

ONLINE REPORTING

Processes and Lessons Learned

Courtney Heppner
&
Sarah Rand



An aerial photograph of the University of Chicago campus. In the foreground, there are several large, light-colored stone buildings with red-tiled roofs and multiple windows. Some buildings have flat roofs with HVAC units. In the middle ground, there are more buildings, including a prominent one with a green dome. The background shows a dense urban landscape with many tall buildings and a body of water (Lake Michigan) under a blue sky with light clouds.

outlier

RESEARCH & EVALUATION
CEMSE | UNIVERSITY OF CHICAGO

OUTLINE

1. Introduction

2. Theoretical Framework

3. Methodology

4. Results

5. Conclusion

OUTLINE

- What is an online report?

OUTLINE

- What is an online report?
- Lessons learned from creating online reports
 - Online reports require teamwork
 - Online reports are powerful and dynamic
 - Online reports require time and money

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[Computer Science Research](#) > [OS4CS Home](#)

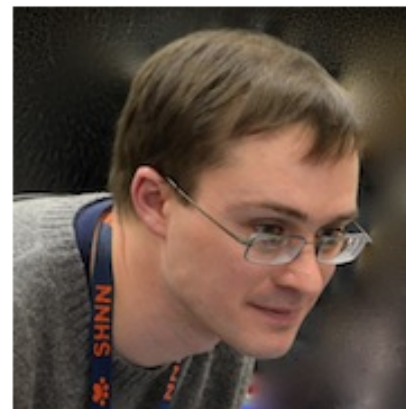
BUILDING AN OPERATING SYSTEM FOR Computer Science Education

-  Landscape Study
-  Teacher Capacity Study
-  Stories from the Field
-  CS in Schools Study
-  Design Studio
-  Five Challenges and Call to Action

TEACHERS

The goal of this study was to identify the most significant supports and barriers that CS teachers and principals perceive most affect CS education in their schools. We also sought to understand practitioners' opinions about the qualities they felt CS teachers needed to have; steps that needed to be taken to move CS forward' and their visions for CS in the future. In order to answer these questions, we interviewed 19 teachers and 8 principals ([see description of sample](#)).

This study complements the [Teacher Capacity Study](#) in that both examine teachers' current contexts, capacities and needs. The Teacher Capacity Study did so through the administration of a questionnaire. This study examines these issues more in-depth and provides rich descriptions, in practitioners' own words.

