

# **A Baseline for Learning Outcome Assessment: Lessons from Michigan State University**

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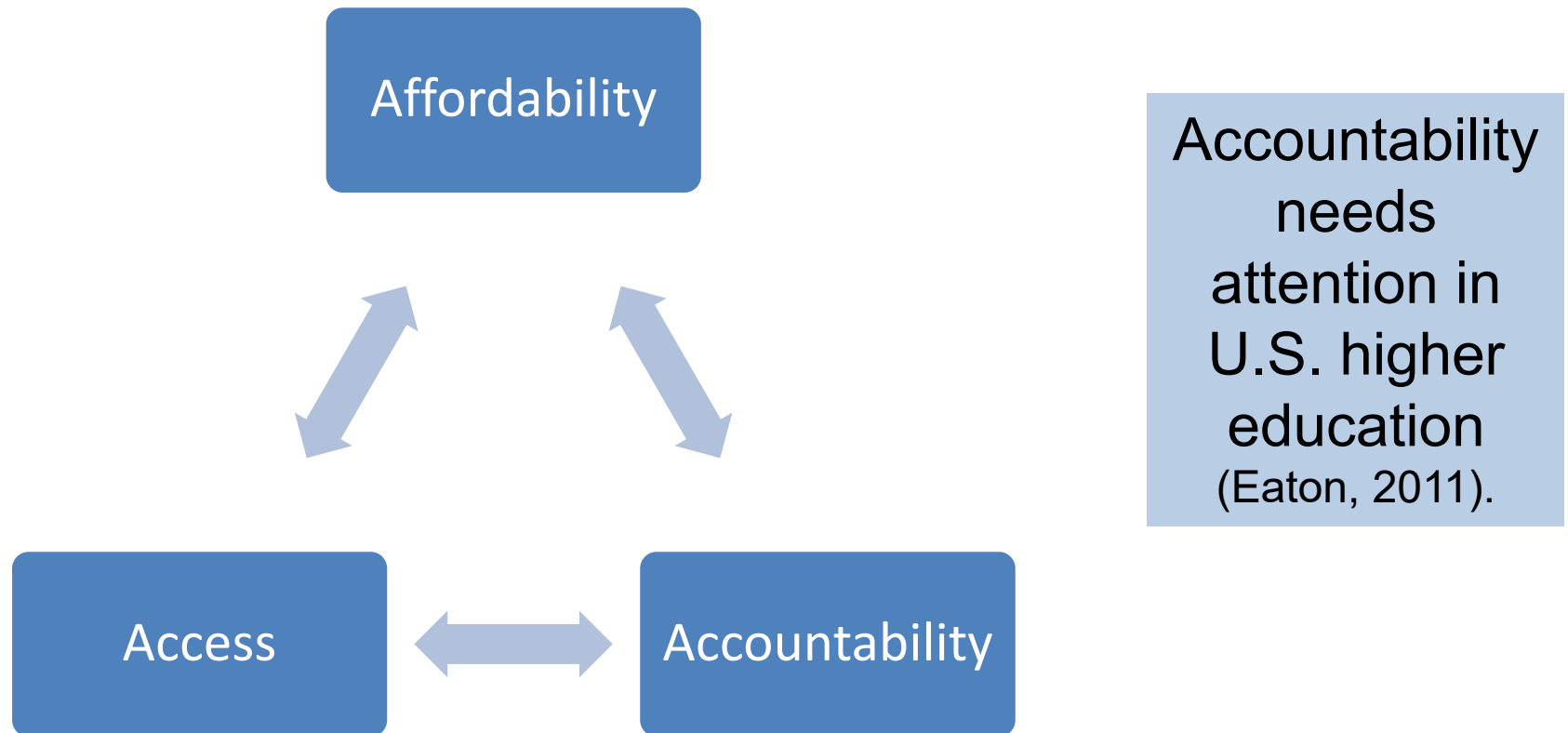


## Introduction

- ~ 1 mil students join American higher education institutions / year.
- Student retention and success are institutional priorities.
- Six year graduation rate: public—51%, private – 63% (The Chronicle of Higher Education, 2015).
- >40% of American students who join four year college degree don't earn a degree in six years (The Chronicle of Higher Education, 2015).



