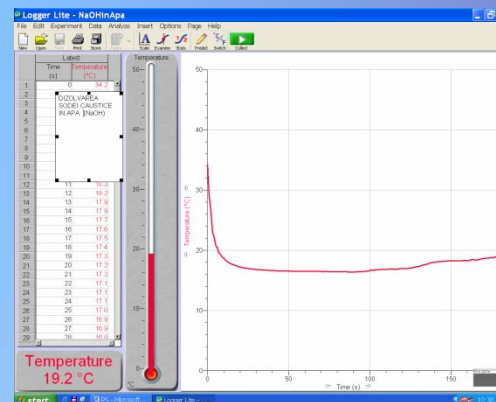


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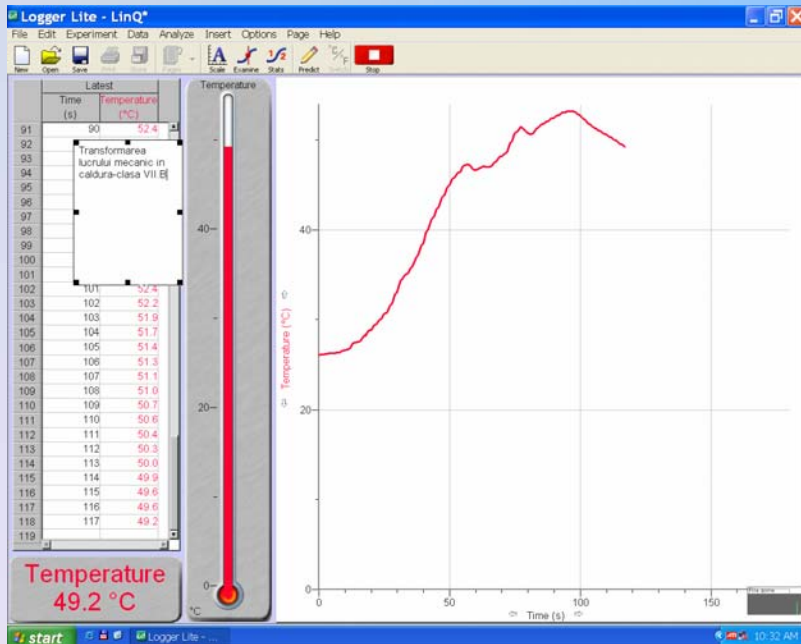


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Measuring the temperature of reaction

