Coronado Unified School District 21st Century Learning Research Study

2012-2013
November 22, 2013
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This study was conducted by the Mobile Technology Learning Center (MTLC), a research entity operating under the auspices of the School of Leadership and Education Sciences at the University of San Diego. MTLC is designed to establish the university research environment of the future, while concurrently fueling innovation in PK-12 education. MTLC collaborates with PK-12 districts to research the use of mobile learning devices for teaching and learning to test research findings and provide future teachers with unique teaching and research opportunities. Additional information about MTLC is available at www.sandiego.edu/mtlc.

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This report presents findings on the Coronado Unified School District’s (CUSD) vision of technology integration and the district’s readiness to incorporate 21st century teaching and learning during the 2012-2013 school year. Teachers, principals, and district leaders were interviewed throughout CUSD schools to understand each school’s experience with mobile learning and the barriers they may have encountered. Findings from this study may prove helpful to both CUSD and other districts interested in integrating mobile technology to enhance teaching and learning.

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Executive Summary

This study, conducted in the spring of 2013, was designed to gather Coronado Unified School District (CUSD) teachers’ and administrators’ perspectives on their district’s vision of 21st century skills and technologies. Study findings are intended to guide CUSD in supporting teacher development and moving toward a culture of 21st century learning. The research focused on the following questions:

1. How do CUSD leaders and teachers define CUSD’s vision for 21st century learning and teaching?
2. How do teachers and school leaders feel about implementing CUSD’s vision?
3. What might be the barriers to the effective implementation of CUSD’s vision and how might those barriers be overcome?

Data was collected at three different levels within the district. Interviews were conducted with the superintendent, the curriculum and development director, and the principals of the four district schools. Teacher focus groups were convened at 3 of the 4 schools, to get an in-depth understanding of teachers’ attitudes. These interviews, which sought the range of perspectives across the district, were analyzed for commonalities and differences concerning the understanding, acceptance, and implementation of 21st century learning and teaching.

Along with a detailed description of each stakeholder group’s perspective, this study elaborates on the following findings that emerged from the data:

1. CUSD administration and teachers share a consistent vision for 21st century learning and teaching.
2. There is a discrepancy between CUSD’s vision and its schools’ capacity to implement it.
3. Conflicting accounts of infrastructure reliability exist.

The report closes with four recommendations based on its findings. These include:

1. Stratify professional development by teacher skill level
2. Embed time for curriculum design into professional development
3. Ensure the adequate provision of mobile technology resources
4. Reassess the reliability of wireless infrastructure

The report concludes with a recommendation for a survey of the entire district designed to help CUSD leaders make informed decisions on how to best tap into technology’s potential to promote 21st century learning skills.
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District Profile
The Coronado Unified School District (CUSD) is coterminous with the City of Coronado, CA, a suburb of the greater San Diego area. This highly resourced K-12 district enrolls about 3,100 students annually across two elementary schools, one middle school, one high school, and one alternative school (not included in this study). CUSD also has a preschool, adult education, and Regional Occupational Programs (ROP) (not included in the study). CUSD serves families generally considered to be of higher socioeconomic status, though one of its elementary schools participates in the Title I program. One other key CUSD characteristic is its relationship to the military, 38% of CUSD’s students come from military families.

Technology integration varies across the district. In some areas, teachers’ use of technology seems ahead of the curve, while in others it lags significantly. All technology in the district is accessed through the cloud. CUSD uses a single sign-on protocol that streamlines access to district web resources and minimizes management burden. CUSD technology related teacher development has focused on supporting those who are ready to use technology, allowing the culture to develop gradually. As an example, the district provides financial support to teachers who propose ways to use technology in their classrooms, rather than requiring all teachers to use mobile devices. CUSD has begun the process of creating a personalized educational plan for each student and is currently modifying its teacher evaluation system to increase its emphasis on student achievement.

