

**ADVANCED WORKSHOP ON TECHNOLOGY FOR
SUSTAINABLE DEVELOPMENT: LOW-COST TOOLS
TO SUPPORT SCIENTIFIC EDUCATION**

OPENDANTE:

**AN APPLICATION OF A LOW-COST AV RECORDING TOOL
TO SUPPORT SCIENTIFIC SCHOLAR EDUCATION**

ARMANDO PISANI, PHD

**LICEO LINGUISTICO & SCIENTIFICO M. BUONARROTI -
MONFALCONE – GORIZIA - ITALY**

ENRIQUE CANESSA

ICTP – TRIESTE - ITALY

21 SEPTEMBER 2018

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THE LICEO LINGUISTICO
E SCIENTIFICO
M. BUONARROTI



THE LICEO LINGUISTICO
E SCIENTIFICO
M. BUONARROTI



THE SCHOOL



- THE "LICEO CLASSICO" AND "LINGUISTICO"
- STUDENTS AGE RANGES FROM 14 TO 18 YR.
- MOST OF THE CURRICULUM IS DEDICATED TO HUMANITIES AND FOREIGN LANGUAGES. THE 19% OF THE TOTAL LECTURE TIME CONCERNS MATHEMATICS, PHYSICS AND NATURAL SCIENCES.
- AFTER THE DIPLOMA (FINAL EXAM) 40% OF THE STUDENTS DO ENROLL TO A SCIENTIFIC FACULTY



OPENDANTE THE ORIGIN



■ SUPPORT THE STUDENTS WHEN CHOOSING THEIR CAREER AT THE UNIVERSITY: “AFTER THE DIPLOMA ITUNESU



■ ONLY A FEW UNIVERSITIES IN ITALY HAVE FULL COURSES ONLINE (LEWIS, BOCCONI, PISA, TRENTO).

■ OUTSIDE ITALY: FEW COURSES FOR HIGH SCHOOL STUDENTS





OPENDANTE THE ORIGIN



- WHY NOT TO OFFER THE SAME TOOL TO THE ITALIAN HIGH SCHOOL (LICEO) STUDENTS?
- JUNE 2012: MEETING AT TRIESTE ABOUT “MOBILE-LEARNING” E. CANESSA, M. ZENNARO & C. FONDA (SCIENCE DISSEMINATION UNIT - INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS)
- SOFTWARE OPEN SOURCE: [OPENEYA](https://openeya.it)

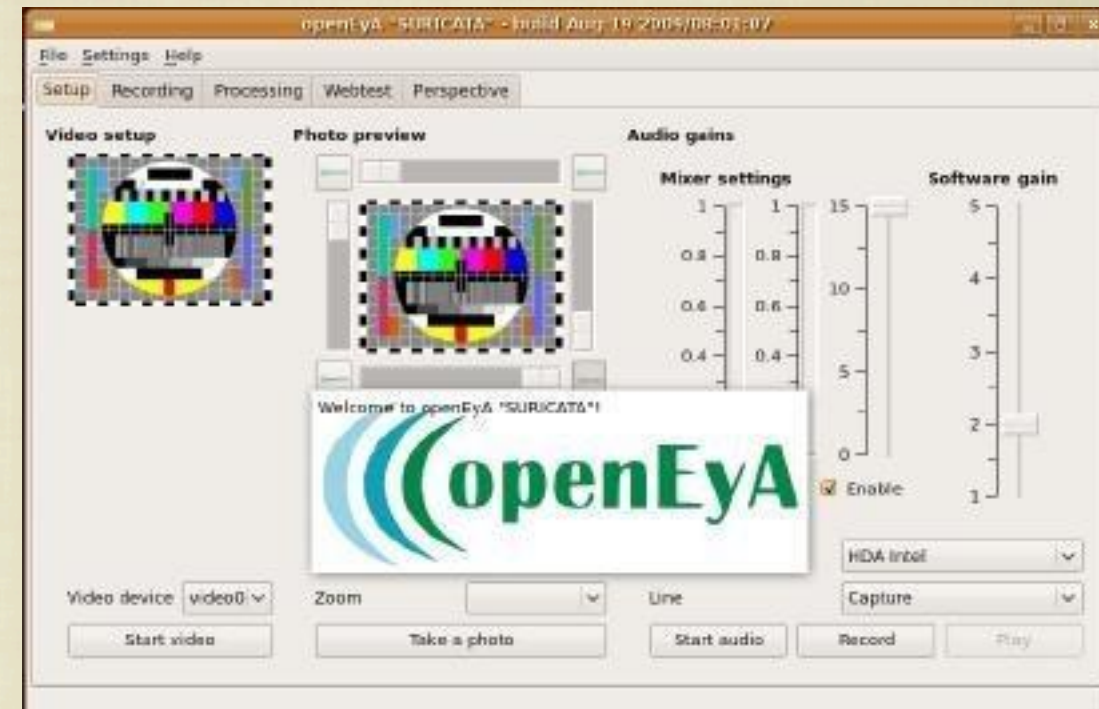




OPENEYA



- OPENEYA (ENHANCE YOUR AUDIENCE)
- FREE, AVAILABLE FOR UBUNTU-LINUX
- IT REQUIRES: A NETBOOK, TWO WEBCAMS AND A MICROPHONE
- NO POSTPROCESSING IS NEEDED
- YOU CAN LEARN IT IN 30 MINUTES (NEARLY)