# Three Pressures on College Education: The Iron Triangle



(Source: Immerwahr, Johnson, & Gasbarra, 2008)

## Why do this work?

- Learning outcomes and assessment work is the future direction of higher education!
  - Universities will be increasingly more accountable to demonstrate the impact of their academic programs on producing workforce ready employees.
  - **We strive for cutting edge research. We need to strive for cutting edge education, too!**



# Value Rubrics for Learning Outcome Assessment

- Inquiry and Analysis
- Critical Thinking
- Creative Thinking
- Written Communication
- Oral Communication
- Quantitative Literacy
- Information Literacy
- Reading
- Teamwork
- Problem Solving
- Civic Knowledge and Engagement

(Source: AACU, 2016a)



## Study Goals and Objectives

- Assess graduating seniors' perception of learning outcomes.
- Examine whether students' perceptions of learning outcomes differ by their demographics.
- Solicit student opinions on strengths and weaknesses of undergraduate education programs and seek suggestions to improve them.



## Study Methods

- Population: Graduating seniors
- Learning outcome categories:
  - Analytical thinking
  - Cultural understanding
  - Effective citizenship
  - Effective communication
  - Integrated reasoning



## Study Methods...

Self-rating on current level of competency and CANR's contribution to acquire the competency

### Effective Citizenship:

	How would you assess your current competency level on effective citizenship?					What was MSU CANR's contribution to acquire this competency?				
	Very High	High	Neutral	Low	Very Low	Very High	High	Neutral	Low	Very Low
I can reflect on the meaning of what I have learned in my academic major as it pertains to the local, national and/or global society.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can evaluate problems within systems of local, national and global contexts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can connect code of ethics, academic integrity, and responsible and ethical behaviors, in the context of my discipline, to personal and professional behaviors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can recognize the range of social values and philosophies around a problem and integrate this range into an approach for a solution.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



