Building on Learner Resources

in Urban Pre-service Teacher Professional Development

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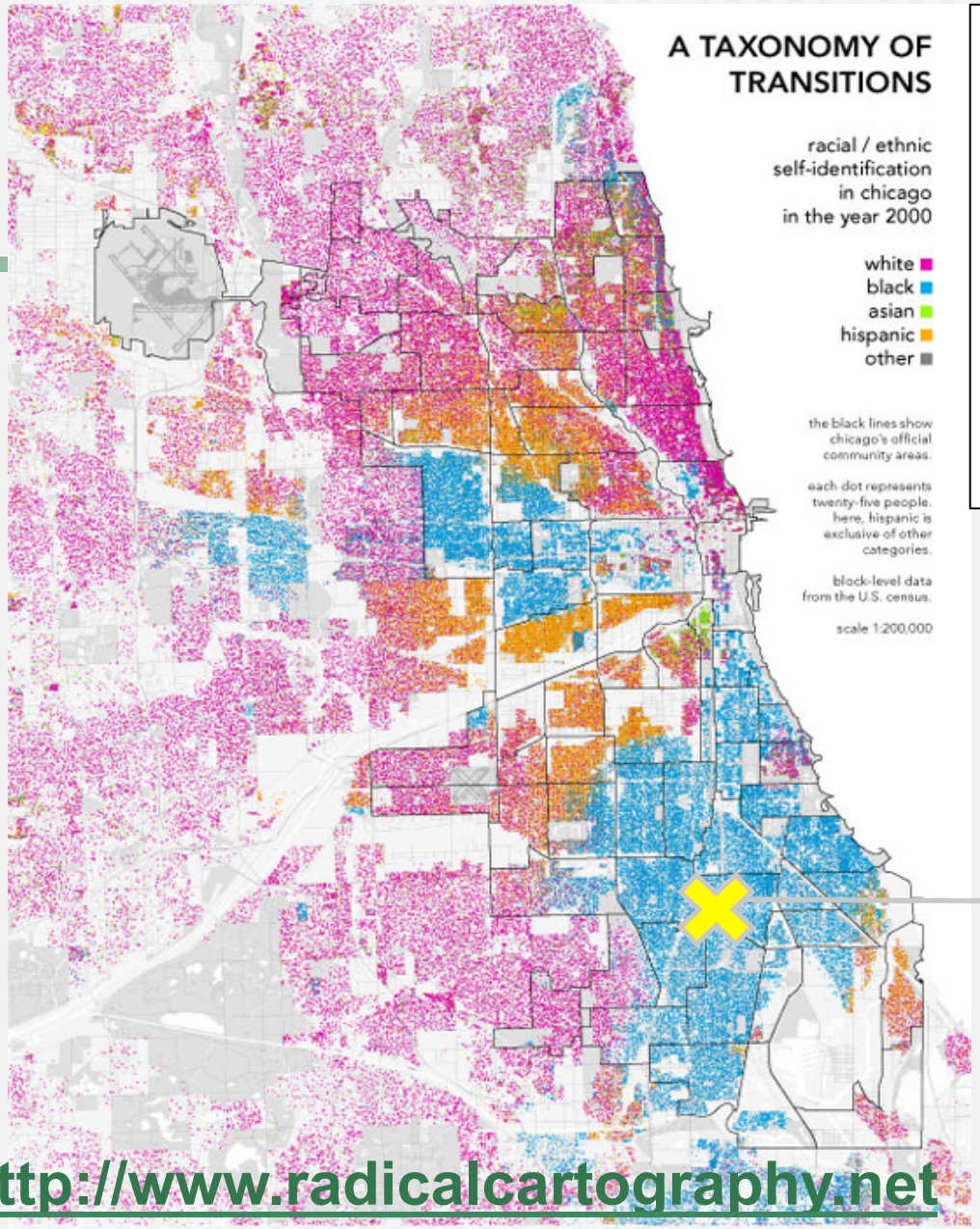


http://www.radicalcartography.net

CSU works predominantly with the African American Community on the Southside of Chicago

Chicago State University

Deficit thinking

- Too often in public discourse about urban education deficit thinking predominates with a focus on what students "cannot" do.
  - Don't have prior content knowledge
  - Don't have study skills
  - Don't have academic attitudes
- The role of instructors is then to either "fix" students or to absolve themselves of responsibility.

Pass/fail/fail/fail: In prepping teachers, 'We need to set the bar higher.' Chicago Tribune: June 25, 2011

"Minority candidates are faring comparatively poorly under the new standard: Since September, 13 percent of African-American candidates passed the [Illinois state required] basic skills test. That compares with 19 percent of Hispanics, 38 percent of Asians, and 43 percent of whites. Those low pass rates are discouraging news, especially for minority communities that clamor for more minority teachers.