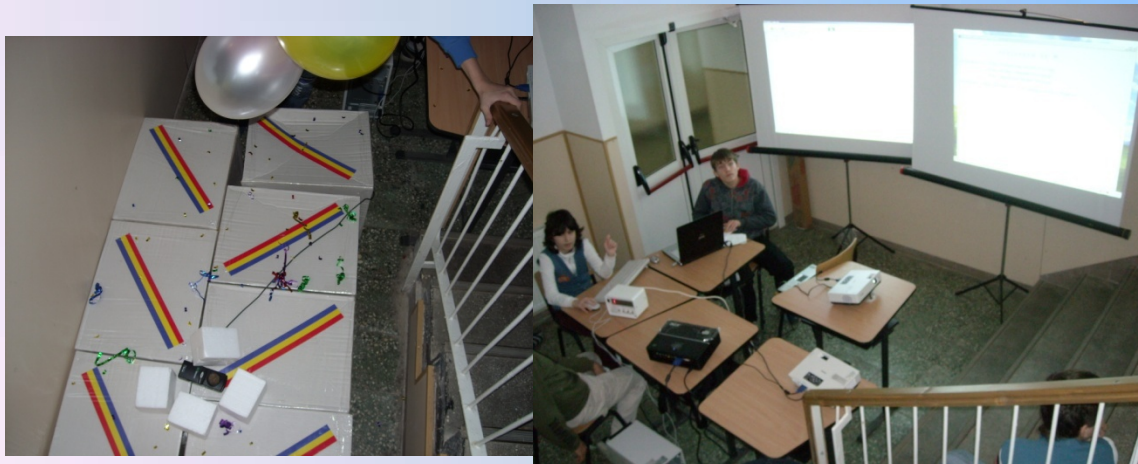
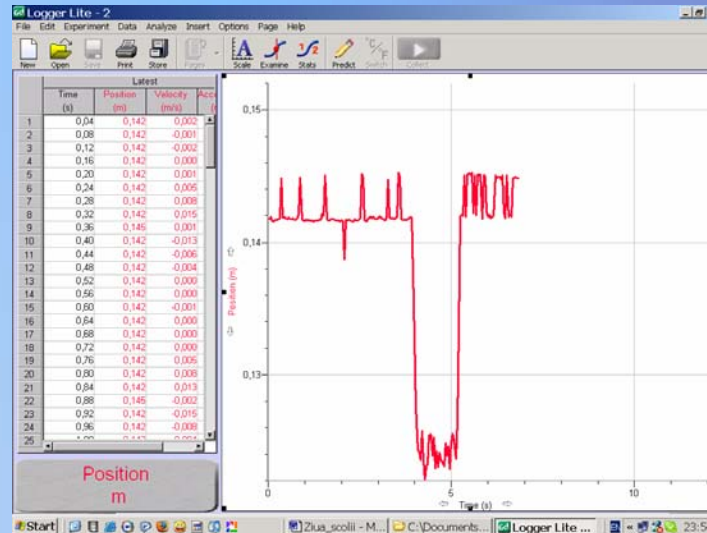
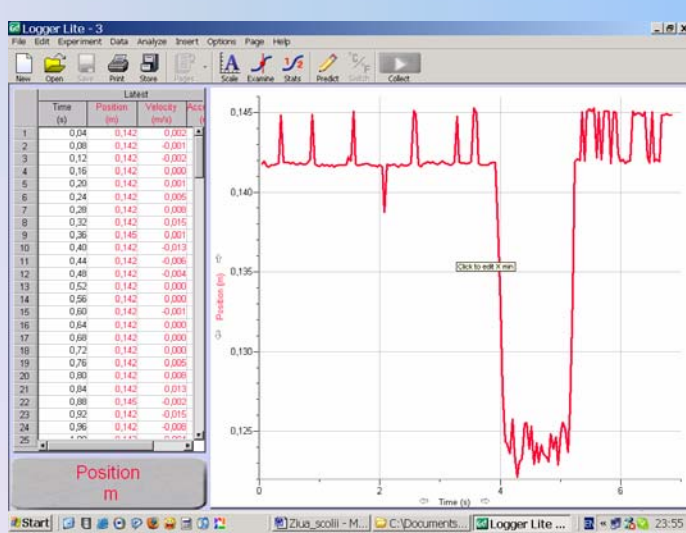