The district’s decentralized technology policy yields outcomes such as the drastically different student-to-device ratio between its two elementary schools. At Silver Strand, there are about as many devices as students, while at Coronado Village the ratio is less than 2:1 (See Table 1 on the following page).
Table 1: Technology Infrastructure and Capacity of Coronado Unified Schools

<table>
<thead>
<tr>
<th>School</th>
<th>Silver Strand</th>
<th>Coronado Village</th>
<th>Coronado Middle</th>
<th>Coronado High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrollment¹</td>
<td>301 (+24 PK)</td>
<td>921 students</td>
<td>763 students</td>
<td>1170 students</td>
</tr>
<tr>
<td>Full Time Teachers²</td>
<td>16</td>
<td>36</td>
<td>31</td>
<td>44</td>
</tr>
<tr>
<td>Tech Support Teachers²</td>
<td>1 Shared by Strand &amp; Village</td>
<td>NA</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CUSD Computers³</td>
<td>165</td>
<td>288</td>
<td>245</td>
<td>417</td>
</tr>
<tr>
<td>Total Mobile Devices³</td>
<td>47 iPods (1 cart)</td>
<td>60-80 iPods (2 carts)</td>
<td>~480³</td>
<td>76 iPads (2 carts)</td>
</tr>
<tr>
<td>Total Computers</td>
<td>~312</td>
<td>~403</td>
<td>~725</td>
<td>~493</td>
</tr>
</tbody>
</table>

Research Questions and Methodology
This study was designed to gather the perspectives of Coronado Unified School District (CUSD) leaders and teachers on their district’s 21st century learning initiative. The study is built around three guiding questions:

1. How do school leaders and teachers define CUSD’s vision for 21st century learning and teaching?
2. How do teachers and school leaders feel about implementing CUSD’s vision?
3. What might be the barriers to the effective implementation of CUSD’s vision?
   a. How might those barriers be overcome?

To answer these questions, researchers conducted interviews or focus groups with district administration and teachers:

1. Five interviews were conducted for this project; they included interviews of two key central office administrators and all four principals: The superintendent and the director of curriculum and development were interviewed together following a semi-structured protocol (Appendix A); the principals were interviewed individually following a semi-structured protocol (Appendix B).
2. Using a purposive sampling technique, focus groups of teachers from the two elementary schools and the middle school were convened. Individual school principals invited teachers to the focus group. Participant selection was based on a variety of criteria including teacher availability, specialist knowledge, and use

¹Data source Ed-Data website for the 2012-2013 school year.
²Data source Principal interviews; counts are device & cart totals (ie. 47 iPods on 1 cart)
³BYOD Student Program – Not CUSD Devices
of technology. A semi-structured protocol was used for the focus groups (Appendix C). Time constraints prevented high school teachers from participating in focus groups.

All participants gave informed consent prior to research participation. All names in this study have been changed to maintain participant confidentiality.

Interview and focus groups transcripts were analyzed using a process that included multiple rounds of readings by the research team. Through repeated readings, themes emerged as the data was analyzed to increasingly deeper degrees. The data from each group of stakeholders was comparatively analyzed to help researchers understand their perspectives concerning 21st century learning in Coronado Unified School District.

Limitations

Because only a small sample of elementary and middle grade teachers was included in the study, it is not clear whether these findings represent the experience of all CUSD teachers. High school teachers’ opinions may be unrepresented. While multiple forms of evidence support the following findings, they should be interpreted accordingly.

Theoretical Framework

The Partnership for 21st Century Skills (P21) provided a foundation for the district’s vision. District administrators have aimed to align their goals and vision to the P21 framework. This framework provided points of reference and common language for researchers to note the similarities and differences between the district’s and P21’s definition and vision of 21st learning and teaching. Researchers also used the language and vocabulary provided by P21’s framework to code and analyze the transcribed interviews (see Figure 1). Because of this, P21 language is prevalent in the findings that follow.
Findings

The Coronado Unified School District (CUSD) leadership embraces a vision of 21st century learning based on P21 components. The following findings emerged from researchers’ efforts to gather the perspectives of CUSD leaders and teachers on their district’s 21st century learning initiative.

Three major findings emerged through the data analysis:

1. CUSD administration and teachers share a consistent vision for 21st century learning and teaching.
2. There is a discrepancy between CUSD’s vision and its schools’ capacity to implement it.
3. Conflicting accounts of infrastructure reliability exist.