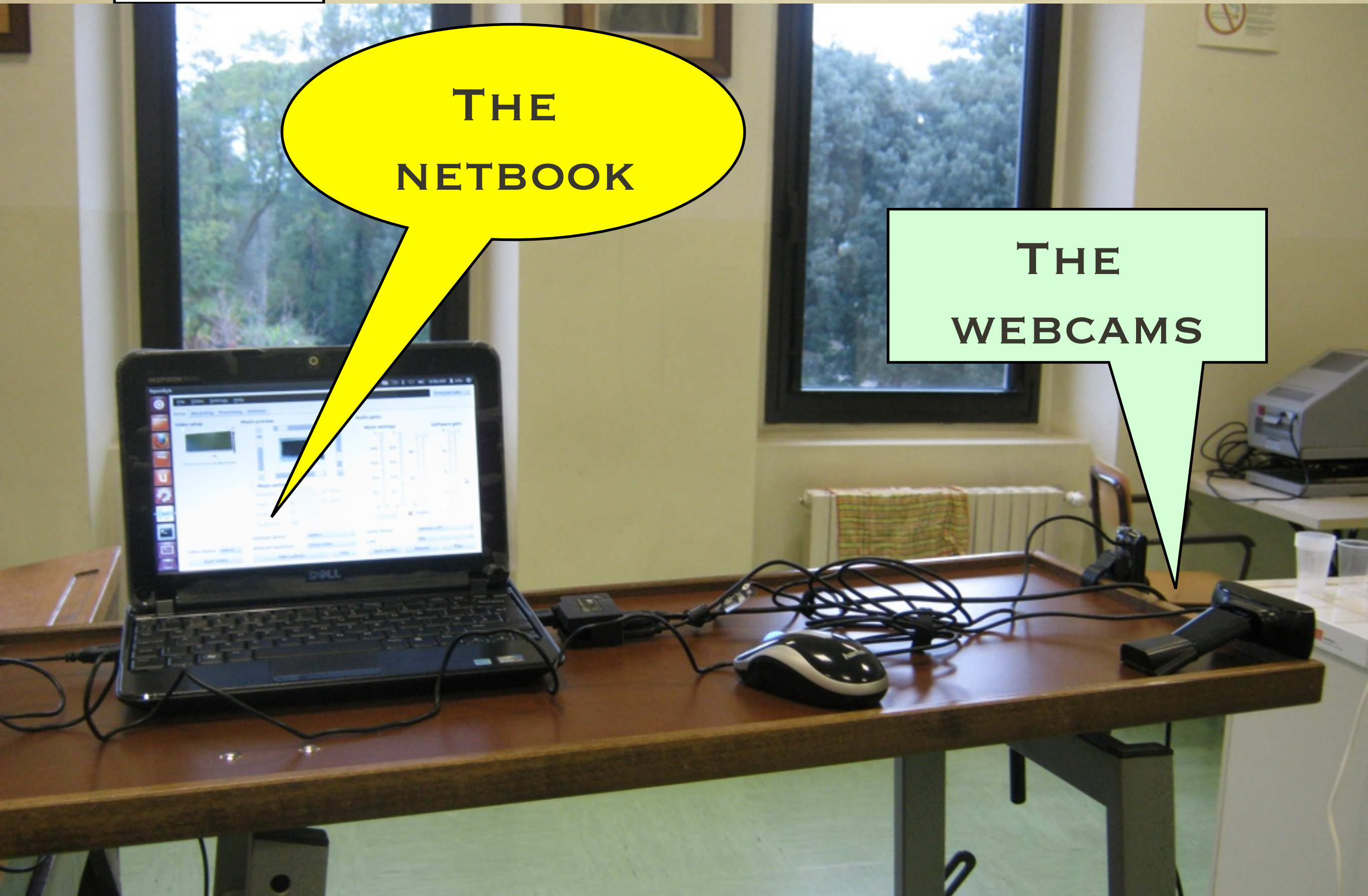
THE CLASSROOM



THE HARDWARE

**THE
NETBOOK**

**THE
WEBCAMS**



HARDWARE OPENEYA

WEB HOST
(?)

COST:
NEARLY 1000 €



NDAZIONE
Cassa di Risparmio di Gorizia



ICTP Science Dissemination Unit



RECORDING SYSTEM AUDIO + VIDEO OPENEYA:
COMPLETELY AUTOMATHIC, LOW COST, NON INTRUSIVE, NO POST-
PROCESSING REQUIRED

THE WEB SITE

A.S.
2012-13

44 GB

54
PHYSICS

96
MATHEMATICS

32 ADVANCED
TOPICS

LICEO CLASSICO DANTE
ALIGHIERI (GORIZIA)

OPENDANTE



openEYA



Una delle foto ad alta risoluzione scattate nel corso delle lezioni di matematica per il quinto anno del corso di studi del Liceo Classico. Qui sopra è ripresa l'intera apparecchiatura che

THE WEB SITE

A.S.
2013-14

51 GB

80
PHYSICS

114
MATHEMATICS

3 ADVANCED



Open Dante



[BENVENUTO](#) [ISTRUZIONI](#) [MATEMATICA](#) [FISICA](#) [APPROFONDIMENTI](#) [LETTURE](#)



Lezioni on-line di Matematica e Fisica
del prof. Armando Pisani
presso il Liceo Classico Dante Alighieri di Gorizia

Ecco una breve descrizione dell'origine del progetto OpenDante delle lezioni video registrate e disponibili on-line.

Il mio nome è Armando Pisani e sono un docente di Matematica e Fisica presso il Liceo Classico, sezione associata dell'I.S.I.S. Dante Alighieri di Gorizia. Ho partecipato al meeting internazionale "Scientific m-Learning" tenutosi a Trieste presso il Centro Internazionale di Fisica Teorica (ICTP), dal 4 giugno al 7 giugno 2012. Nel corso del meeting è emerso come la possibilità di poter rivedere le lezioni tenute durante la mattina a scuola sia di grande aiuto per gli studenti delle Università italiane e straniere di cui erano presenti i rappresentanti. Credo che anche gli studenti del nostro istituto potrebbero trarre aiuto e vantaggio dalla possibilità di poter riascoltare e rivedere le lezioni della mattina anche a casa in un qualunque momento. A questo scopo ho contattato il **Science Dissemination Unit** di Trieste, guidato e fondato dal prof. **Enrique Canessa**, che ha sviluppato un software gratuito che consente di effettuare le registrazioni

THE WEB SITE

A.S.
2016-17

50 GB

50 PHYSICS

125
MATHEMATICS

13 ADVANCED



Open Dante



[BENVENUTO](#) [ISTRUZIONI](#) [MATEMATICA](#) [FISICA](#) [APPROFONDIMENTI](#) [LETTURE](#)



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THE LECTURES



Docente: prof. Armando Pisani; Corso di Fisica; Titolo della lezione: La misura di G costante gravitazionale. Stima della massa del
Classico Dante Alighieri di Gericcio

Digital Lecture using www.openya.org

PAUSED 0:31:05.114

Date: 2015/01/27 09:45

Open the image 00103 in a new window.
Gorell image gallery

Ritorna alla pagina iniziale di OpenDante

$$G = \frac{Mm}{r^2}$$
$$R = 148 \cdot 10^6 \text{ km}$$
$$T = 365 \cdot 24 \cdot 3600 \text{ s}$$
$$2 \approx 1 \cdot 10^7 \text{ s}$$
$$\frac{4\pi^2 R^3}{GT^2} = \frac{4\pi^2 \cdot (148 \cdot 10^6)^3}{6.67 \cdot 10^{-11} \cdot (365 \cdot 24 \cdot 3600)^2} \approx 2.05 \cdot 10^{24} \text{ kg}$$