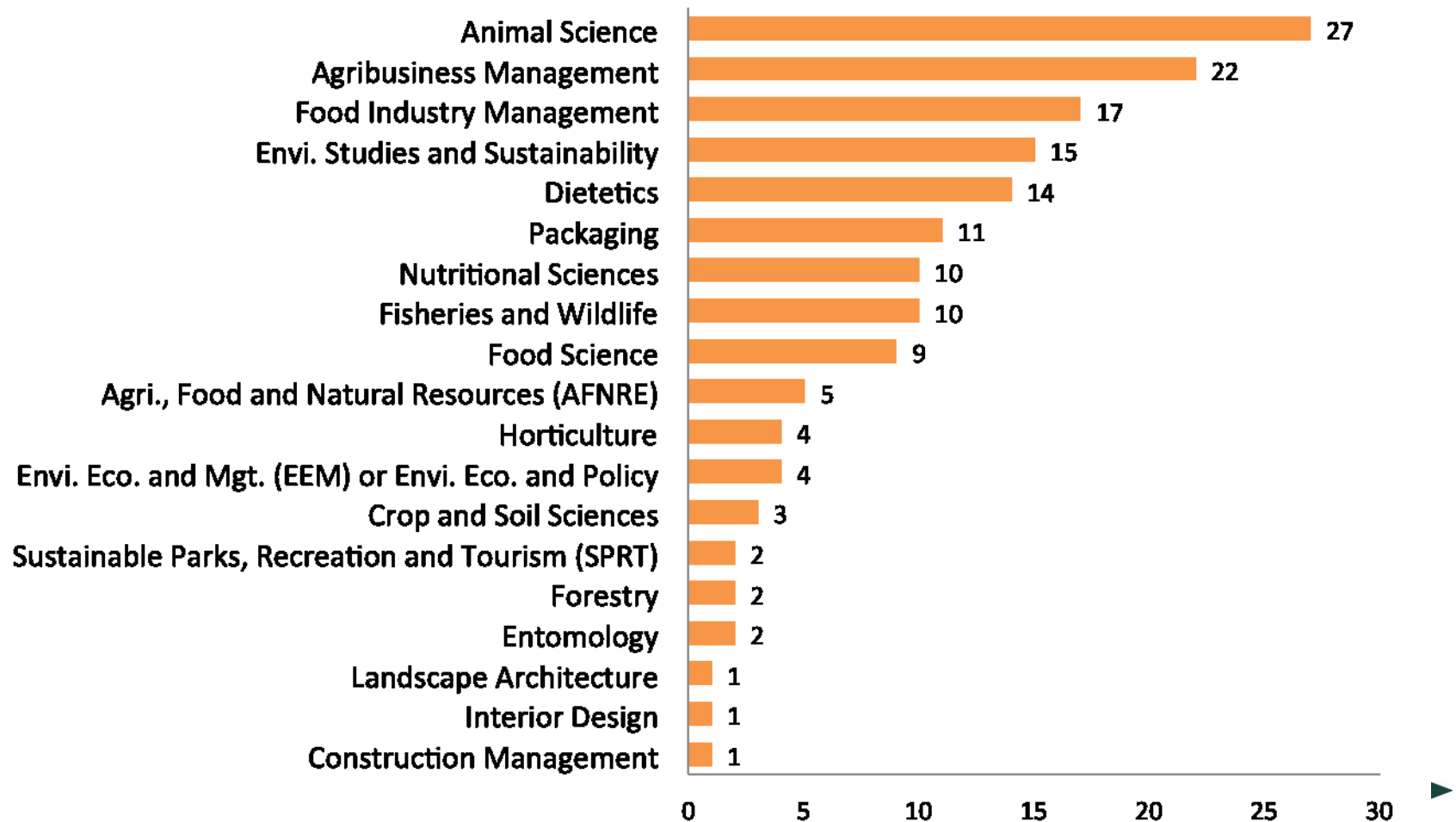


## Study Methods ...

- Demographics: gender, ethnicity, academic major, residence, study abroad participation, internship participation, research participation, work during college, ...
- Open-ended questions: strengths, weaknesses, suggestions
- Web survey administered at the end of semester
  - Fall 2015 – December, January
  - Spring 2016 – April, May
- Response rate: 21%
- Instrument's reliability:  $\geq 0.85$