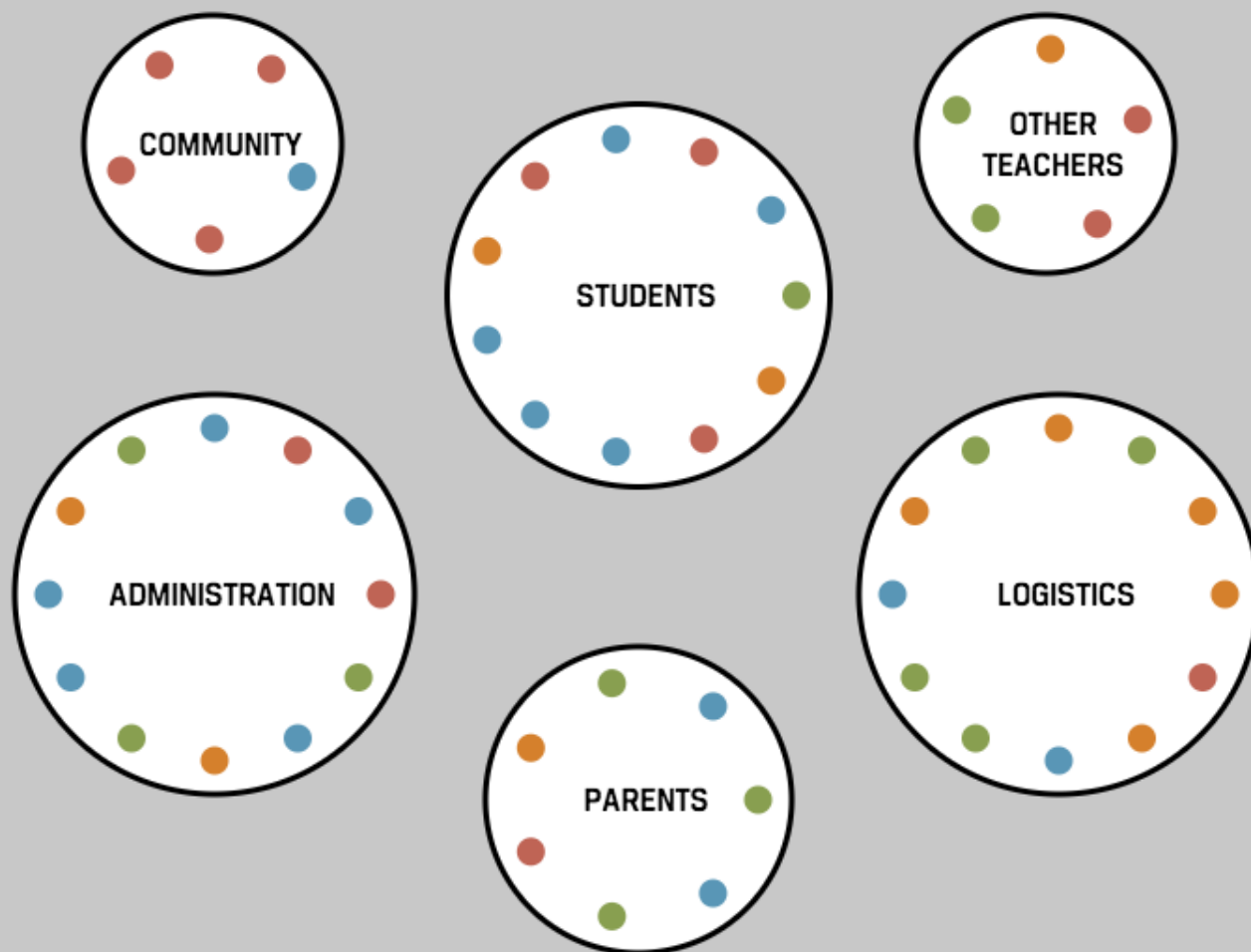


[Open all sections](#) / [Close all sections](#)

- ▶ Computer science teachers feel isolated.
- ▶ Computer science teachers feel that they lack sufficient instructional materials.
- ▶ Computer science teachers perceive that computer science isn't understood or valued as a rigorous discipline.
- ▶ Computer science teachers perceive that because CS is low priority it receives fewer resources.
- ▶ Computer science teachers are scarce.

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Teacher Thoughts on CS Stakeholders



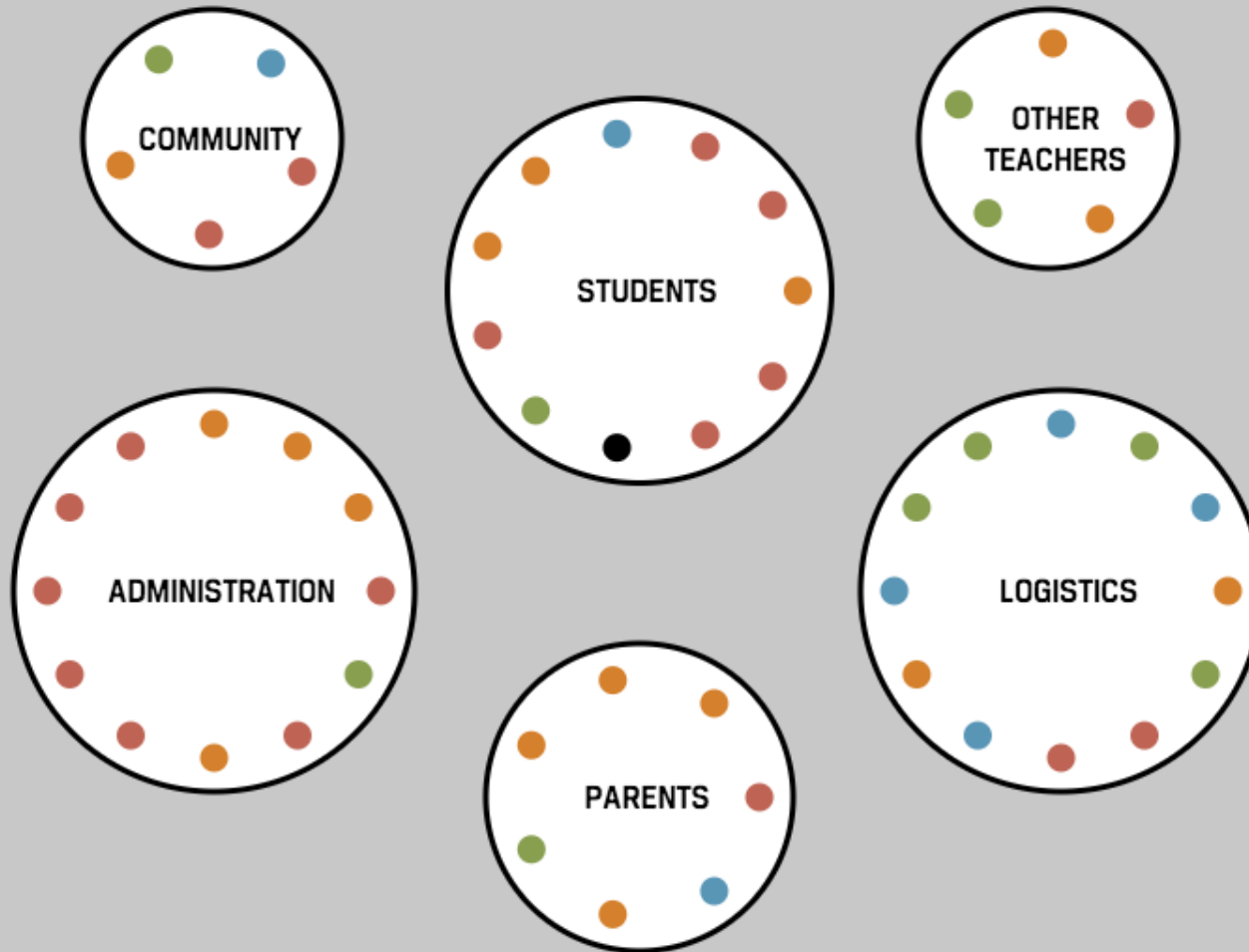
Teacher Thoughts

(unedited)

Click the small circles to see teacher responses.