HTML 4

IN STREAMING OR AFTER
DOWNLOAD OFFLINE

THE LECTURES



HTML 5



Un'avventura intellettuale: introduzione storica (parte 1).

prof. Armando Pisani

Liceo Linguistico - M. Buonarroti - Monfalcone (Gorizia)

Corso di Fisica

Data: 18 settembre 2015



LECTURES CAN BE SEEN ALSO ON AN IPAD

THE LECTURE WEB PAGE

DATE

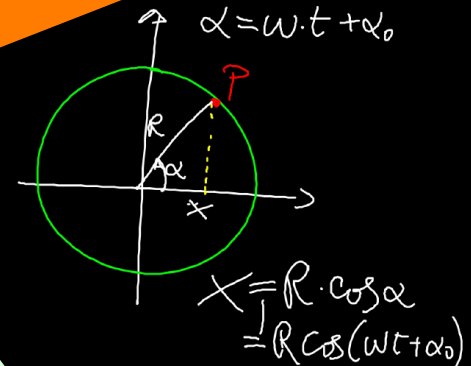
TITLE OF THE LECTURE:
LINK TO FULL AUDIO
AND VIDEO

LINK TO FURTHER
LEARNING TOOLS

Dinamica

Data	Titolo della lezione	scarica zip file
7 Mag. 2014	La dinamica: introduzione. Il passaggio dalla fisica antica e medievale alla fisica classica.	scarica zip file
9	I principi della dinamica: introduzione storica (continuazione). Huygens e la accelerata del moto circolare.	scarica zip file
	Qui puoi trovare gli appunti in pdf della lezione con la LIM.	
	Introduzione alla Dinamica. Premessa storica. Il principio d'inerzia. (Suggerimento: guarda il video del PSSC nr. 07)	scarica zip file
11 Ott. 2013	Il principio d'inerzia. Analisi di alcuni moti con Tracker. (Puoi scaricare i filmati da questo link e da questo)	scarica zip file
	I principi della dinamica: il secondo ed il terzo principio. (Suggerimento: prima della lezione guarda la seconda metà del video del PSSC nr. 07)	scarica zip file
Ott. 2013	Le Forze fondamentali. La forza elastica e la forza peso. Laboratorio virtuale: il comportamento della mola (simulazione in java realizzata da Ph.E.T. Università del Colorado, USA) Scarica il foglio di lavoro sulla molla vistuale.	scarica zip file
8 Ott. 2013	I principi della dinamica. L'equilibrio del punto materiale. I vincoli. Il piano inclinato. Esercizi.	scarica zip file
9 Ott. 2013	(prima della lezione guarda questo video da youtube su "L'equilibrio sul piano inclinato") L'equilibrio del punto materiale. Le forze d'attrito, l'attrito radente.	scarica zip file
24 Ott. 2013	L'equilbrio sul piano inclinato e la forza d'attrito. La lezione è stata tenuta in via sperimentale usando la Lavagna Interattiva Multimediale.	scarica zip file

PDF
NOTES



$$\alpha = \omega \cdot t + \alpha_0$$

$$x = R \cdot \cos \alpha = R \cos(\omega t + \alpha_0)$$

LINK TO DOWNLOAD



THE RESULTS



- HOW TO EVALUATE THE RESULTS. THE EFFECTS OF THE USE OF THE ONLINE LECTURES OF OPENDANTE
- QUESTIONNAIRE FOR STUDENTS AND PARENTS
- MULTIPLE CHOICE AND OPEN QUESTIONS
- TWO SETS OF STUDENTS: "BIENNIO" (14 - 15 YR.) AND "TRIENNIO" (16, 17 AND 18 YR.)
- ANALYSIS AND DISCUSSION OF THE RESULTS ON "EUROPEAN JOURNAL OF OPEN, DISTANCE AND E-LEARNING"

New Chief Editor in EURODL

The EDEN Executive Committee assigned Dr. Ulrich Bernath as Chief Editor of the journal.

Latest article

TPDK, a New Definition of the TPACK Model for a University Setting
09.07.2014

Latest Brief Item

English Abtract - Student-centred outcomes of an e-learning course on Public Health in Hanoi and New York
08.07.2014

Archives

2014/I 2009/II 2005/I
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2010/II 2006/I 1998
2010/I 2005/II 1997

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High School Open On-line Courses (HOOC): A Case Study from Italy

Enrique Canessa [canessae@ictp.it], ICTP – The Abdus Salam International Centre for
Theoretical Physics, Trieste,
Armando Pisani [arpisan@tin.it], Liceo Classico Dante Alighieri, Gorizia, Italy

Abstract

The first implementation of complete high school, open on-line courses (HOOC) aiming to support the training and basic scientific knowledge of young students from the Liceo Ginnasio Dante Alighieri in Gorizia, Italy, is discussed. Using the open source and automated recording system openEyA, HOOC give an student the opportunity to watch on-line, at their own place and own pace, the same lessons of physics and mathematics held in the classroom. It is found that high school students' have changed the traditional modality of study and their scores have systematically improved since the implementation of this project. In only few months the use by students of the www.OpenDante.it video archive for HOOC has growth from 30 % to 97 %. Feedback from students and Parents on the use and impact of making HOOC available on the web are encouraging.

