

Wednesday, Sept. 26

- Upcoming deadlines

Wed	Oct. 3	Human subjects training
Wed	Oct. 17	2 nd interview – topic search
Wed	Oct. 24	Journal report
		Statistical methods
		Fog index
Wed	Nov. 7	Annotated bibliography
Wed	Nov. 14	Colloquium report
Wed	Nov. 14	3 rd interview – topic search

Wednesday, Sept. 26

- Groat+Wang 8 correlational
 - Hassan's thesis
- Groat+Wang 9 experimental
 - Design an experiment
- Groat+Wang 10 simulation & modeling
 - Aaron's thesis
- Groat+Wang 12 case studies
 - Jeff's thesis

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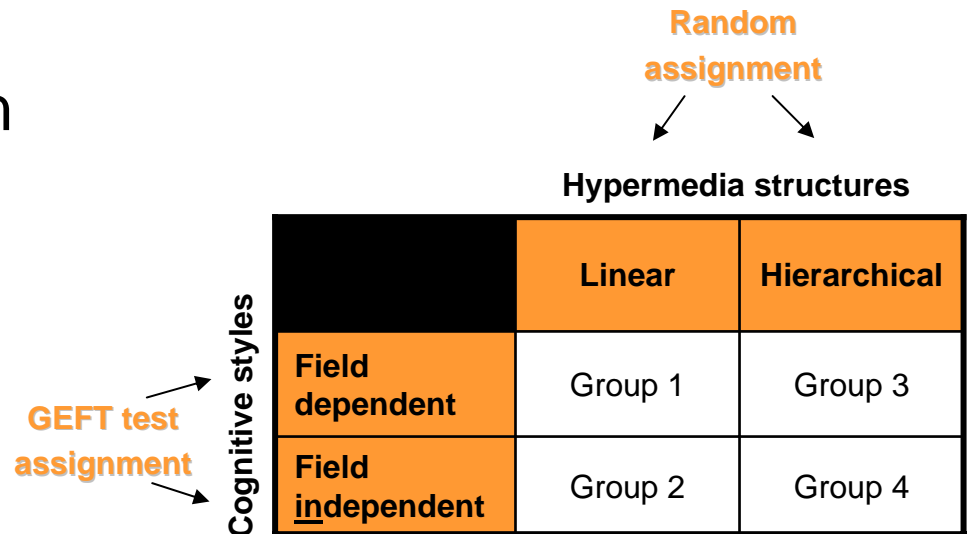
- Hassan's thesis BLA 1989 MS educ 1997
 - The relationship between hypermedia structure and cognitive style, and its impact on student performance in hypermedia-based instruction
 - Problem/purpose
 - Uncertain relationship between cognitive styles and hypermedia structure
 - How should learning materials be organized?
 - What navigational approaches aid learning?
 - Are specific combinations of hypermedia structure and cognitive style more effective than others?

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- Hassan's thesis
 - What is hypermedia?
 - Research questions
 - Demographic characteristics of students?
 - Statistically significant difference in student performance between
 - Linear and hierarchical structure?
 - Cognitive styles?

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- Hassan's thesis
 - Experimental design
 - Factorial
 - 2 factor
 - Variables
 - Independent
 - Cognitive styles
 - Hypermedia structures
 - Dependent
 - Student achievement



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- Hassan's thesis
 - Research hypotheses
 - No statistically significant difference between post-test mean scores of linear and hierarchical structure groups
 - No statistically significant difference between post-test mean scores of field dependent and field independent groups
 - For linear structure groups, no statistically significant difference between post-test mean scores of field dependent and field independent groups
 - For hierarchical structure groups, no statistically significant difference between post-test mean scores of field dependent and field independent groups
 - No statistically significant interaction between hierarchical structures and cognitive styles

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- Hassan's thesis

- Methods

- Human subjects review
 - Selected 32 students (2 classes in industrial education)
 - Demographics questionnaire (major, year, own computer)
 - Pre-test (basic landscape design process)
 - GEFT test (Group Embedded Figures Test)
 - Cognitive styles (field dependent / field independent)
 - Hypermedia-based lesson
 - Structure (linear / hierarchical)
 - Post-test