Teachers were asked to agree/disagree about statements pertaining to stakeholders' views of the importance of CS and about logistical barriers to CS. They were invited to write in explanations for their responses. A sample is included here.

Teacher Thoughts on CS Stakeholders



Teacher Thoughts

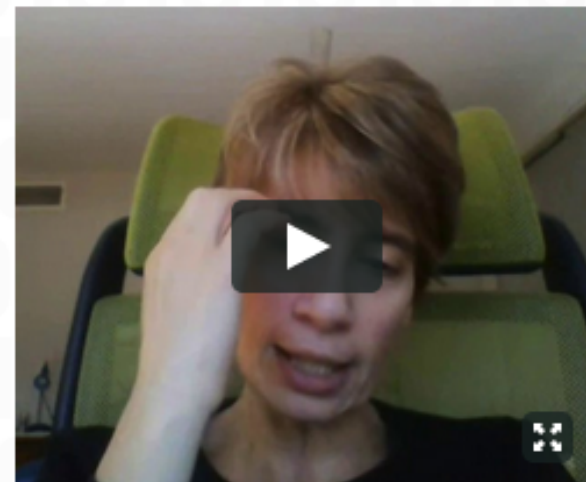
(unedited)

Majority of students see CS as something difficult and don't want to enroll in any elective classes that require effort

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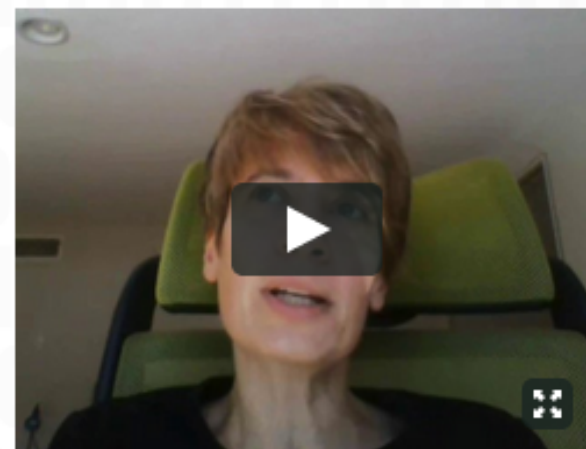
Lucia remembers how this drive and commitment helped them preserve:

“ *...When the second one was not funded, we grouped with the bad news around the table at Northside College Prep and we said "can we make a pact that this is too important to wait for someone in Washington to bless us? And can we just make it happen." We were determined after this second proposal was not funded to make it up somehow.* ”



Lucia also cautions that you need a coalition of diverse stakeholders:

“ *It is very important to have a champion of your cause. One person that is in your team, in your core, committed, that's not going say "this could be a solution, but I don't know..." Someone that really gets it. Unfortunately that's not enough, so I think you want to try to diversify and have contacts at different levels in the district.* ”





How many of you have developed
an online report like this?

How many of you have seen an
online report like this?

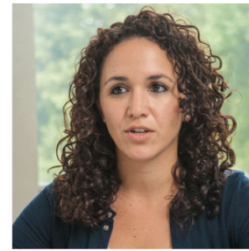
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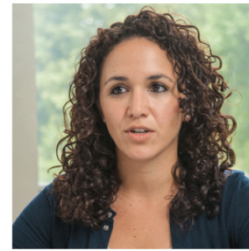
A decorative header featuring a complex circuit board pattern with various lines, nodes, and circular components in black and white.

ONLINE REPORTS...
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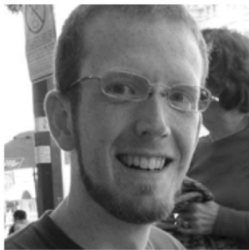
University of Chicago Research Team



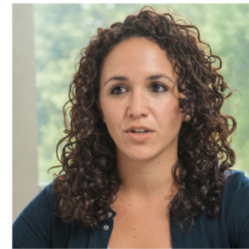
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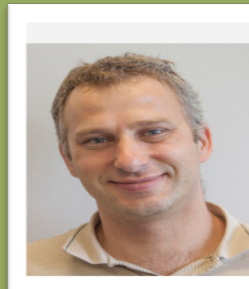
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Designers & Web Team



My Tasks

Inbox

- OSLN
- CEMSE R&E Admin
- ACM Computer Science
- Data Visualization
- S3
- Purple Asparagus Evaluation
- Development
- Web Development: ACM Project
- Web Development: S3
- Graphic Design
- LEAD CSI Evaluation
- Web Development: R&E Team
- CS10K

Show more...

CE

CC

GV

KB

PROJECTS

- CEMSE R&E Admin
- OSLN
- ACM Computer Science
- Websites
- School Health and Wellness Devel...
- Data Visualization

★ ACM Computer Science

Other

Sort

Filter

New

Archive

Overall Project Management:		
4	Monthly reports drafted	Wednesday
5	Baker: Compile hours worked	Tomorrow
6	Baker: Submit Baker's Hours for ESP	Thursday
Communication and Coordination:		
8	Submit CSTA Voice Article for Jan 2014 Issue	Nov 10
9	Send Status Reports to Cameron	Today
10	Solicit Feedback on Design Studio Report from Attendees prior to announ	C&C Today
AEA Presentation:		
12	Plan AEA presentation	Oct 19
13	Create handout	Oct 9
14	Rand review AEA presentation slide deck < Plan AEA presentation	Today
Other Presentations:		
September 25th Webinar:		
Design Studios:		
18	Grant Report for NSF	design studios Oct 7
Framing/Concluding Documents:		
Other Policy/Support Tasks:		

A decorative graphic on the left side of the slide, featuring a white background with a black circuit board pattern. The pattern consists of various lines, dots, and circles, resembling a complex electronic circuit.