Keywords: Computers and Education, Learning, Schools, Webcasting

Tags

e-learning, distance learning, distance education, online learning, DE, higher education, blended learning, ICT, information and communication technology, Internet, collaborative learning, learning management system, LMS, constructivism, interaction,

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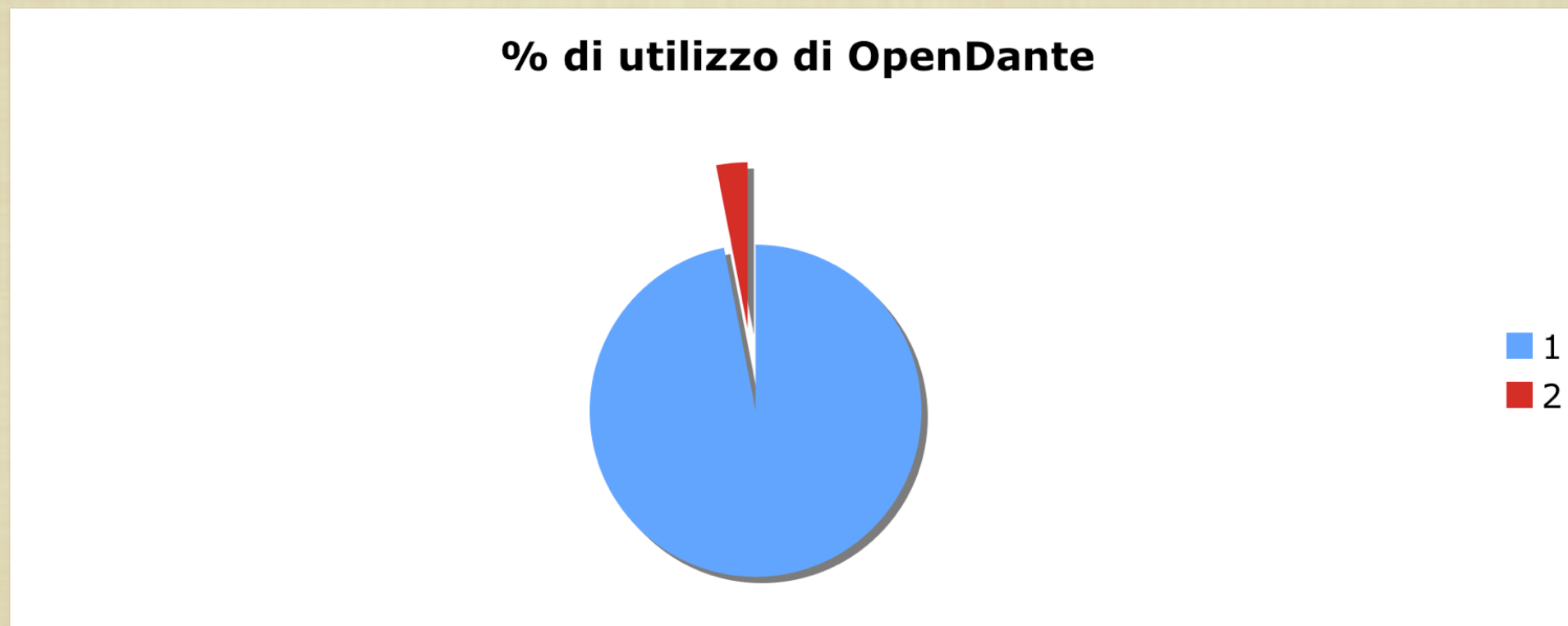
– the Cabell's Directories



