

Symposium

Information Technology in Support of Materials Education

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Materials Park, Ohio, USA



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Materials Camp®

TARGET AUDIENCES

- High school **students**
- High school **teachers**

Materials Camp®

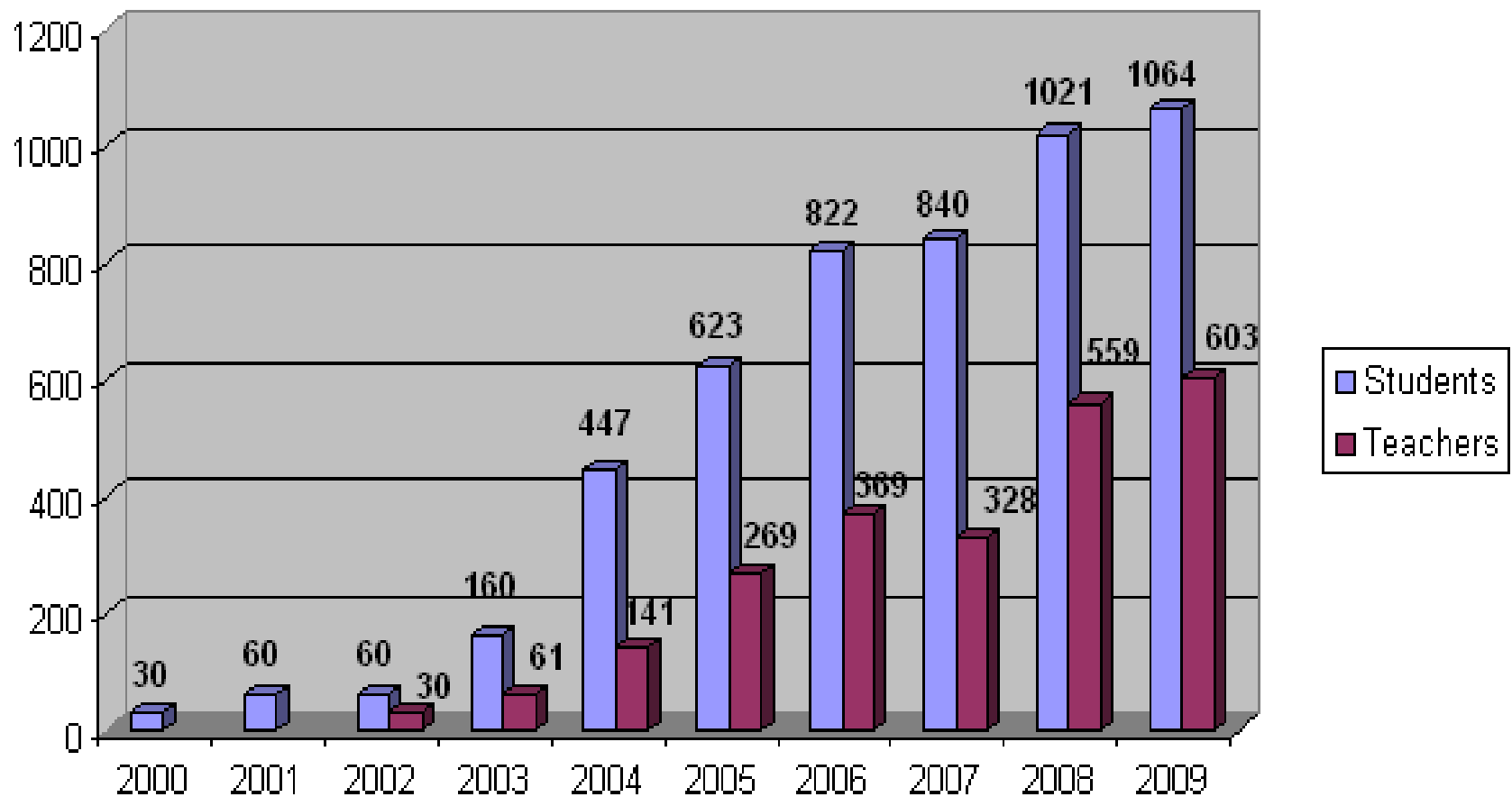
PHILOSOPHY

- ✓ LEARN BY TOUCHING
- ✓ GUIDED DISCOVERY
- ✓ NO “WRONG ANSWERS”