ONLINE REPORTS...
are powerful and dynamic

Lack of sustainability: Gray explained that once funding of a program ends, the program can be in danger of ending. He said that it can be a challenge to involve teachers in the program in a consistent way.

Gray on sustainability:

“Sustainability has always been the challenge. And then just finding the kind of teacher you need who has that excitement and passion as well and doing it for the right reasons. That's been the main challenges. It's kind of frustrating when you know that we can only do this two or three times per session, so we do it for two years, and we hope the teacher will take over, but if they're back grading papers and not paying attention and we have no mechanism to bring them up and engage them, that's the main challenge.”



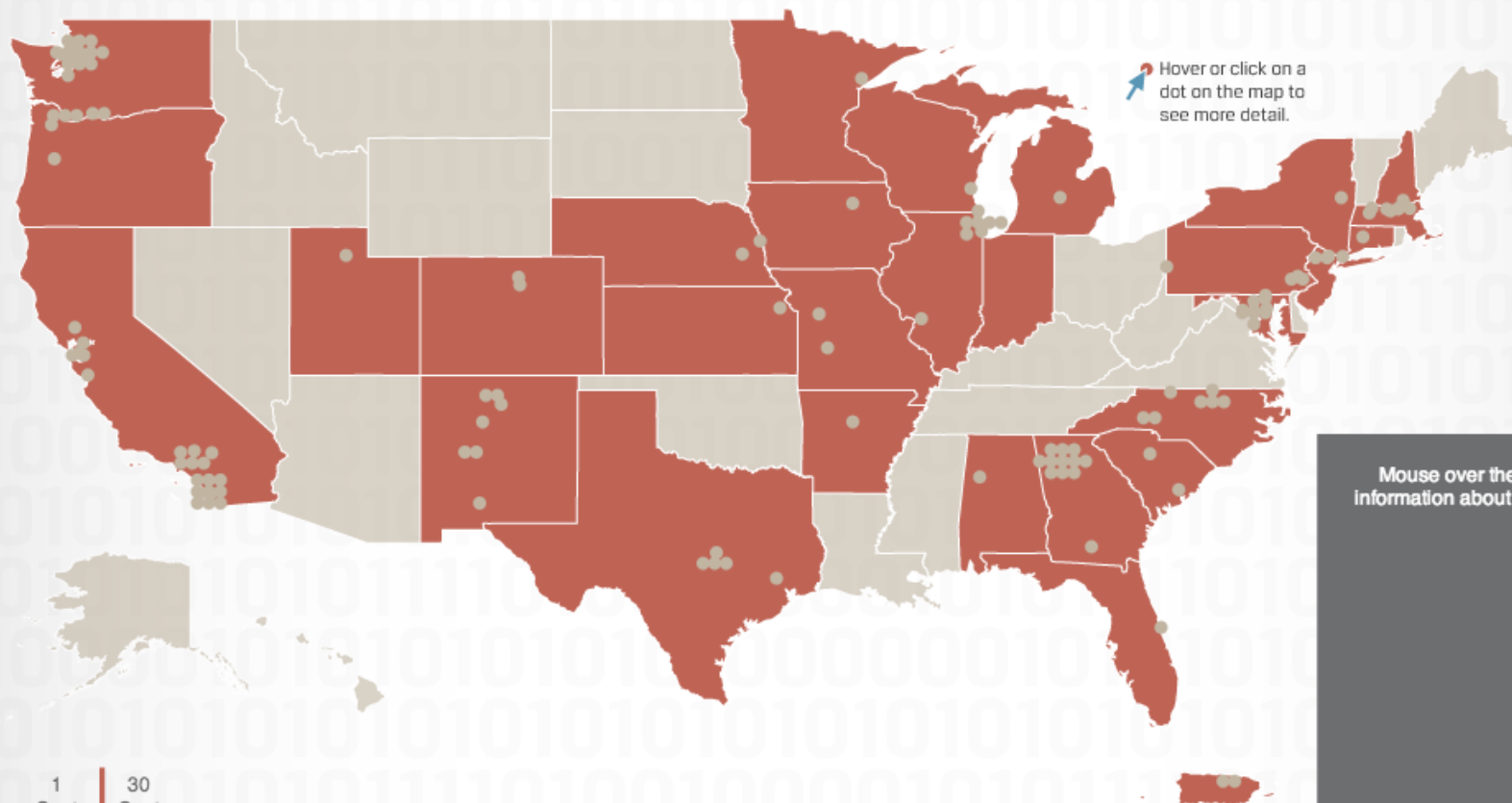


Dates, Locations, Names of PD Use this data Final 79 cases Sheet2

The Landscape of Computer Science

Professional Development

Data presented in this map is from a survey administered in September 2012 by CEMSE and UEI at the University of Chicago.