THE RESULTS



- **HOW MANY STUDENTS USE THE OPENDANTE ONLINE LECTURES?**



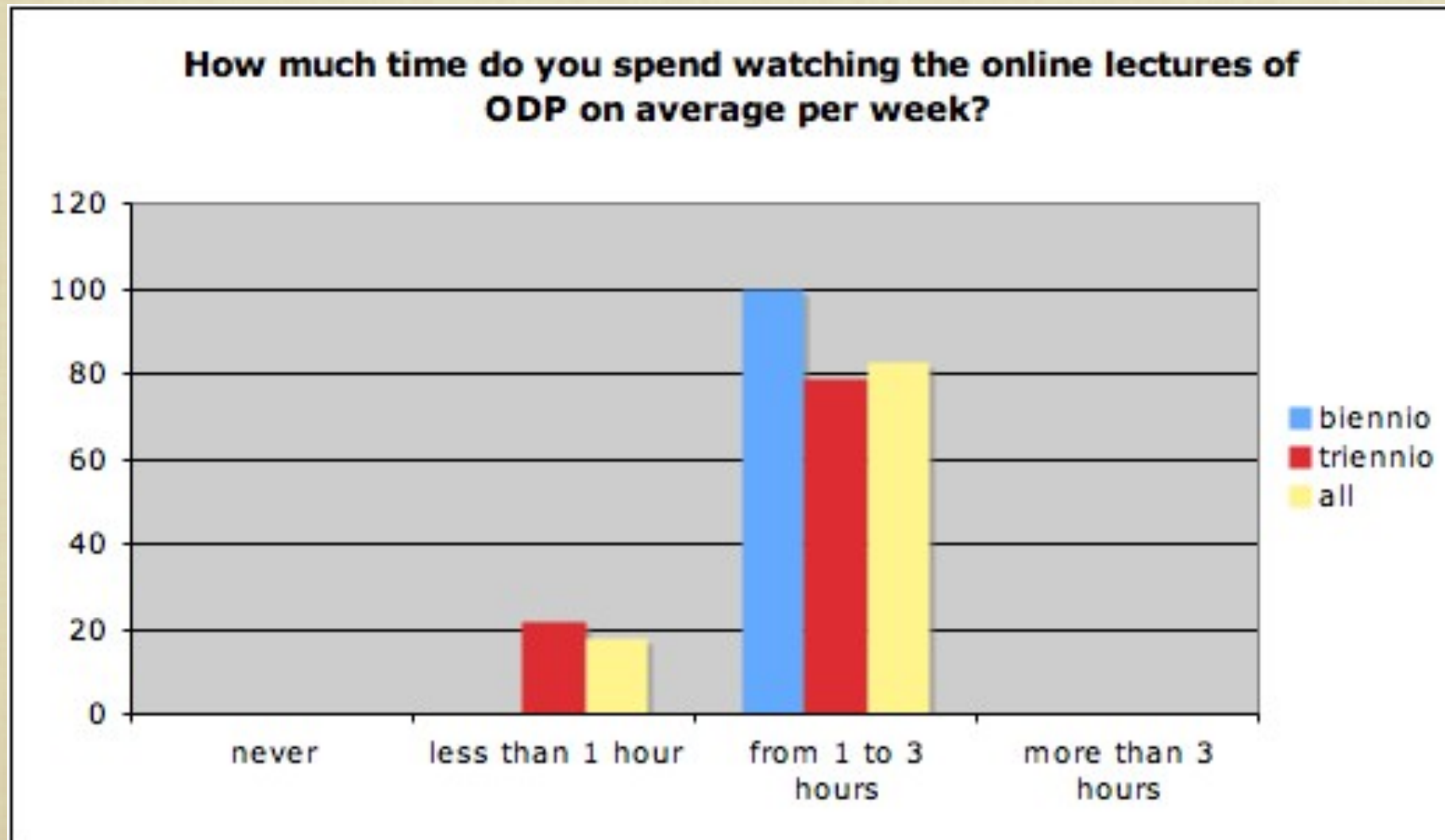
FEB. 2013: 30%

JUN. 2013: 97%

THE RESULTS



- **HOW MUCH TIME DO YOU SPEND WATCHING THE O.D. ONLINE LECTURES PER WEEK?**

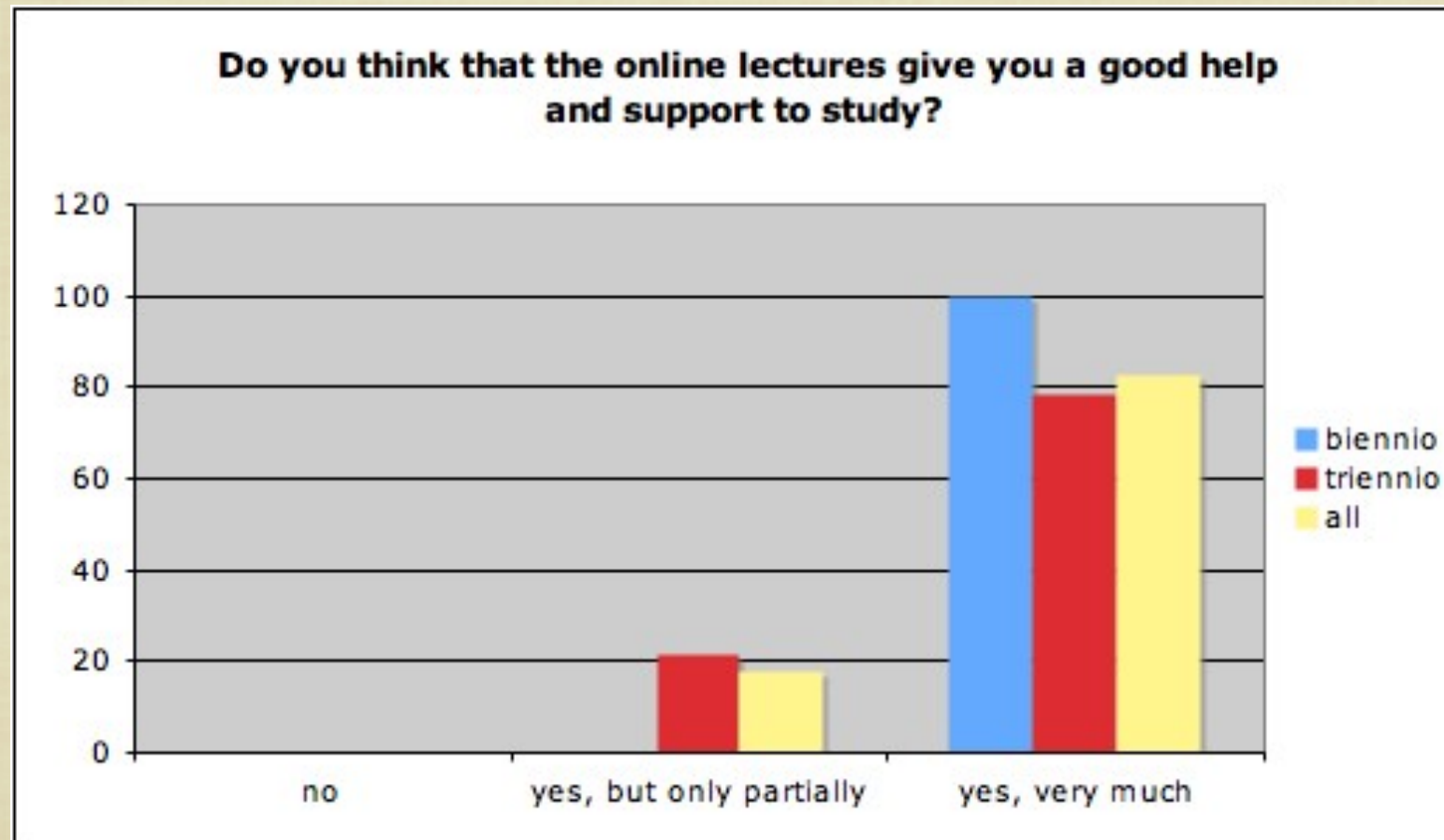


ON AVERAGE 2 HOURS

THE RESULTS



- DO YOU THINK THAT THE O.D. ONLINE LECTURES GIVE YOU A GOOD HELP AND SUPPORT YOUR STUDY?