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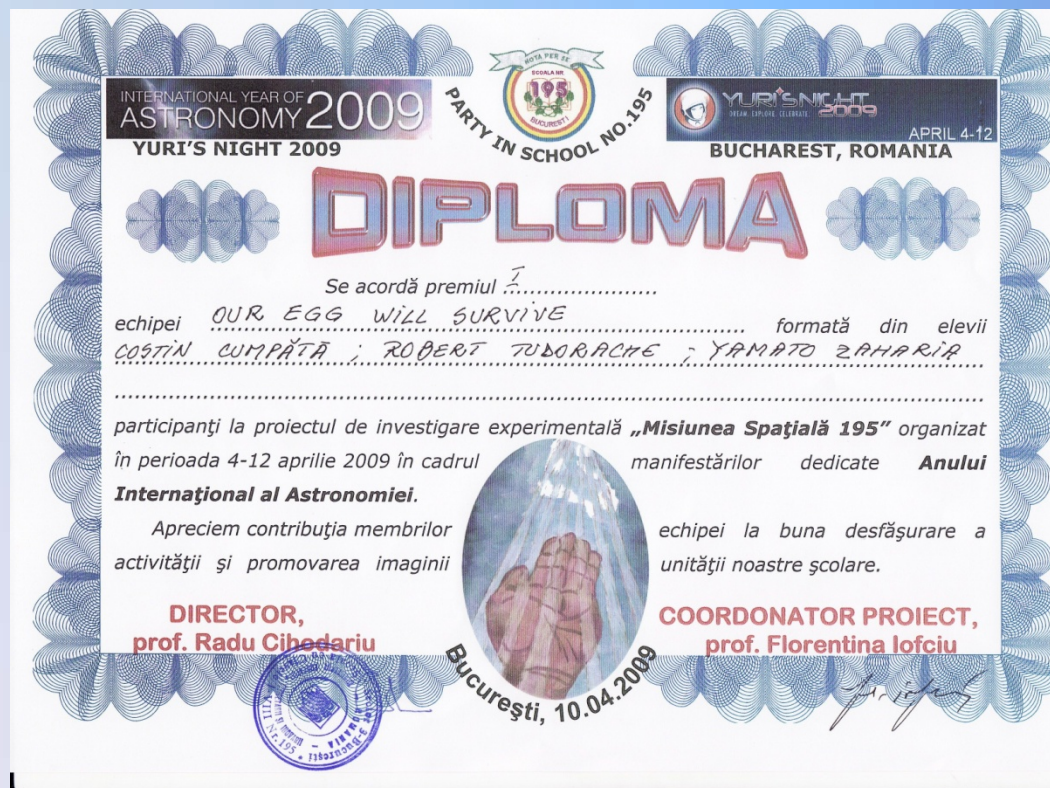
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GoMotion Vernier sensor monitorise the landing and the graph is projected on a large screen.

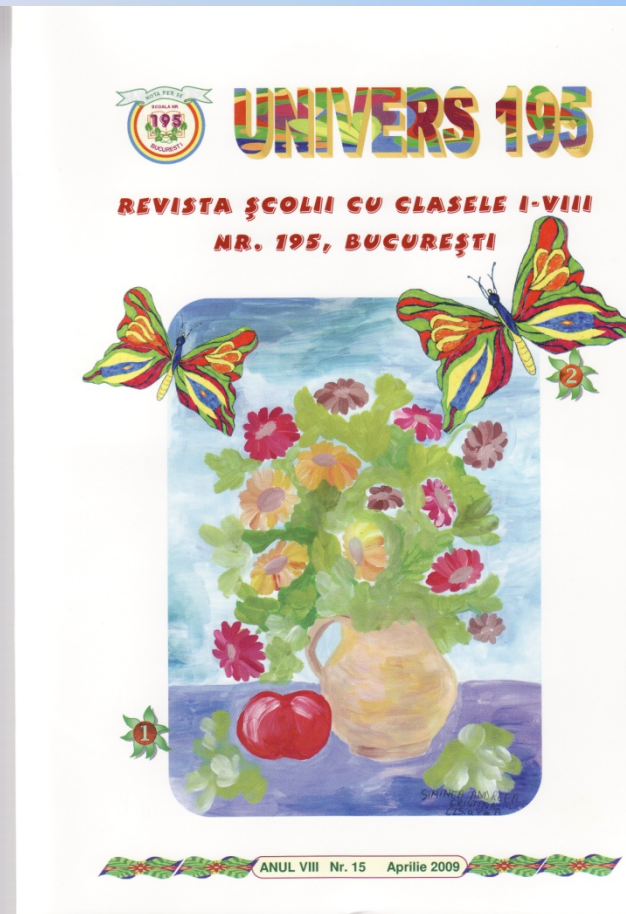


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Students' Award



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Echoes in School Magazines



Floare de cactus

Numărul 3, anul II 6 Ianuarie 2009

Școala nr. 22 "MEXIC"

Misiunea spațială "Andromeda 22 Mx"


(proiect desfășurat de Ziua școlii)

Suntem convingi că invitații care ne vizitează de Ziua școlii, mai ales cei care ne trec pragul în fiecare an în luna decembrie și nu numai, s-au obișnuit deja cu surprizele. Dintre cele mai plăcute și interesante desigur, ca să nu spunem chiar palpitante! Respectând cu sfințenie această frumoasă tradiție - aceea de a nu ne dezamăgi (sau plăciti!) oaspeții - și în decembrie 2008 am pregătit o activitate cu totul și cu totul originală, merită să ilustreze atenția care se acordă în școala noastră, educației științifice de calitate.