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- Hassan's thesis

- Research results

- **Supported** No statistically significant difference between post-test mean scores of linear and hierarchical structure groups
 - **Supported** No statistically significant difference between post-test mean scores of field dependent and field independent groups
 - **Supported** For linear structure groups, no statistically significant difference between post-test mean scores of field dependent and field independent groups
 - **Not Supported** For hierarchical structure groups, no statistically significant difference between post-test mean scores of field dependent and field independent groups
 - **Not Supported** No statistically significant interaction between hierarchical structures and cognitive styles

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- Hassan's thesis
 - Research results

Mean score	Pre-test	Post-test
All	8.3	14.5

1

Mean score	Linear	Hierarchical
All	13.6	15.3

2

Mean score	Field dependent	Field independent
All	14.3	14.6

3

Mean score	Field dependent	Field independent
Linear	14.6	12.6

4

Mean score	Field dependent	Field independent
Hierarchical	14.0	16.3

5

Mean score	Linear	Hierarchical
Field dependent	14.6	14.0
Field independent	12.6	16.3

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- Hassan's thesis
 - Statistical methods
 - Mean
 - Standard deviation
 - t-value
 - p-value
 - ANOVA
 - Degrees of freedom
 - Mean square
 - F ratio
 - F probability

Wednesday, Sept. 26

- Groat+Wang 9 experimental
 - Characteristics 252-254
 - Treatment (independent) variables
 - Measurement--Outcome (dependent) variable
 - Unit of assignment
 - Control group
 - Diagramming 261-262

R	Random assignment
X	Treatment
O	Observation of dependent variable

- Tactics 263
 - Setting—Lab or field

Wednesday, Sept. 26

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R	Random assignment
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O NR R X O

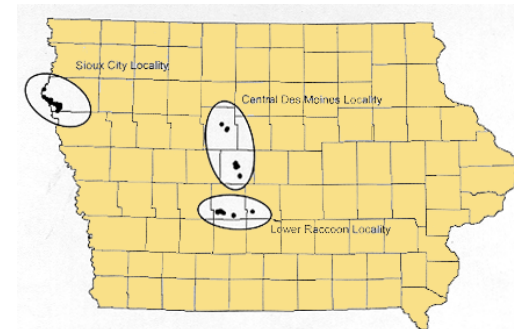
- Tactics 263
 - Setting—Lab or field

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- Groat+Wang 10 simulation & modeling
 - Tactical concerns 286-290
 - Accuracy of replication
 - Completeness/calibration
 - Programmed spontaneity
 - Cost & workability
 - Heuristic 290-292
 - Aaron Greiner's thesis
 - Archaeological site modeling

Wednesday, Sept. 26

- Aaron Greiner's thesis
 - Geographic Information System (GIS) modeling to predict potential Great Oasis site locations in Iowa: An evaluation of three models using logistic regression
 - Great Oasis
 - Semi-sedentary = seasonal villages
 - 950-1100 AD -- hunting, horticulture
 - 139 sites in Iowa, Neb, Minn, SoDak
 - 65 sites in NW and Central Iowa



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- Aaron Greiner's thesis
 - GIS descriptive modeling
 - Compared characteristics of existing sites to a random sample of non-sites in NW Iowa
 - Chi-square measure & logistic regression

Table 4.3. Variables for Great Oasis GIS predictive models and Chi-Square values

Variable	Logistic Regression			
	Percent Site Predictability	Chi-Square	p	df
Landscape position	69.23%	63.75	p<0.00005	15
Distance to water	63.08%	46.97	p<0.00005	1
Drainage class	56.92%	54.02	p<0.00005	10
Parent material	46.15%	81.25	p<0.00005	15
GLO historic vegetation	43.08%	35.31	p<0.00005	6
Flood frequency	35.38%	17.70	p<0.00700	6
Elevation	32.32%	18.79	p<0.00005	1
Slope steepness	7.69%	6.93	p<0.00005	1
Native vegetation	0.00%	1.62	p<0.44390	2
CSR	0.00%	1.51	p<0.21970	1
Slope aspect	0.00%	10.85	p<0.21040	8

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- Aaron Greiner's thesis
 - GIS predictive modeling
 - Site location =
 - + 69.23 * landscape position
 - + 63.08 * distance to water
 - + 56.92 * soil drainage class
 - + 46.15 * soil parent material
 - + 43.08 * GLO historic veg.