…The goal [of new testing and reforms]: Keep the best teachers in the classroom and weed out the worst. That winnowing process starts long before a teacher steps before his or her students. Illinois needs to front-load the pipeline with candidates who will become excellent teachers. The state's new standard for the basic skills it expects from prospective educators is a start."

Student resources

- Instead of focusing on what students "lack" greater success come from focusing on student capabilities and how instructors can structure the learning environment to help students succeed (ex. Barton 1998, 2010; Dana et al. 1997).

Elements of pre-service teacher education at CSU

- Inquiry-based learning environments in science
- Emphasis on the professional nature of teaching.
- Early teaching experiences

Explicit attention on student resources rather than student deficits.

Inquiry-based science courses in Dept. of Chemistry and Physics

- Department commitment to inquiry evident in curricular choices
  - For example, interactive lectures, Clicker Questions, TIPERs, and Research-Based Laboratories used in Physics.
  - For example, POGIL, Argument Driven Inquiry, Clicker Questions used in Chemistry.
  - Several grants to improve general physics, modern physics, astronomy, general chemistry curricula.
- CSU faculty model the types of instructional modes we want future teachers to use , and these instructional modes capitalize on the resources of our students.

Inquiry-based science courses movement

- There is some evidence that national discourse in science education is moving from a “deficit thinking” model to a “student resources” model as instructors work to make classroom instruction student-centered and utilize inquiry approaches.

Professional Nature of Teaching

- *Readings in Science Education* course
- Noyce Scholar Seminar Series
- Attendance at national and local conferences
- Involvement in Science Education internships and research

Professional Nature of Teaching: *Introduction to the profession*

- African American non-education majors can view teaching as a career that is underpaid and undervalued and often believe that teaching is only viable for students with altruistic tendencies seeking intrinsic rewards (Shipp, 1999)
- Our goals were to change student perceptions about teaching and to prepare students to become teachers who value continued professional development and the science education research literature.

Professional Nature of Teaching:
Importance of joining professional community

- As our programs have developed we have placed increasing importance on:
  - Valuing pre-service teachers as professionals who are part of the community of scholars concerned about science education
  - Valuing the important insights pre-service teachers have for the science education community.

Readings in Science Education course

- One credit hour course, repeated up to three times, for reading and discussing the literature.
- Co-taught by four faculty members
  - Plant pathologist with education specialization (Jacobs)
  - Master chemistry teacher (Koziarski)
  - Physics education researcher (Sabella)
  - Chemistry education researcher (Van Duzor)
- Helps create modified cohort model responsive to student schedules.

Analysis of the Science Education literature

Students Brandee and William share their ideas about effective pedagogy for students at different grade levels with instructors Van Duzor and Koziarski.

- Each week students discuss a seminal article chosen by the faculty or an article of interest chosen by a Scholar.
- Before class students post comments on the course website to begin the discussion based on academic analysis **and** personal experience.

Noyce Scholar Seminar Series

- Local and national speaker come to campus to discuss Science Education.
- Students in *Readings* course read an article written or recommended by each speaker and have the opportunity to engage in dialog with the speaker as junior colleagues.

Prof. Valerie K. Otero of University of Colorado Boulder presents "What Type of Education is Appropriate for Future Science Teachers?"

Attendance at national and local conferences

Mike, Barbara, CSU instructor Rita Koziarski, and Rosa at NSTA in San Antonio, Texas.

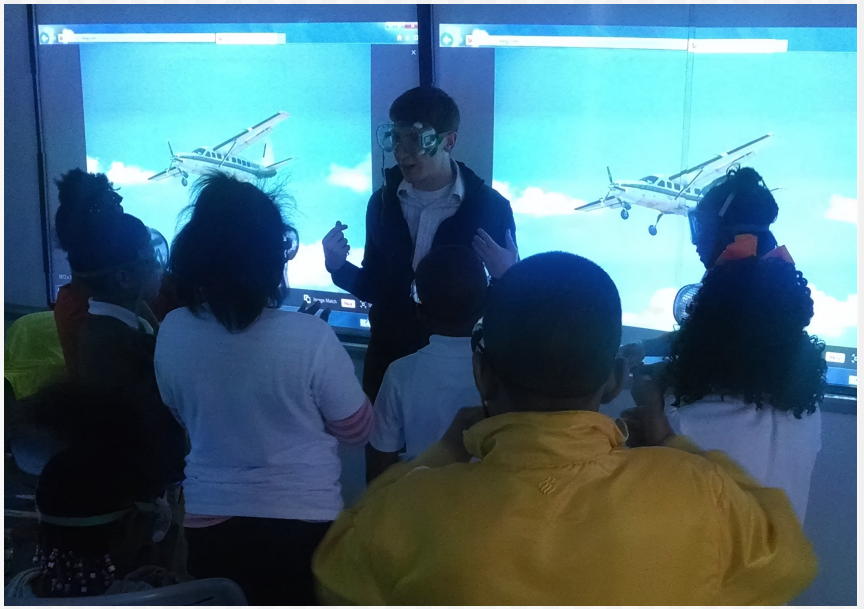
"The seminars were very informative but I think the most valuable experiences were spent talking with people and picking their brains about their ideas, solutions and experiences. The networking possibilities were endless and the trip solidified the passion about the reason people become teachers."
Tiffany NSTA 2013