V-ați dat seama, este vorba despre proiectul intitulat atât de enigmatic "Misiunea spațială Andromeda 22-Mx" (pag. 21)

Cuprins:

Debut literar	4
Strefele iernii	7
Acum 90 de ani...	8
Dia de los muertos	13
Ne place să fim... pe scenă!	16
Misiunea spațială Andromeda 22 Mx	21
Parcul Titan	29
Să mai și rîdem...	33



V-ați dat seama, este vorba despre proiectul intitulat atât de enigmatic "Misiunea spațială Andromeda 22-Mx" (pag. 21)

Acum 90 de ani, "La Alba-Iulia-n cetate"

1 Decembrie 1918 este momentul cel mare al istoriei noastre, momentul când a rodit lupta de veacuri a poporului român. Pe bună dreptate, poetul Lucian Blaga afirma că „la 1 Decembrie 1918 Dumnezeu a fost cu noi”.

Într-adevăr, Dumnezeu a fost cu noi în acea zi memorabilă de iarnă, când clopotele celor două biserici ale orașului îi cheamă pe oameni la marele eveniment. (pag. 8)

idei din școala noastră

2. Înregistrarea și prelucrarea informatizată a parametrilor de zbor

Datele de zbor pentru macheta lansată în finalul desfășurării de ziua școlii au fost înregistrate și prelucrate matematic cu ajutorul a două sisteme informatice care au funcționat în paralel:

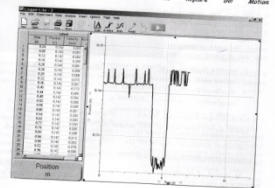
- senzorul de măsurare "Gul-Motion" și programul "Logger Lite", puse la dispoziția laboratorului de fizică de la Școala nr. 22 „Mexic”;
- programul "Space", realizat în cadrul Școlii nr. 22 „Mexic”.

4. Utilizarea programului Logger Lite și a senzorului de măsurare Gul Motion în cadrul "Misiunii spațiale Andromeda 22-Mx"

Senzorul de măsurare Gul Motion și programul Logger Lite au constituit instrumentele de înregistrare și prelucrare a datelor în cadrul proiectului nostru. Pentru fiecare măsurătoare lansată, Logger Lite a înregistrat și salvat pe disc, sub formă de grafic, datele obținute cu ajutorul senzorului de măsurare.

Pe baza acestor date, Logger Lite a calculat instantanee viteza și accelerația machetei înregistrate în documentele "Misiuni spațiale Andromeda 22-Mx".

Spun exemplificativ, vă prezentăm o înregistrare realizată de programul Logger Lite pe baza datelor furnizate de senzorul de măsurare Gul Motion



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The screenshot shows a web browser window displaying a blog post. The browser's address bar shows the URL: <http://noaptealuiyuri.blogspot.com/2009/04/100409-bucuresti-scoala-nr-195.html>. The blog's header features a circular logo with a space helmet and the text "Noaptea lui Yuri, 4-12 Aprilie 2009" and "Sarbatoarea Mondiala a Spatiului Cosmic". The main content area displays a post from Friday, April 10, 2009, at 7:39 AM, titled "10.04.09, Bucuresti - Scoala nr. 195". The post text describes a "Yuri's Night Party" at School No. 195 in Bucharest, organized by Florentina Iofciu, a physics teacher and NASA Space Academy graduate. It details an experimental project titled "MISIUNEA SPATIALA 195" and lists several participating teachers. The post is divided into two parts: the first describes the party's activities, including a simulation of space flight phases, and the second describes the finalization of the investigation. The right sidebar contains navigation links for "Entries (RSS)" and "Comments (RSS)", a search bar, and a "Translate into English" button. Below these are sections for "Coordonator National" (Romanian Space Agency) and "Coordonator Global" (Yuri's Night 2009). An "Archive" section lists posts from April 2009, including events in Timisoara, Sibiu, Cluj, Barlad, Constanta, and Turda. A "Labels" section lists various cities, and a "Visits" section shows live traffic from Bucharest.