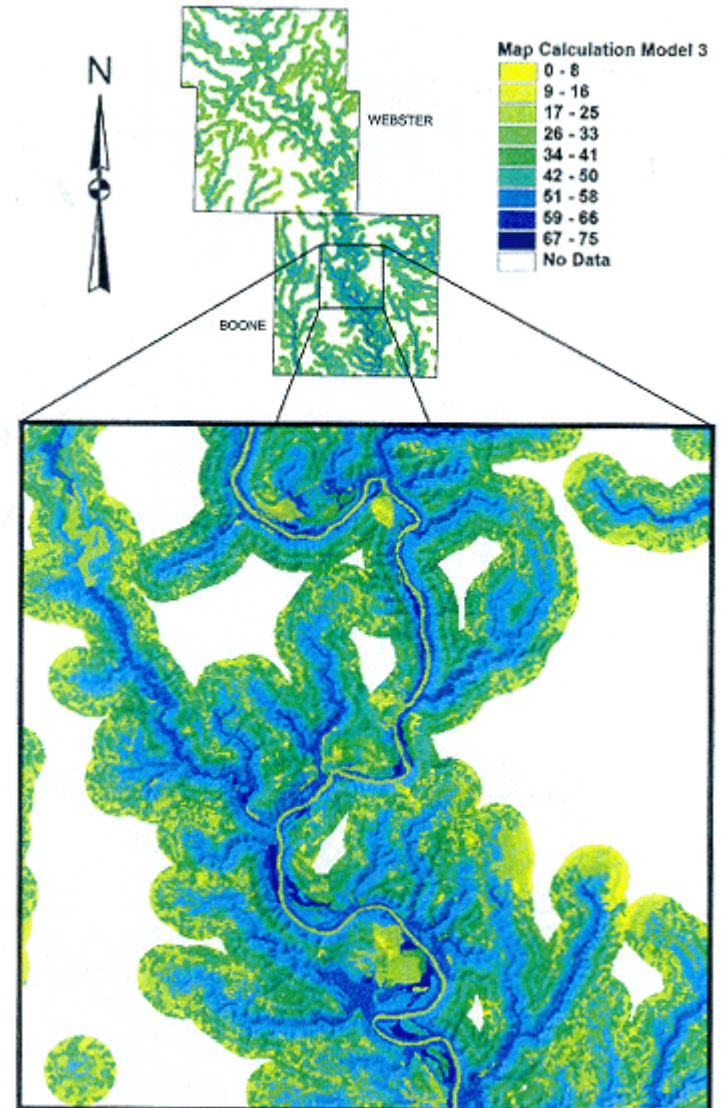


Table 5.4 Scores for the three models

	Model 1	Model 2	Model 3
Cutpoint Score	33	27	53
Known Sites correctly classified as high potential	74%	73%	79%
Non-sites correctly classified as high potential	69%	86%	74%
Improvement over chance	43%	59%	53%

Wednesday, Sept. 26

- Groat+Wang 12 case-studies
 - Characteristics
 - Explain causal relationships (how?, why?)
 - Generalize into theory
 - Triangulation 348, 361
 - Course pack
 - Case Study Method, Mark Francis 23-25

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- Groat+Wang 12 case-studies
 - Case studies <> sample
 - Purposes
 - Teaching <> research

Strategy	Research questions	Control over behavioral events?	Focus on contemporary events?
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much	No	Yes
Archival analysis	Who, what, where, how many, how much	No	Yes/no
History	How, why	No	No
Case study	How, why	No	Yes

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- Groat+Wang 12 case-studies
 - Design
 - Robert Yin, 2002, *Case Study Research*
 - Jeff Logsdon's thesis

Design	Single-case designs	Multiple-case designs
Holistic (single unit of analysis)	Type 1	Type 3
Embedded (multiple units of analysis)	Type 2	Type 4

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- Groat+Wang 9, 10, 12

Methods	Strengths	Weaknesses
9. Experimental		
10. Simulation & modeling		
12. Case study		

