

# Appalachian Aspirations

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# Guiding Research Questions

- AMSP #3: What factors influence rural students to enter and remain in mathematics and science teaching or to select and remain in mathematics and science majors in higher education?
- How do beliefs about knowledge—personal epistemologies—affect educational decisions?
- How do differences within the region—political economies—affect this decision making process?



# Background: What contributes to academic aspirations?

- School environment (McDonough, 1994, Plucker, 1996; Plucker & Quaglia, 1998; Wilson & Wilson, 1992),
- Peer culture (Gandara, Gutiérrez, and O'Hara, 2001),
- Family characteristics (Beyer, 1995; Hossler & Stage, 1992; Paulson, 1989)?
- Community variables (McDonough, 1994).



# Background: Economy and Education in Appalachia

- Historically a majority of Appalachian students have chosen not to continue their education after high school.
- Appalachian educational achievement has lagged far behind national averages but has been improving in regional centers.
- This reflects a “rich get richer” trend

• Haaga, 2004



# Background: Epistemological Beliefs

## How do you know what you know?

- Four quasi-independent constructs (Marlene Schommer-Aikins, 2004): certainty, simplicity, source, justification.
- Constructed through interactions with others and life experiences—common sense (Kitchener, 2002).
- Epistemological beliefs have indirect effects on students' use of learning and self-regulatory strategies (Paulsen & Gentry, 1995; Pintrich & Schrauben, 1992).
- May be domain specific, particularly “certainty of knowledge” (Hofer, 2004; Paulsen & Feldman, 1999; Paulsen & Wells, 1998) which influences motivation to learn in some fields of study but not in others.



# Characteristics of this Research

- Examines within region differences of rural Appalachia
- Explores cultural values for education and their relation to locale: a sense of place
- Includes personal epistemology as a measure of motivation to study particular subjects
- Uses qualitative methods for fine grained analysis.



# Why Qualitative?

- We don't know what we don't know.
- Getting into the heads of young people is hard.
- Schools spend a lot of time reporting students' progress, but rarely do we sit down with them and ask their opinions.
- Theory building rather than theory testing.



# Methodology

- Community Study: informational interviews, participant observation, lots of driving around.
- Series of Interviews with 8-10 students planning on attending college from two schools. (N=18)
- Interviews with a “peer” and an adult “mentor” identified by most students (N=32)
- Alternative data sources: census, Department of Education, on-line alumni discussion forums, “Facebook”, etc.





# Two Communities: One Coalfield

“Dogwood City”



“Valley View”

# Differently located in a shared economic heritage

- "Dogwood City", the county seat, has with a population of 6,196 and a median household income of \$22,026 USD.
- "Valley View" is located 40 minutes from Dogwood City with a combined population of 5,700 and a median household income of \$23,125 USD.
- "Dogwood City" has a hospital, a college with a medical school, and is a banking center for the region.
- "Valley View" is a collection of road-side communities whose major employment source is coal mining and commuting to service positions including teaching and nursing.