Noaptea lui Yuri, 4-12 Aprilie 2009
Sarbatoarea Mondiala a Spatiului Cosmic

Home Contact

Friday, APR 10, 2009

10.04.09, Bucuresti - Scoala nr. 195

Posted by Virgiliu Pop at 7:39 AM

In Scoala 195 din Bucuresti am organizat Yuri's Night Party sub forma prezentarii unui proiect de investigare experimentală MISIUNEA SPATIALA 195, precedat de o mica sceneta de elevii claselor VI A,VI.B si VI.D. Coordonatorii activitatii: Florentina Iofciu profesoara de fizica , absolventa NASA Space Academy for Educators, Prof Doina Militaru - matematica, Radu Cihodariu director –prof. matematica, Stefania Voicu director adjunct – prof Geografie, Monica Corbus prof Matematica , Adriana Duta –prof Biologie, Laurentiu Cirstea.prof. fizica.

In prima parte a activitatii , elevii clasei VI.A prezinta echipajul unei navete spatiale, fiecare cu rolul sau in misiune conform datelor furnizate de NASA.

In partea a doua se finalizeaza tema de investigare experimentală de simulare a ultimelor trei faze din zborul unei navete spatiale: intrarea in atmosfera, caderea libera in atmosfera si impactul cu solul . Naveta este simbolizata de un ou crud . Sarcina echipajului este aceea de a asigura aterizarea in siguranta a navetei, adica de a realiza un timp de cadere cat mai lung si de a amortiza cat se poate de mult impactul cu solul. Oul trebuie sa ramana intreg dupa ce "naveta" cade de la etaj, scara profesorilor.

Elevii lucreaza in echipe de cel putin trei membri, isi distribuie rolurile in cadrul echipei, realizeaza sigla echipajului pe care o

Entries (RSS)
Comments (RSS)

Coordonator National
ros agentia spatiala romana
romanian space agency

Coordonator Global
YURI'S NIGHT 2009
DREAM. EXPLORE. CELEBRATE.

Archive
▼ 2009 (11)
▼ April (20)
12.04.09, Timisoara - Libraria Carturesti, Iulius ...
12.04.09, Sibiu - Colegiul Național "Octavian Goga...
12.04.09, Cluj - Libraria Carturesti
12.04.09, Barlad - Asociatia Astronomica "Sirius"...
12.04.09, Constanta - Colegiul Național „Mircea ce...
12.04.09, Constanta - Liceul

Translate into English

Labels
> Arad (3)
> Barlad (1)
> Bucuresti (4)
> Chisineu-Cris (1)
> Cluj (2)
> Constanta (3)
> Deva (1)
> Hunedoara (1)
> Lugoj (2)
> Oradea (1)
> Orastie (2)
> Petrosani (1)
> Sibiu (2)
> Timisoara (2)
> Turda (2)
> Zalau (1)

Visits
Live Traffic Feed
Bucharest, Bucures arrived from ynatina.blogspot.com on Noaptea lui Yuri, 4-12 Aprilie 2009; 10.04.09, Bucuresti - Scoala nr. Bucharest, Bucures arrived from google.ro

<http://noaptealuiyuri.blogspot.com>

www.195yuri2009.blogspot.com

Material Resources :

Vernier GoMotion and GoTemp sensors

OSA Discovery Kit

Optic kit from National Observatory Tucson Arizona

Physics Kits from School

Offered with generosity by. Dr.Dan Sporea director CSET

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Related links

<http://www.answers.com/topic/learning-theory-constructivist-approach>

<http://net.educause.edu/ir/library/pdf/EDU01108.pdf>

<http://resources.glos.ac.uk/shareddata/dms/6C38EE56BCD42A039D56BD9FB396676F.pdf>

[http://cis01.ucv.ro/DPPD/profesorul%20 si alternativa constructivista a instruirii.pdf](http://cis01.ucv.ro/DPPD/profesorul%20si%20alternativa%20constructivista%20a%20instruirii.pdf)

<http://pbl-online.org/>

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