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Sept
2011

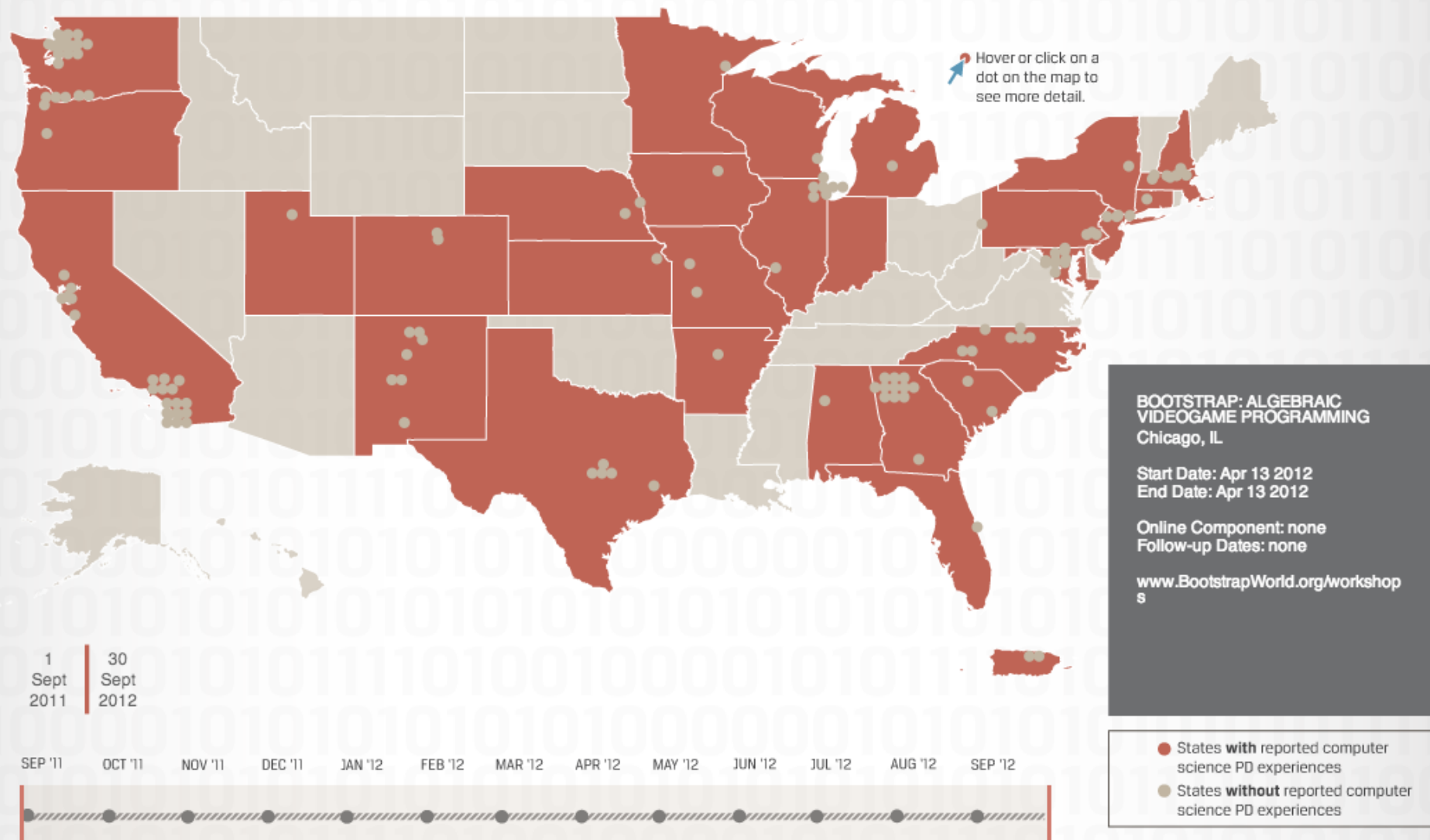
30
Sept
2012

SEP '11 OCT '11 NOV '11 DEC '11 JAN '12 FEB '12 MAR '12 APR '12 MAY '12 JUN '12 JUL '12 AUG '12 SEP '12

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Home Layout Document Elements Tables Charts SmartArt Review

Font Paragraph Styles

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AaBbCcDdEe Normal QLabel No Spacing Heading 1 Heading 2 Title

1 2 3 4 5 6

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Updated 12-19-2012

Landscape Study Final Report Outline

Background:

Numerous professional development opportunities for computer science teachers exist, however the computing community has little understanding of how these opportunities fit together in a strategic framework for systematically growing the number of teachers and learners of computer science. Expanding computer science education is of vital importance to the United States, and the community's engagement on this grand challenge has been spurred on by the National Science Foundation's "CS10K" vision, which seeks to have rigorous academic computer science courses in 10,000 high schools taught by 10,000 teachers by 2016. Does the nation and education community have the capacity to greatly increase the ranks of computer science teachers, and put rigorous computer science in places where it currently is not and never has been? If so, where will those teachers come from, and what kinds of professional development and supports do they need? If we are going address the grand challenge of growing computer science education across the country, we need to develop a greater understanding of how to prepare, develop and support computer science teachers of all levels and advocate for expansion and improvement.