These findings address the perceptions and understandings of the various CUSD stakeholder groups. A more detailed explanation of each finding is given below.

Finding 1: Administration and teachers share a consistent vision for 21st century learning and teaching

Coronado Unified School District’s (CUSD) vision of 21st century learning and teaching is consistent across administrators and teachers. All share similar ideas of what 21st century learning should look like in the classroom. CUSD’s vision extends beyond meeting Common Core Standards. It is of paramount importance to all stakeholders that the curriculum incorporate the 4Cs (Communication, Collaboration, Critical Thinking, Creativity), that it emphasizes project-based learning, and that all schools aim to increase positive learning experiences for all students. CUSD participants believe technology is simply a tool to foster 21st century skills.

Learning is a lot more than a device. You can teach 21st Century skills. You can promote 21st Century learning without instructional technology in your hands. How are we developing critical thinkers? How are we promoting collaboration? How are we having people analyse complex texts? Work within a team, as a member of a group? So, we look at 21st Century Learning as opportunities to promote those 21st century skills. – CUSD Principal

[… ] We are trying to incorporate tools for the student to use so that they will be more engage, to assess them better and just to really higher their level of learning. – CUSD Teacher
In CUSD, stakeholders believe 21st Century learning can only happen with 21st Century teaching. Effective and efficient teaching (not the technology) was the focal point of CUSD’s vision. Teachers and administrators noted that teacher practice needed to change in order to better prepare students for life beyond the classroom. The district is hoping to shift pedagogical practice and enhance the students’ learning experience through implementing such things as: data-driven curriculum, a Bring Your Own Device (BYOD program), and individual learning plans. A district administrator elaborated on this point:

A Personalized Education Program (PEP) changes how we deliver education to students. And a lot of educators are trying to bring it back to where we not only create the personalized program with the funding that we currently have, that’s built upon the factory model, but by using technology. It’s the only time in mankind’s history have we ever had the ability to create personalized instruction for masses of students. – CUSD Administrator

Site personnel generally agree with this administrators’ statement and with the overarching vision for the district. Of those interviewed, the majority believed personalized education was the right next step, not only for the district, but also for their students. The shared belief is that through a more personalized education program students are more engaged, thus more likely to take ownership of their learning process.

I think we’re all pretty enthusiastic teachers and we’re gung-ho about stepping into the future and making sure our kids are prepared. – CUSD Teacher

Finding 2: There is a discrepancy between CUSD’s vision and its schools’ capacity to implement it.

Although teachers consistently understood and embraced the district’s vision (as described in Finding 1), they noted a discrepancy between the vision and the schools’ capacity to implement it. Teachers hold some reservations about their ability to implement the vision as well. These reservations are based on their proficiency integrating technology in the classroom and in what they described as inadequate access to lesson planning time and mobile devices.

Professional Development and Proficiency with Integrating Technology. Teachers expressed concern about a lack of relevant professional development. Teachers at all three participating schools expressed desire for the district to offer a more in-depth, differentiated professional development program:

I do think the professional development, in my experience, has been somewhat limited as far as taking things beyond a more basic level. I feel that there are a lot of people in this
district who are pretty gung-ho with technology and there are not a lot of people that can train us on something more advanced. – CUSD Teacher

So for, those of us who tend to be advanced… I feel we are often left out in some of the trainings. – CUSD Teacher

I also think that the differentiation, this is a side comment, but they always talk to us about differentiating for our students so the differentiating for the teachers needs to happen. They really should have the: ‘Here you go basic people, here is your training.’ If you are medium, here you go, and if you consider yourself advanced, here you go. They really should have these trainings that are differentiated. – CUSD Teacher

According to CUSD teachers, differentiating content variety in professional development is not the issue. Those who participated in focus groups called for variety in the skill levels professional development targets. For the early adopters, their innate motivation to integrate technology into their teaching is stifled by the limited support they receive as more advanced teachers. The lack of accommodation for various levels of expertise affects not only the early-adopters, but as one teacher explained it, also those less able to integrate technology:

And for some teachers it’s not that they don’t want to be at that point, it’s not that they aren’t willing to be at that point, it’s just either: 1. They need more time, or 2. They need the confidence to believe they can actually do it.