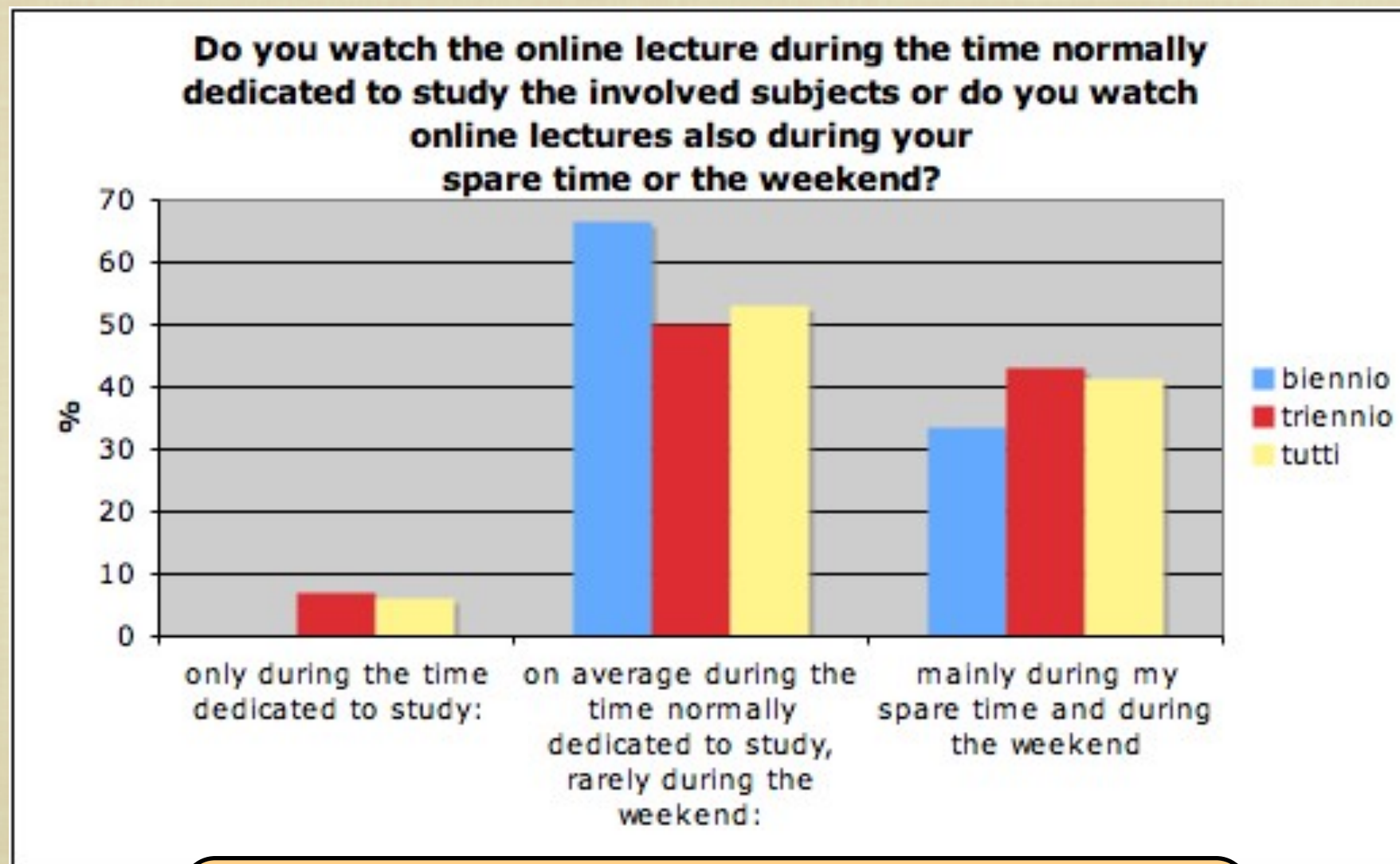


YES: 80%

THE RESULTS



- **THE O.D. ONLINE LECTURES REQUIRE YOU EXTRA TIME?**

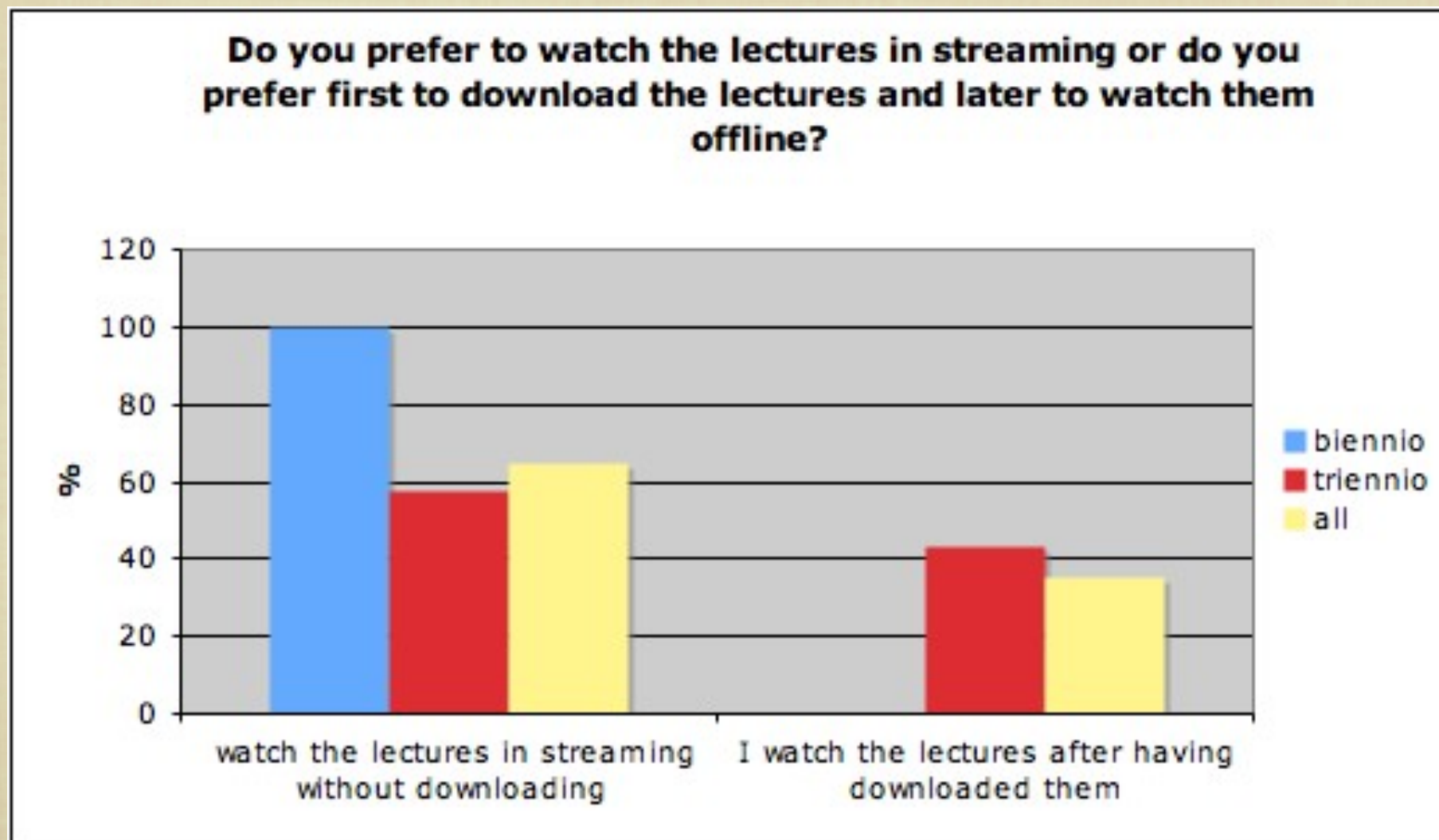


NO EXTRA TIME : 55%

THE RESULTS



■ STREAMING ONLINE OR DOWNLOADED OFFLINE?