Study Questions:

The University of Chicago's Urban Education Institute (UEI) and the Center for Elementary Mathematics and Science Education (CEMSE) are carrying out an 18-month study for the computer science education community to (1) Understand and document the landscape of current computer science teacher professional development; (2) Identify the current capacity of computer science teachers, potential sources of new computer science teachers and the organizational and institutional steps some have taken to advocate for the broader computer science education effort (3) Understand the professional development and institutional supports for, and barriers to high quality computer science teaching and learning; and (4) Work with PD providers to identify barriers, needs and challenges, and define opportunities and develop strategies to grow their professional development efforts.

Data Collection:

Over the course of the 18-month study, researchers are using surveys and interviews to collect data from professional development providers, computer science teachers, school leaders, and others involved in computer science education. Findings will be released as they are developed and will be available at: <http://cemse.uchicago.edu/research-and-evaluation/research/computer-science/>. A final report will include a summary of all findings and recommendations for next steps.

This project seeks to provide useful, timely information to inform growth of computer science professional development and computer science education. The project team is committed to working with the computer science education community to accomplish that goal. To that end, our project team will work with the partnership that ACM has established with the National Science Foundation, Google, the Computer Science Teachers Association, Microsoft, and the National Center for Women and Information Technology to assure our deliverables will be useful the broader computer science and computer science teaching community.

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1

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Updated 12_6 2012

FINDINGS

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Updated 12-19-2012

Landscape of Professional Development for High School Computer Science Teachers

The "Landscape Study" strand of this work focused on describing the current professional development opportunities that are available for high school computer science teachers. The primary data collection for this strand took place through a survey administered to providers of high school computer science teacher professional development.

Survey Content

The survey sought to answer the following questions:

- Who is providing high school computer science teacher professional development?
- Who is participating in high school computer science teacher professional development?

The survey asked for information on who was providing the professional development (including the initiators, organizers and leaders) and who was participating in the professional development (e.g. Were the participants primarily computer science teachers? What grade level? Pre-service teachers? In-Service? Full-time?). The survey also asked for information on the numbers and experience of participants as well as the interests of participants in teacher particular computer science courses.

- Where and when and how is high school computer science teacher professional development taking place?

The survey asked providers to report on the organizational structure of the professional development (e.g. duration, timing) and the delivery structure (e.g. face-to-face, on-line, combination). It also asked substantive questions about the pedagogical approaches the providers used. Other questions focused on the steps that led to the existence of the professional development including who funded it (e.g. federal, state, local, foundation), who initiated and planned it, and how participants were recruited (e.g. professional organizations, local school districts).

- What is the PD about? Were the goals of high school computer science professional development and what disciplinary content, and pedagogical content is included?
- What instructional approaches do high school professional development providers use?

Sample, Duration and Response Rate

The goal of this survey was to paint as comprehensive a picture as possible of the CS PD landscape. To that end, the research team worked with a range of experts in the field of computer science education to create a list of 129 high school computer science PD providers. The list was then distributed to all providers and all providers were asked to complete the survey. The team recognized that even with a best effort to create a comprehensive list of high school computer science professional development providers some (especially local/regional) professional development experiences would be overlooked. Therefore, we made the survey link publicly available on the project web site, posted information about the survey on the SIGSCE Twitter, a CACM blog post, and direct outreach with follow up phone calls. We also encouraged recipients of the survey to pass it on to others.

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2

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Updated 12_6 2012

- Recruitment and commitment to implement computer science: Provide the appropriate K12 teachers, require the teachers to

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The survey opened on August 1, 2012. Of the 129 providers, 76 completed the survey. Of those who completed the survey, 20% completed less than 20% of the survey. The total response rate for the survey was 20%.

Of the 76 respondents, 51 (67%) were female and 25 (33%) were male. (Individuals could complete the survey anonymously.)

Some people responded for projects that were not part of the CE21 project. I would say that of the 76 respondents, 20% came from people we contacted.

Also, those 76 surveys actually represent 129 providers.

For the CE21 projects, we need to know what portion of the CE21 projects are relevant to count CE21 projects.

For CS4HS Google funded project, who Baker the

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The Current Landscapes of Computer Science Professional Development

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The analysis sought to answer the following questions:

Who is Providing High School Computer Science Teacher Professional Development?

Most professional development is
provided by **higher education institutions**.

The vast majority of respondents reported
their organization to be a college or university.

82%
College/University

62%
College/University
Faculty

18%

Membership organizations,
corporations, high schools
and foundations

25%
Google-only
funded PD

Google and the National
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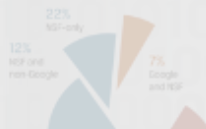
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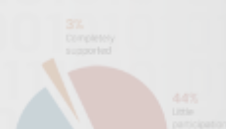
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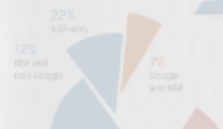
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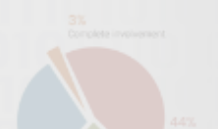
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11%
NSF + non-NSF