ASM Materials Camp®

Number of Participants

Total Thru 2009: 7,487 (Students: 5,127; Teachers: 2,360)



MATERIALS CAMP[®] - Students

Impact

Universities Attending

- **University of Washington** **15**
- **Georgia Tech** **9**
- **Cornell** **8**
- **Stanford** **7**
- **17 Schools have 4 or more graduates**
- **80 schools have a graduate**

MATERIALS CAMP[®] - Teachers

100 HOUR TRAINING PACKAGE

- **Basic: 40 hours**
(24 locations)
- **Advanced: 40 hours**
(Ohio State University.)
- **Support: 20 hours**
(Virtual / online, conferences)

HIGH SCHOOL TEACHERS

- 400+ pages of high school level lesson plans, class demonstrations, labs, experiments
- Fully searchable with all ASM content
- Numerous authors and sources
- Formerly provided to 700+ teachers each year in print format

CITY OF MATERIALS

Bookmark this site
to solve a materials
mystery.



Griffith
CSI Lab



Materials Park



Austen's
Detective Agency

www.cityofmaterials.com

CITY OF MATERIALS

- **City Tour** – an interactive game for students to play and learn
- Materials Science
 - **Try it Yourself experiments**; can be done in the classroom or at home
 - Links to other sites highlighting games, videos and career information
- **Podcasts on Materials Radio**

CITY OF MATERIALS

“FUN FACTS”

10 different materials trivia facts

Just started March 8

Provided courtesy of Granta “Deck of Cards”

10 “Fun Facts” now, more to come in future

Useful as materials information while waiting for game to download

Software Information Industry Association

CODiE Award

Past Winners

Adobe Systems

Novell

McGraw Hill

Apple Education

Pokemon

Carnegie Learning

Award Finalist

Best Education Game or Simulation

- Awards the best overall education game or simulation solution for 2008. This solution reflects instructional goals for students, teachers, or administrators in preK-20 education and is suitable for the classroom, administrative office or home. Includes delivery by CD, DVD, online, handheld or multimedia package.
- **City of Materials - City Tour, ASM International**
- There's a new place where middle school students and their teachers and parents can have fun, solve CSI-like mysteries, and learn more about the amazing world of materials. City of Materials is an interactive online environment where you can explore the materials that are part of our everyday lives. Goal is for students to connect with Materials Science & Engineering as a potential career.
- Copyright ©2009, [Software & Information Industry Association](#).

ASM POD CASTS

STRATEGY

**TAKE THE CONTENT TO
YOUNG KIDS IN A FORMAT
THEY USE EVERY DAY**

ASM POD CASTS

- 37 DIVERSE TOPICS NOW ON ASM WEBSITE
- MATERIALS ADVANTAGE STUDENT CHAPTER ENTRIES
- PEER-REVIEWED BY: EDUCATORS, PARENTS, ASM MEMBERS
- \$4,500 CASH PRIZE FOR BEST TEAM
- 2 YEARS OF EFFORT TO DATE

ASM POD CAST TITLES

Memory Foam Never Forgets

Composites, the Wave of the Future

Superconductors: The Wave of the Future

History in the Casting

What is Materials Engineering?