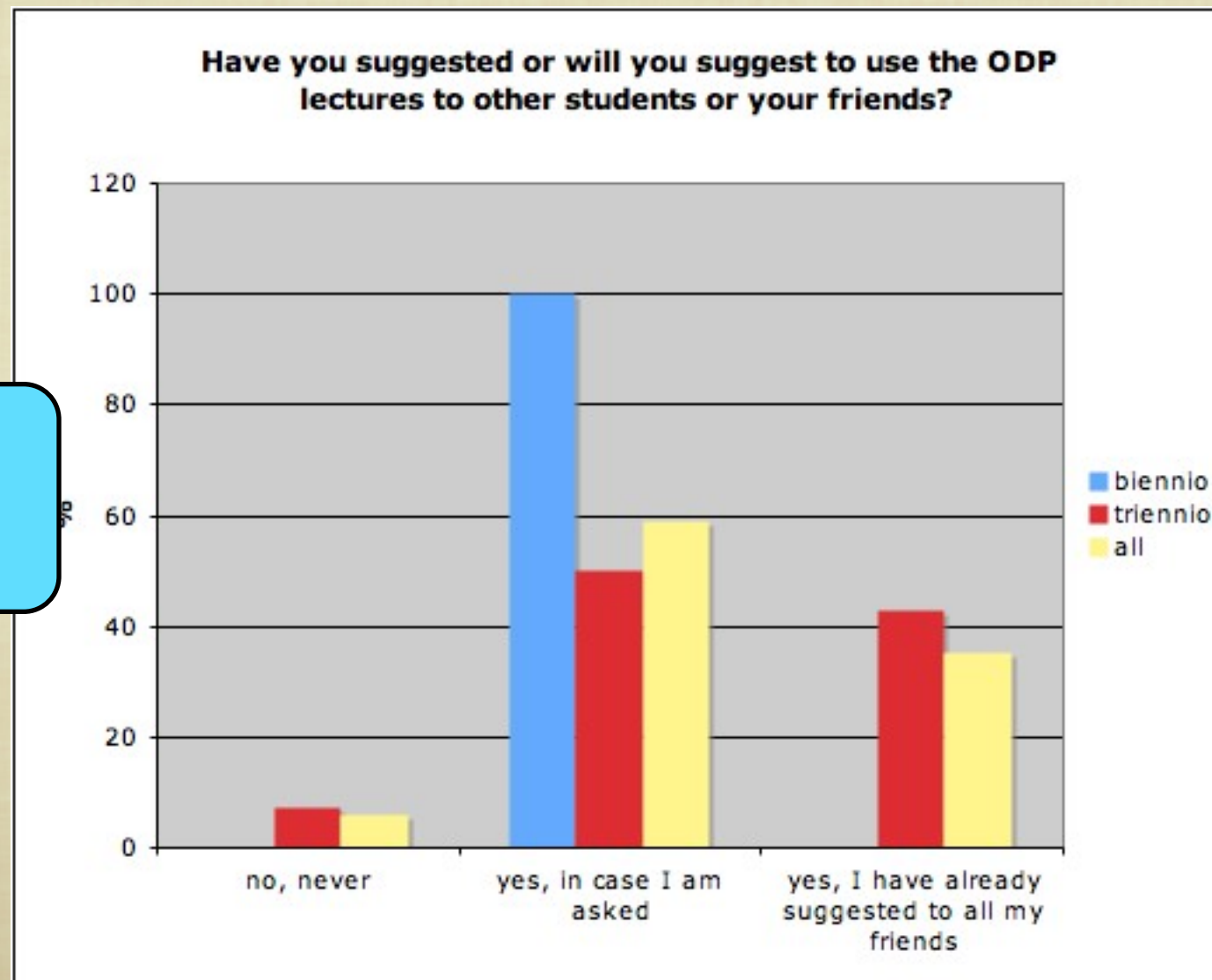
STREAMING: 65%

THE RESULTS



- HAVE YOU SUGGESTED TO USE O.D. ONLINE LECTURES TO OTHER STUDENTS OR FIENDS?**

YES: 90%





THE RESULTS



- **PARENTS:**
- **ARE YOU IN FAVOR OF THE USE OF O.D. ONLINE LECTURES FOR YOUR SON/DAUGHTER?**
- **DO YOU BELIEVE THAT THE O.D. ONLINE LECTURE ARE A USEFUL HELP AND SUPPORT FOR YOUR SON/DAUGHTER HOMEWORK?**

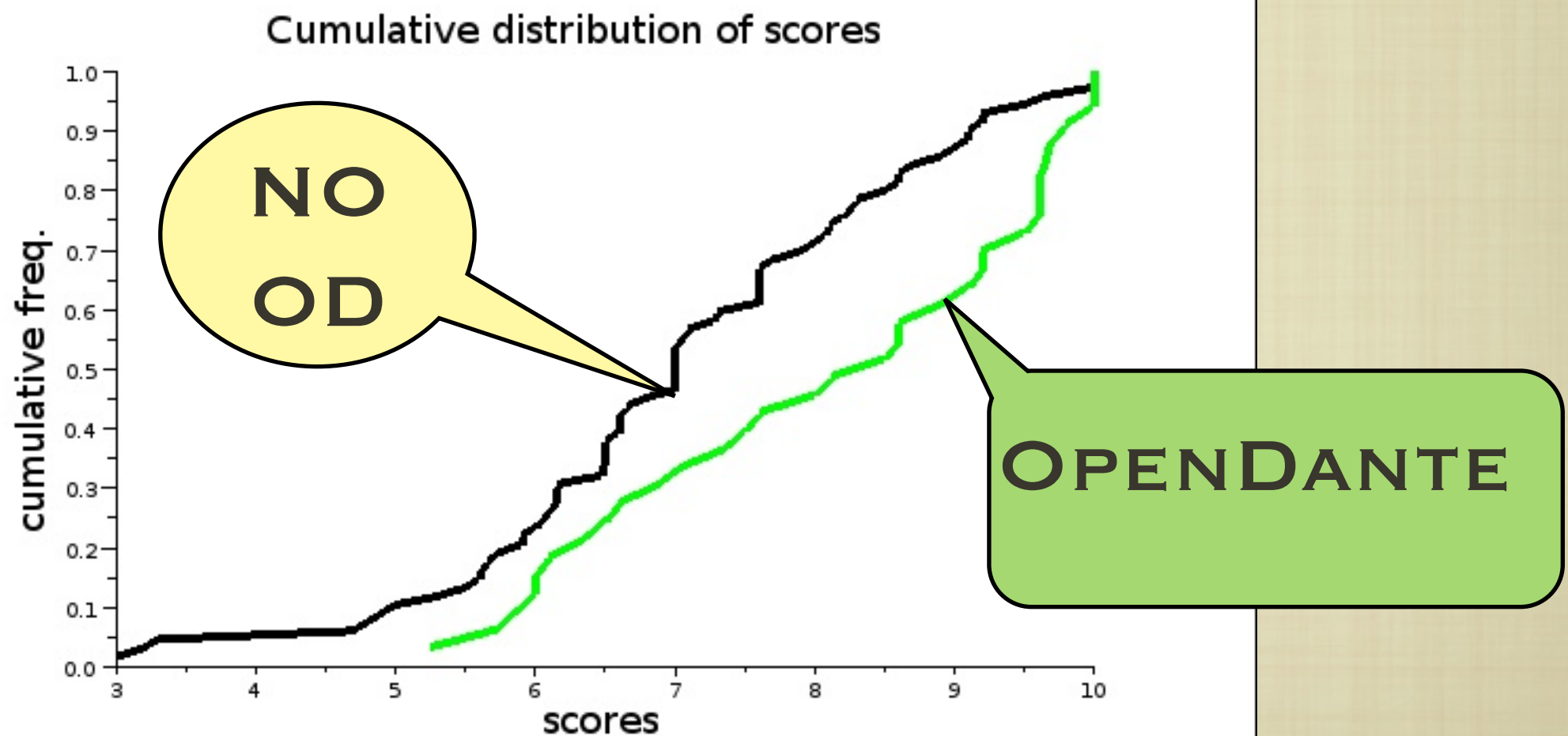
BOTH::