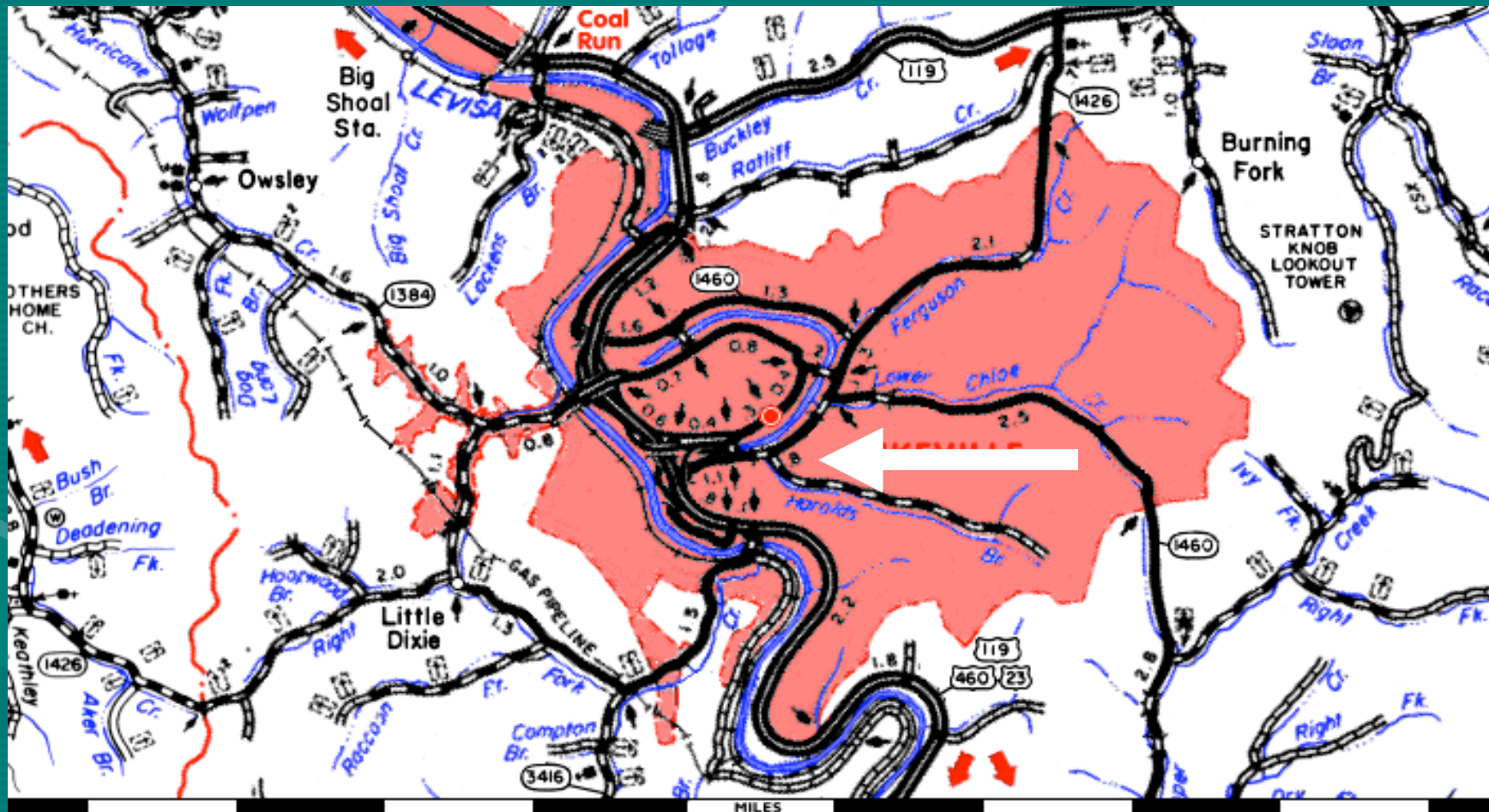


# Valley View





# Dogwood City



# Two Schools: One Coalfield

## Dogwood City High School

- 85% or more of Dogwood City High School graduates have gone to post-secondary schools over the last five years.
- Dogwood City is one of the five top performing high schools in the State with options for dual credit in math and chemistry

## Valley View High School

- 30% of Valley View graduates have attended post-secondary schools over the last five years, mostly two year schools.
- Valley View is the smallest high school in the County School District and Participates in federal GEAR UP programs
- Only one AP course in statistics.



# Selection of Participants

## Dogwood City

80 Seniors/79 with college plans—recruiting matrix:

- STEM & Non-STEM
- Level of Parental Ed
- Gender
- Baccalaureate plans

10 Students Consented

## Valley View

45 Seniors/9 with Baccalaureate plans—recruited:

- All students with Baccalaureate plans
- One student with 2+2 plans

9 Students consented, one later declined to continue.



# Data Collection

- Participant Observation in both communities and schools ongoing throughout project.
- Introductory interview with each student.
- “Going to College” interview with each student.
- Epistemological Belief interview (students completed instrument prior to interview).
- Interviews with identified peer and mentor.
- Facebook and email communications throughout first year.
- Follow up interviews following first year (ongoing).



# Analytic Methods

- Iterative analysis at each stage
- Preliminary analysis of epistemological beliefs instrument and narrative interview relative to college going plans
- Open coding of all data including alternative sources.
- Closed coding and development of ideas relative to existing literature & data.





# Final Choice of College

College or University	Dogwood City	Valley View
Research I	3 (1 STEM)	0
Private Liberal Arts Outside Region	4 (2 STEM)	0
Private Liberal Arts Within Region	2 (1 STEM)	3 (1 STEM)
Comprehensive Outside Region	1	0
Comprehensive in Region	0	5 (2 STEM)
Community College in Region	0	1 (1 STEM)



# Themes

- Epistemological Beliefs and Naiveté: “It just comes easy to me.”
- Freedom and Adulthood: “I just want to make money and be happy.”
- Local Knowledge and Credentialing: “She gets real good grades.”



# Summary

- Epistemological Beliefs worth studying further...developmental as much as cultural.
- First Generation...parental education & community knowledge of college material important to consider.
- Social Reproduction...aspirations influence curricular offerings that influence aspirations...and yes, it's the money.