The extent to which teachers feel comfortable in the learning process influences their willingness and confidence in their ability to integrate technology into their teaching. One teacher elaborated on how grouping everyone together is a hindrance to those that are advanced and those who are not as advanced:

You could have some blockers, in that sense, that they need to have training provided at their comfort level and we should be differentiating for those people, so that they aren’t sitting in the room and they are trying to create their page, and here I am sitting next to them and I’m like, “Well, I am already ahead”. That makes them feel… That would make me feel a little uncomfortable… They feel like they are trying to catch up to what the other people are doing in the room. Differentiate us, and then people will feel like they are at their comfort level.

**Inadequate Planning Time for Technology Integration.** In addition to wanting a stratified professional development model, teachers desire more time to design curriculum around what they are learning, “I would like more time to develop things to implement in my classroom. That’s the big thing.” One teacher emphasized the need for
time to work with her team to translate the new information from professional development into their classroom settings:

I would love time to collaborate after a professional development. For example, we just went to the one-to-one institute. It would have been fabulous if the team that came from our school, to have a day when we came back to plan and implement.

Lack of the necessary time to design lesson plans that integrate technology was an expressed concern among both low and high integrators. For teachers, time to plan or strategize on how they will incorporate what they learned into their instruction, needs to follow adequate and relevant professional development. Teachers articulated that it takes time to internalize and implement the many uses of technology to enhance instruction in the classroom:

But sometimes too it takes a while to set things up and just a long time to explore it...there all these new uses for technology; people are flipping classrooms, they are doing screencasts of their work, people might be interested in how to do a screencast with a certain program, or even if it’s I already know how to embed videos but how do I take it further, how do I embed a video into a website I create and then also add in this thing? Meshing all the different technologies together (takes time).

Even with the management of an (iPad) cart, . . . (We need) the time to decipher.

Making the leap from participating in professional development sessions, to effectively changing classroom instruction, takes time. This is particularly true in the case of technology integration, where many teachers express having to learn two things: how to operate the technology and how to integrate its use into learning and teaching. CUSD teachers want to increase their effectiveness with technology integration through professional development, but recognize they also need the time and space to translate these skills into their classroom practice.

**Insufficient Resources.** CUSD teachers expressed wanting to feel more confident in their integration of technology, and that they desire a more personalized professional development that is responsive to their ability and challenges them to move beyond what they already know. CUSD teachers also have reservations pertaining to device availability. Across the district, teachers are concerned that their schools lack the adequate resources to successfully carry out the 21st Century Initiative:

The thing is: the resources. Like you were saying earlier, we do have limited supplies, and it is like trying to be creative, and figure out if everybody doesn’t have their hands on an actual device, how can we still prepare them?
I think right now the perspective is they really want everyone to be on board, but a lot of teachers are trying to figure out how that is going to happen without all the equipment and devices, to be on board. How are we going to share all these resources and still be able to meet those standards? We know we have to meet the standards, but how are we going to be supported in meeting those standards? I think that is a big question.

Teachers’ concern over not having enough devices hinders them from fully investing in the CUSD vision. Although they are in full support of the initiative, the reservations they expressed indicate they are unsure if it can actually come to fruition. Regardless of the district’s efforts, the skepticism held by the teachers could obstruct the successful implementation of the initiative. A BYOD program is included in the initiative to extend device access beyond the number available through the district, but some teachers hold reservations about compatibility:

Well, now you have kids who bring in their own phones and IPads and stuff, but they’re not always reliable enough to do the same activities at the same time with those devices.
- CUSD Teacher

In the interviews, teachers expressed a need for assurance that proper support will be provided through professional development and resource allocation. Building confidence and peace-of-mind in these two areas could potentially reduce unnecessary barriers to future implementation of the initiative.

Finding 3: Conflicting accounts of infrastructure reliability exist.

Coronado Unified School District has made it a priority over 2011-2012 and 2012-2013 to improve its wireless Internet access. According to administration, the upgraded infrastructure provides reliable broadband wireless access to all classes, students and devices.