YES 100%

THE RESULTS



- THE EFFECT OF THE USE OF O.D. ONLINE LECTURES TO PREPARE THE TESTS



OPENDANTE:
IMPROVES TESTS BY 1.5 POINTS THE AVERAGE SCORES



THE RESULTS



- QUESTIONNAIRE 2014: OPEN QUESTIONS (NO NEED TO SIGN)
- QUESTION: “IN YOUR OPINION, WHAT ARE THE BEST FEATURES OF THE SCHOOL YOU ARE IN?”
- ANSWERS: 65%: OPENDANTE ONLINE LECTURES

THE USERS



■ **AA.SS. 2013-14-15 FROM OCT. 2013 TO MAR. 2015 MORE THAN 3500 USERS IN 30 COUNTRIES**



**Current Country Totals
From 18 Oct 2013 to 29 Jul 2014**

Italy (IT)	1,885
Friuli-Venezia Giulia	1,261
Veneto	254
Umbria	73
Lazio	35
Lombardia	35
Sicilia	25
Emilia-Romagna	21
Puglia	13
Piemonte	11
Toscana	11
Campania	10
Liguria	5
Calabria	4
Sardegna	4
Abruzzi	3
Trentino-Alto Adige	2
Marche	1
N/A	117

**Current Country Totals
From 18 Oct 2013 to 29 Jul 2014**

Italy (IT)	1,885
United States (US)	70
Brazil (BR)	38
Ireland (IE)	13
United Kingdom (GB)	7
Colombia (CO)	5
Russian Federation (RU)	5
France (FR)	4
Germany (DE)	4
Spain (ES)	3
Argentina (AR)	3
Indonesia (ID)	3
Denmark (DK)	3
Greece (GR)	2
Belgium (BE)	2
Portugal (PT)	2
Israel (IL)	2
India (IN)	1
Philippines (PH)	1
Mexico (MX)	1
Thailand (TH)	1
Poland (PL)	1
Lesotho (LS)	1
Singapore (SG)	1
Egypt (EG)	1
Finland (FI)	1
Europe (EU)	1
Turkey (TR)	1
Libyan Arab Jamahiriya (LY)	1
Australia (AU)	1
Georgia (GE)	1
Croatia (HR)	1
Malta (MT)	1
Austria (AT)	1

**FROM JAN.2017 TO
DEC. 2017:
2000 VISITS**



THE USERS



Mondo



1 | 11.327

2018



THE USERS



■ WHAT DEVICE?

Altro

🌐 IL PRIMO BROWSER

iPhone

📱 IL PRIMO DISPOSITIVO MOBILE

♥️ DESKTOP VS. MOBILE



50%

50%



2018

THE LANGUAGE



- MOST OF THE LECTURES ARE IN ITALIAN, SOME ARE IN ENGLISH.





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Armando Pisani's Page

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"Thank you very much for your request. I am happy we are fiends."
Jun 20
-  [Armando Pisani](#) and [Faculty Row Director](#) are now friends

Jun 20
-  [Armando Pisani](#) updated their [profile](#)
Feb 12

Armando Pisani
Male
Monfalcone, Gorizia (Italy)
Italy
professor

 Like 0



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NY Times Event 2014



PROS AND CONS



- **PRO:** STUDENTS WERE VERY HAPPY THINKING TO THE FACT THAT THEY CAN HAVE THE OPPORTUNITY TO RE-LISTEN THE LECTURE WHENEVER THEY WANT. THEY IMPROVED THE SCORES OF THE TESTS.
- **PRO** SOME STUDENTS POINTED OUT THAT THEY HAVE UNDERSTOOD THE TOPIC COVERED DURING THE LECTURE ONLY AFTER HAVING LISTENED THE LECTURE FOR THE SECOND OR THIRD TIME AT HOME.
- **PRO:** STUDENTS ARE MORE INVOLVED AND THAY PAY MORE ATTENTION TO THE LECTURE. NO LECTURE WAS LOST SINCE 2012.
- **PRO** PERSONALLY, I HAVE NOTICED SOME DETAILS IN MY LECTURES THAT CAN (AND MUST) BE IMPROOVED. I AM ALWAYS STIMULATED TO DO MY BEST.
- **CON:** RECORDED LECTURES ARE LESS INTERACTIVE THAN OTHERS SINCE STUDENTS ARE NEVER FILMED (PRIVACY).





CONCLUSIONS

- THE OPENDANTE/OPENEYA TOOL IS EASY TO LEARN, INSTALL AND
- OD/OE IS A LOW-COST TOOL
- OD/OE IS EFFECTIVE IN HELPING STUDENTS AND IMPROVING THEIR SCORES
- OD/OE DOES NOT AIM TO REPLACE THE LECTURE, BUT IT MAKES IT ALWAYS AVAILABLE TO EVERYONE
- OD/OE IS A STRONG MOTIVATION TO IMPROVE
- WHAT ABOUT THE FUTURE?



■ **THANK YOU**