12%
NSF + non-NSF

22%
NSF-only

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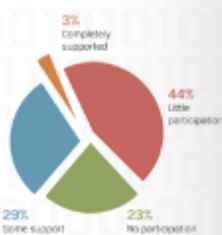
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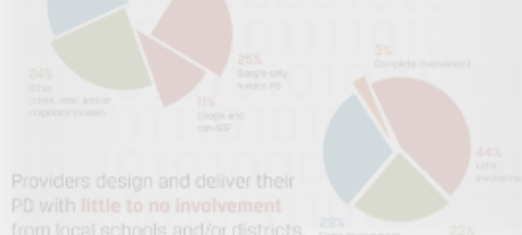


22%
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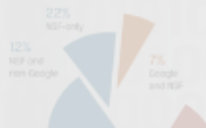
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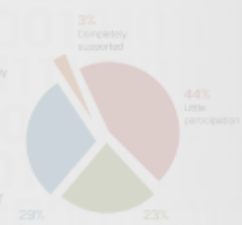


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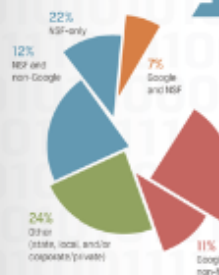
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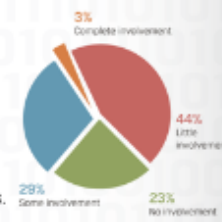
20%
Membership organizations, corporations, high schools and foundations

80%
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Google + NSF

THE LANDSCAPE OF Computer Science Professional Development

IN SEPTEMBER 2012, THE UNIVERSITY OF CHICAGO'S Center for Elementary Mathematics and Science Education (CEMSE) and the University of Chicago's Urban Education Institute (UEI) developed a survey for high school computer science teacher professional development (PD) providers. The survey sought to answer the following questions about high school computer science teacher PD:

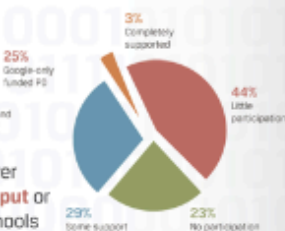
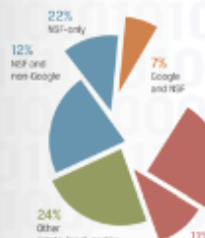
- Who is providing the PD?
- Who is participating?
- Where, when, and how is the PD happening?
- What is the content?
- What instructional approaches are used?

WHO IS PROVIDING PROFESSIONAL DEVELOPMENT?

Most PD is provided by **higher education institutions**.



Google and the National Science Foundation (NSF) are the **primary funders** of computer science teacher PD.



Providers design and deliver their PD with **little to no input** or co-planning from local schools and/or districts.

THE LANDSCAPE OF Computer Science Professional Development

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- What is the PD content?
- What instructional approaches do PD providers use?

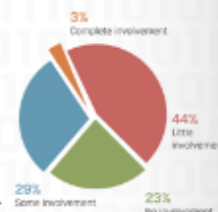
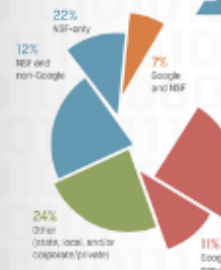
WHO IS PROVIDING PROFESSIONAL DEVELOPMENT?

Most PD is provided by **higher education institutions**.

Of the respondents from a college/university, 59% were college or university **faculty**.



Google and the National Science Foundation (NSF) are the **primary funders** of computer science teacher PD.



Providers design and deliver their PD with **little to no involvement** from local schools and/or districts.



Basic online report:

\$5,000



Basic online report:

\$5,000

Customized online report:

\$10,000



Basic online report:

\$5,000

Customized online report:

\$10,000

Infographic from Visual.ly:

\$4,500





CENTER FOR
ELEMENTARY MATHEMATICS
AND SCIENCE EDUCATION
THE UNIVERSITY OF CHICAGO



process
technology
Education practices today's
lap innovation educator
look districts new
found future
Foundation way science



A decorative header image featuring a complex circuit board pattern with various lines, nodes, and circular components in black and white on a light gray background.

ONLINE REPORTS...

- ✓ require teamwork
- ✓ are powerful and dynamic
- ✓ require time and money

OUTLINE

- ✓ What is an online report?
- ✓ Lessons learned from creating online reports
 - ✓ Online reports require teamwork
 - ✓ Online reports are powerful and dynamic
 - ✓ Online reports require time and money
- Why invest in online reports?
- Feedback from users
- Online reporting & you!



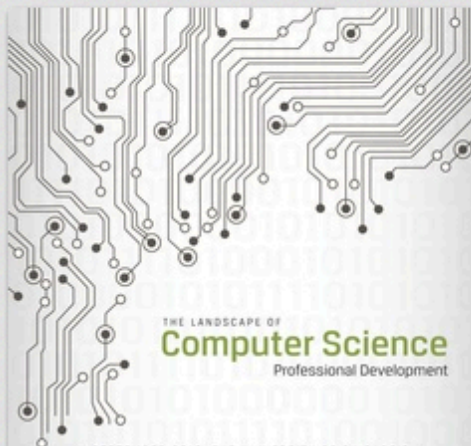
Why are online reports a good or bad investment for your projects?



Why invest in
online reports?



Infographics

[Edit Board](#)


IN SEPTEMBER 2012, THE UNIVERSITY OF CHICAGO'S Center for Elementary Mathematics and Science Education (CEMSE) and the University of Chicago's Urban Education Institute (UEI) developed a survey for high school computer science teacher professional development (PD) providers. The survey (n=76) sought to answer the following questions about high school computer science teacher PD:

- Who is providing the PD?
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- What instructional approaches do PD providers use?