As far as infrastructure is concerned, the administration believes the schools have the right technology to implement the initiative. These sentiments were echoed at the principal level. Principals from all sites were confident that their infrastructure was adequate enough to implement the 21st Century Learning Initiative in every classroom. The two comments below give an explicit indication of the general perceptions principals held towards the wireless infrastructure.

“If you have a whole school and every teacher wants to do mobile learning technology in their classroom, your infrastructure is solid.”
- District Administrator
Every student in the school could be on a computing device at the same time at any given time during the school day. – School Principal

We don’t seem to have a problem with accessibility to the Internet or with devices.  
– School Principal

At the administrative and principal levels accounts of wireless connectivity were universally positive. However, conflicting accounts arose among teachers. Many of the teachers interviewed shared that within their classrooms, reliable Internet access was a problem.

I think they are working on it. In my room in particular, again being surrounded by the military, we are not sure what interference it is, but in my room I have definite zones where they can’t use the wireless, it just doesn’t (work). – School Teacher

Our bandwidth doesn’t support...We supposedly have it, but it hasn’t been switched on yet. That’s the rumor I’m hearing. […] We’re doing these MAP testing and all of a sudden four units go down. And we’ve got some poor kids who are wondering: “Did I push the wrong button? Am I dumb? Or did I do something wrong?” No, you were just randomly selected by the bandwidth gods to be sitting out today. – School Teacher

The reported inconsistency of the wireless network presented by the teachers could pose a serious barrier to the implementation of the 21st Century Initiative. First, not knowing if the Internet will work properly, could discourage teachers from planning and including technology-related activities in their lessons. When utilizing technology as a tool, increased classroom efficiency is a big motivator, but when there is a chance that some students will be unable to participate in the activity, or that the activity will take longer than expected due to Internet delays, that motivator is subverted.

Needs and Recommendations

The following needs and recommendations are proposed given the findings above:

Stratify professional development by skill level

Teachers want more personalized professional development that offers a variety of sessions, at different skill levels. Though the district already provides a “university-style” professional development program, which offers content variety, many sessions are at the basic level or are for beginners. By stratifying the professional development offerings, the district could ensure teachers’ needs are more adequately met. Additionally, stratifying PD could provide a comfortable learning environment that
foster teachers’ confidence in their ability to integrate technology in the classroom. Getting advanced and beginning users into separate sessions could help the beginners feel more confident, and allow the advanced users to continue to expand their skills.

**Embed time for curriculum design into professional development**

A crucial aspect of teachers feeling confident in their ability to integrate technology is their having the time to properly plan. Even with stratified professional development, teachers are less likely to use the techniques they have learned in their classroom if they are not given time to reflect and design activities that integrate technology. Time to design allows teachers to become more familiar with new concepts and new materials, and to gain a better perspective on how these new aspects can be integrated into their classrooms. CUSD should offer “Time to Design” as a new session in the proposed university-style professional development. This session would present teachers the time and expert support to ensure they get the most out of the technology integration PD.

**Ensure the adequate provision of resources**

A big reservation held by CUSD teachers was whether their school had the necessary resources to carry out the initiative. In order to alleviate this anxiety, district administrators should clearly communicate to the schools what resources are being provided to implement the vision. Administrators should also provide suggestions and expectations on how schools can implement the initiative without certain resources. Finally, administrators should indicate a timeline of when adequate resources will be provided. Increasing communication in these areas will ease teacher reservations and assist in propelling the initiative forward, despite the possibility of resource demand exceeding resource availability.