Swords – Revealing Materials History

ASM POD CASTS

TOPICS FOR MIDDLE SCHOOL KIDS

Adhesives

Aluminum

Automobiles

Bending

Carbon and Alloy Steels

Casting

Catastrophic Failure

Ceramic

Ceramics

Communications

Composites

Composites

Computer Generated Solid
Models

Concrete

Conductivity

Construction

Corrosion

Creep

Cyclic Stress

Ductile-to- Brittle transition

ASM POD CASTS

TOPICS FOR MIDDLE SCHOOL KIDS

Monomers

Nano composites

Nano materials

Optical properties

Oxides

Plastic Injection Molding

Polymeric Foam

Polymers

Porcelain

Recycling

Slip Casting

Sporting Equipment

Stainless Steel

Stamping

Steel

Steels

Strength

Super Conductor

Surface Coating

Swords

Titanium

Transparency

Visco elasticity

CES EDU PACK EXPERIMENT

- CUSTOMER MARKET: PRE-COLLEGE
- POTENTIAL USERS: STUDENTS, TEACHERS, PARENTS
- TEST GROUP: HIGH SCHOOL TEACHERS ATTENDING ASM MATERIALS CAMP 2.0 ADVANCED TRAINING

CES EDU PACK EXPERIMENT

- ADVANCED ‘2.0’ TEACHERS MATERIALS CAMP
- ATTENDED A 40 HOUR INTRODUCTORY CAMP
- MOTIVATED TO LEARN MORE CONTENT AND TEACHING METHODS
- OHIO STATE UNIVERSITY HOSTS (PROFESSOR GLENN DAEHN & OTHERS)

CES EDU PACK EXPERIMENT

- **SPONSOR:** UNIVERSITY OF WASHINGTON, SEATTLE
- **INVESTIGATOR:** PROFESSOR TOM STOEBE
- **TEAM MEMBERS**
GRADUATE STUDENTS IN MSE
HIGH SCHOOL TEACHERS
- **GOAL;** CREATE A 'FRONT END' INTRODUCTION SUITABLE FOR SECONDARY SCHOOLS

CES EDU PACK EXPERIMENT

SURVEY RESULTS : 21 TEACHERS

2007

**1. HOW EASY TO LEARN AND USE
CES?**

86% FAIRLY EASY

2. AMOUNT OF INFORMATION ?

67% ABOUT RIGHT

CES EDU PACK EXPERIMENT

SURVEY RESULTS 2007

3. DID YOU MAKE A SELECTION?

57% RIGHT AWAY

29% AFTER A FEW ATTEMPTS

4. COULD EDU PACK MAKE A SIGNIFICANT CONTRIBUTION TO HS ENGINEERING PROGRAM?

71% YES FOR STUDENT USE

CES EDU PACK EXPERIMENT

SURVEY RESULTS 2007

5. WILL YOU USE IN CLASSROOM THIS YEAR?

48% YES

48% MAYBE

CES EDU PACK EXPERIMENT

SURVEY RESULTS 2007

**6. ARE PROGRAMS LIKE EDU PACK
SUPPORTED BY A TEXTBOOK,
DOWNLOADABLE TEACHING
RESOURCES, TRAINING AND
TECHINICAL ASSISTANCE
IMPORTANT?**

76% YES

CES EDU PACK SURVEY # 2

2008 SURVEY

- 10 TEACHERS RESPONDED
- ONLY 1 TEACHER USED EDU PACK WITH STUDENTS

CES EDU PACK SURVEY # 2

2008 SURVEY

TEACHER COMMENTS

- **“NO TIME AVAILABLE IN CURRICULUM”**
- **“STANDARDS CONSUME ALL MY TIME”**
- **“DOES NOT DIRECTLY RELATE TO WHAT TOPICS I TEACH”**

EDUCATION “YEARBOOK”

- 108 POST-SECONDARY SCHOOLS
- USA AND CANADA
- MATERIALS SCIENCE, CERAMICS,
POLYMERS IN DEPARTMENT NAME
- LINKS TO MSE OFFICIAL UNIVERSITY
WEBSITE
- 49 ANNUAL PRINT EDITS PUBLISHED
ANNUALLY

EDUCATION “YEARBOOK”

INTERNATIONAL SCHOOLS

39 COUNTRIES

PLAN TO BE ON WEBSITE IN 2010