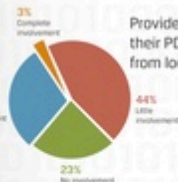
WHO IS PROVIDING PROFESSIONAL DEVELOPMENT?

Most PD was provided by **institutions of higher education**.

Of the respondents from a college or university, 59% were college or university faculty.



Providers designed and delivered their PD with little to no involvement from local schools and/or districts.



1 USE SMS MARKETING TO CONNECT EDUCATION -- LIFE

Connect with your students by using the tools and channels that they use most.

TOOLS LIKE ExactTarget's MOBILE MARKETING RESOURCE CAN HELP

Schools can use SMS to connect with students several ways like:

- Updating students on deadlines, coursework and schedule changes.
- Notifying classes or entire schools of emergency closures.
- Keeping staff and students informed about important events.



HOW SCHOOLS HAVE USED SOCIAL MEDIA TO ADDRESS ISSUES:

One class set up a Facebook page to raise awareness about an environmental problem in their community.

They also recorded and uploaded a rap video to YouTube addressing this issue.

Universities are also using social media to connect with students and their communities.



Schools use social media for a variety of reasons including:

- Engaging alumni: 83%
- Engaging the local community: 38%

3 UNIVERSITIES OFFER FREE non-credit ONLINE COURSES

They will continue to offer free

THERE ARE A VARIETY OF FREE education resources ONLINE INCLUDING

teachers Are heroes

Teachers change the world by spreading knowledge and making an impact on their students from the classroom through to the rest of their lives. Learn more about how teachers are heroes and how they shape not only our education, but our entire world.

TEACHERS TODAY

there are over **7.2 MILLION** teachers in the U.S.



over **80%** are female.



1 IN 5 are in their 20s.



1 IN 3 are over 50.



TEACHING HERO

teachHERO

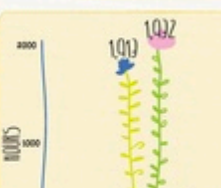


Writes and performs spoken word about the importance of teaching

Left teaching in 2000 to pursue a goal of inspiring 1,000 new teachers

Met his goal in 2012

TEACHING, A HEROIC JOB



teachers on average work **50 HOURS** per week.

46% of teachers work more

THERE'S **No Home** In Finland

Finland's school system accomplishes some impressive

THEIR HIGH SCHOOL GRADUATION RATE IS AT 93%.

COMPARED TO 79% IN CANADA, AND 75% IN THE U.S.



AND THEIR TEST SCORES DOMINATE

Mean scores for PISA test (Program for International Student Assessment)



So what makes

Retweeted 3 times



Jeff Gray @jgrayatua

11 Jul

Horn tooting - The University of Chicago just released their report on the K-12 CS work in Alabama:

cemse.uchicago.edu/computerscienc...



taxman @easypopcorn

146 followers



Follow



Tammi @TScheiring

112 followers



Follow



Alabama Engineering @bamaengineering

726 followers



Follow

Building an Operating System for Computer Science Education

Join Us For A Webinar!

Dear Teacher-

Thank you for completing our Teacher Capacity Survey last winter! We have completed our analysis and created an online report. View that report [here](#). Please share this report with your colleagues.



Join us for a webinar to learn about this report, ask questions, and share your thoughts about the future of computer science education.

Wednesday, September 25th at 3:00 pm CT.

[Register here!](#)



UEI URBAN
EDUCATION
INSTITUTE



THE UNIVERSITY OF
CHICAGO

Questions? Contact Sarah Rand at srand@uchicago.edu.

1225 East 60th St | Chicago, IL 60647 US

This email was sent to srand@uchicago.edu. To ensure that you continue receiving our emails, please add us to your address book or safe list.

● Pageviews

1,000

500

Saturday, June 8, 2013

■ Pageviews: 0

Ju...

July 2013

August 2013

September 2013

Primary Dimension: Page path level 3 Page Other ▾

Secondary dimension ▾

Sort Type: Default ▾



advanced



Page path level 3	Pageviews ? ▾	Unique Pageviews ?	Avg. Time on Page ?	Bounce Rate ?	% Exit ?
	7,191 % of Total: 22.17% (32,431)	4,735 % of Total: 20.59% (22,997)	00:01:48 Site Avg: 00:01:24 (27.85%)	63.19% Site Avg: 57.79% (9.35%)	35.02% Site Avg: 32.83% (6.67%)
1. /	2,037	1,168	00:01:18	53.16%	32.06%
2. /teacher-capacity/	1,377	1,112	00:02:20	64.09%	50.04%
3. /cs-schools-study/	1,166	656	00:01:30	45.60%	18.35%
4. /landscapestudy/	967	798	00:02:24	82.00%	55.95%
5. /stories/	921	619	00:01:39	76.24%	27.69%
6. /design-studio/	462	216	00:02:38	36.50%	18.83%

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Questions?



Creating online reports for your projects



What challenges do you see in creating online reports?

What is exciting to you about creating online reports?

outlier

RESEARCH & EVALUATION
CEMSE | UNIVERSITY OF CHICAGO

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