**Reassess the reliability of wireless infrastructure**

Although solidifying the district’s infrastructure has been a priority, during interviews two major issues concerning the system were raised: the consistency of wireless access in individual classrooms and the capacity of the broadband network. The inconsistency of the wireless connection negatively affects teachers who are trying to implement a 21st Century learning environment. Limited broadband capacity has the potential to undermine the district’s goal of simultaneously assessing every student online. Together these issues pose a threat to technology integration that CUSD leadership may not recognize even as CUSD teacher reluctance to embrace technology integration persists. The infrastructure should be reassessed to ensure both issues are remedied. Further, findings from this reassessment should be effectively communicated to CUSD teachers.
Next Steps: A Full survey of teachers for a more complete picture of needs

This study suggests a common set of perceptions that help to explain why some Coronado Unified School District teachers tend to use technology more and with greater levels of sophistication than others. Because this study is based on a limited pool of teachers, a more robust survey of these perceptions would allow the district to pinpoint specific areas of need and to track changes in these needs over time. Information from the proposed survey would provide the data necessary to help district and school leaders make informed decisions on how to best tap into technology’s potential to promote 21st century learning skills. The survey, which could be administered electronically to all teachers, would expand upon the findings detailed in this report and thus provide a full report of the infrastructure’s capacity and shortcomings, the needs and desires for professional development, and general teacher readiness for implementation of 21st century learning skills. The survey could include constructs such as current uses of technology for learning and teaching, professional development needs, and specific needs related to software tools.
APPENDIX A: District Administrator’s Semi-structured Interview Protocol

Coronado Unified School District, 21st Century Learning Research Study
Administrator Interview

1. Can you give us some background information on your district?
   a. Demographics, size, Title I school sites?

2. Can you provide some background information on each of the four schools we will be working with this spring?
   a. Grade level served?
   b. School size?
   c. Technology used? By Whom?
   d. Involvement/attitude of principals and staff?
   e. Is there anything else special about this school that we should know?

3. What is the purpose of 21st Century Learning for the Coronado Unified School District?
   a. What is the district’s vision of 21st Century Learning
      i. How do you foresee teachers working within this 21st Century environment?
   b. What outcomes do you anticipate?

4. What was the district’s infrastructure like before this initiative?

5. What role do you think technology plays in education?

6. To what degree do you feel like your teachers are ready to move forward?

7. What are your plans for handling professional development for this initiative?
   a. What kind of professional development have your teachers received in the past?

8. Have you done any assessments to measure teacher’s competency levels in the past?

9. Is there anything else you would like to add that would help us understand the 21st Century Learning Initiative in the Coronado Unified School District?
Appendix B: Principal’s Semi-structured Interview Protocol
Coronado Unified School District, 21st Century Learning Research Study

Principal Interview Questions

10. Can you provide some background information on your school?
   a. Grade level served?
   b. School size?
   c. Technology used? By Whom?
   d. Involvement/attitude of principals and staff?
   e. Is there anything else special about this school that we should know?

11. What do you understand about the district’s vision for creating a 21st century environment?
   a. What is the vision of 21st Century Learning for your school?
   b. What is the technology vision?
   c. How do you foresee teachers working within this 21st Century environment?
   d. What outcomes do you anticipate?

12. What was the school’s infrastructure like before this initiative?

13. What role do you think technology plays in education?

14. To what degree do you feel like your teachers are ready to move forward with technology?

15. What are your plans for handling professional development for this initiative?
   a. What kind of professional development have your teachers received in the past? At the district level? At the school level?

16. Is there a technology competency component in your yearly evaluation of teachers?

17. Is there anything else you would like to add that would help us understand the 21st Century Learning Initiative in the Coronado Unified School District?

18. What is the best way to assemble teacher focus groups to get their perspective of 21st century learning?
Appendix C: Teacher Focus Group Questions

Coronado Unified School District, 21st Century Learning Research Study

Teacher Focus Group Questions

1. What do you understand about the vision for 21st Century Learning in the Coronado Unified School District?
   a. What is the vision of 21st Century Learning for your school?
   b. How do you see yourself working within this 21st Century environment?
   c. What outcomes do you anticipate?

2. How would you classify this school in terms of 21st Century learning?

3. What was the school’s infrastructure like before this initiative?

4. What role do you think technology plays in education?

5. To what degree do you feel like you all are ready to move forward with this initiative?

6. What kinds of professional development have you received for this initiative?
   a. What kinds of professional development would you like to receive in terms of this initiative?

7. Is there anything else you would like to add that would help us understand teachers’ perception of the 21st Century Learning Initiative in the Coronado Unified School District?