Involvement in Science Education internships and research

- Through Noyce, PhysTEC, and independent study we strive to have all pre-service teachers complete either an internship or research.
- "I believe that I contributed insight to the education department of Adler [Planetarium]. One of my supervisors often asked for my opinions about the activity carts and the exhibits. I was able to offer my opinion as a student, a parent, and a repeat patron." Angela

Early teaching experiences

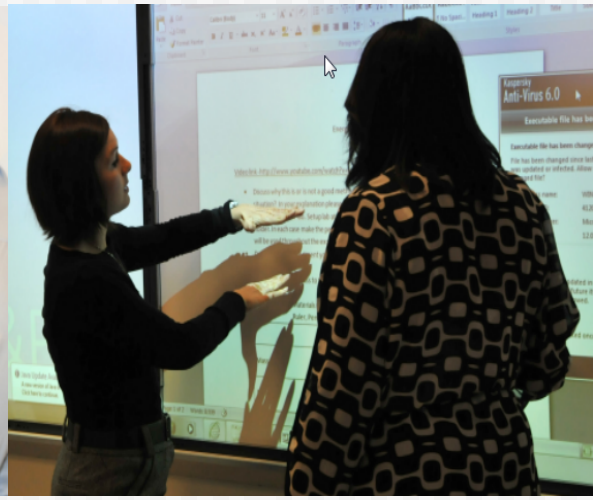
- *Teacher Immersion Institute* course
- Elementary School collaborative lesson as part of the *Readings in Science Education* course in Spring semesters



Brian teaches about energy transfer between potential and kinetic energy using airplanes in the collaborative lesson.

The Teaching Immersion Institute (PhysTEC)

- Introduce prospective students to the teaching profession through a semester long action research project.
- Course is taught by two Chicago Area Teachers (Jennie Passehl and Kara Wiesenburger) and two CSU faculty in Science Education (Andrea and Mel).

- Brainstorming about a specific topic to focus on
- Literature review and discussion about student understanding of this concept
- Pretest, Activity, and Posttest development
- Implementation of the Lesson
- Posttest Analysis
- Final Reflection

See the Physics Teacher 50 (5) 2012

Elementary school collaborative lesson

- The scholars collaboratively design a lesson for a class of Ashburn Elementary school students who visit CSU for the day.
- Scholars reflect on their pedagogy and assessment in light of literature read in the *Readings* course.

Natalie questions students testing household chemicals with acid/base indicators

Allowing space for pre-service teacher ideas in teaching experiences

"The ice-breaker game actually came from me watching my boss in theater … …you point at someone and you make a noise, like, "Zip." And that person was ... point to someone else and make another noise like, "Zap." And what that does is go around in a circle; and then you speed it up ... get your energy going.
… [when] we went over the questions [on conservation of energy] … they was able to zip it or zap someone else .... So that was a good way for students to interact with each other…" Bernard

Listening to pre-service teachers

- We need to look beyond the academic support we think they need to look at the support they say they need.

" I've had at least three professors who have bent over backwards to help me, even providing a location where I can just work. Once I get here I know this environment is safe - I don't have to worry about what critters are crawling through the building - I don't have to worry about someone breaking in ... I'm safe. I don't have to deal with other things; this is my let it go and let's get to work." Angela

Recognizing strengths and capabilities

- Determination and resiliency
- Management of multiple commitments
- Passion for the local community

Important for us to help our students recognize that they should be proud of these skills

...and that they need to help their future students be proud of these skills.

Supporting student resources

- It is important for us to…
  - Trust our students
  - Recognize the resources they possess
  - Help them recognize the resources they possess
  - Encourage them to use these resources to inform their teaching

Thank you

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