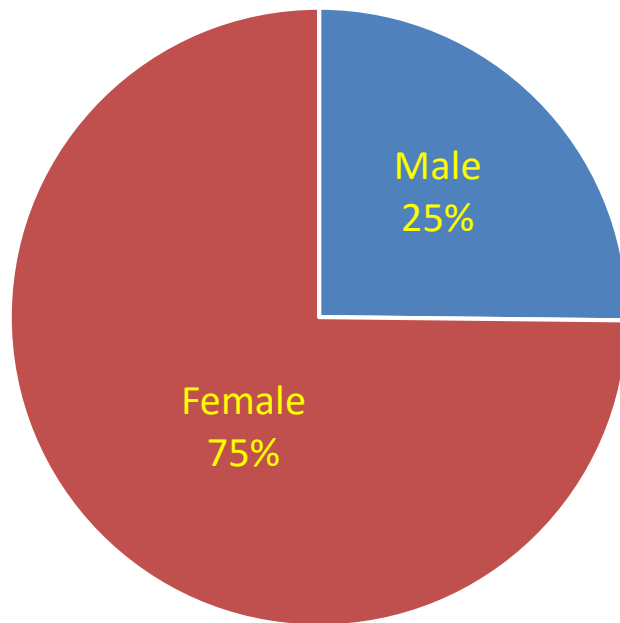


# Respondents by Primary Major (N = 160)

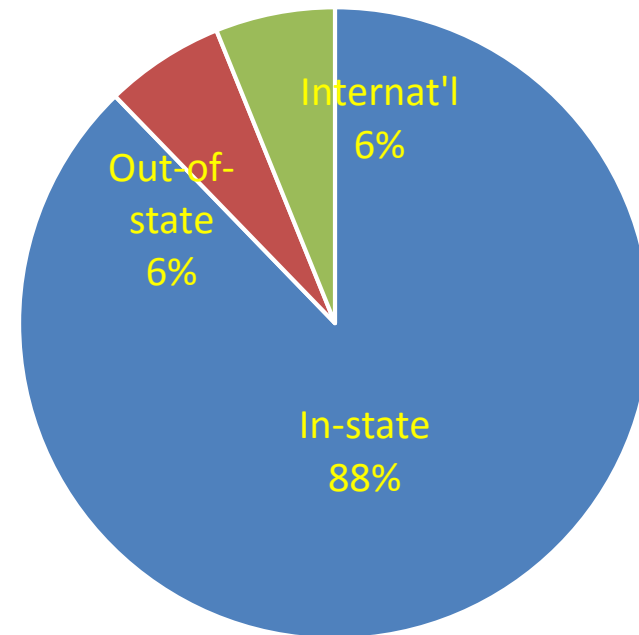


# Gender and Residency (N = 147)

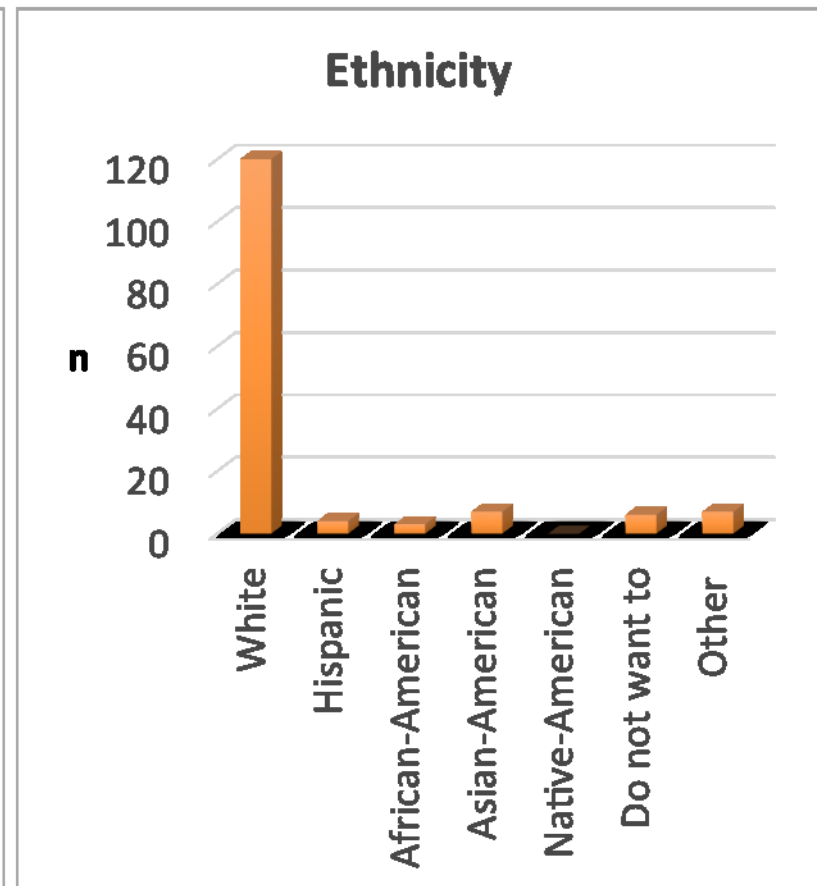
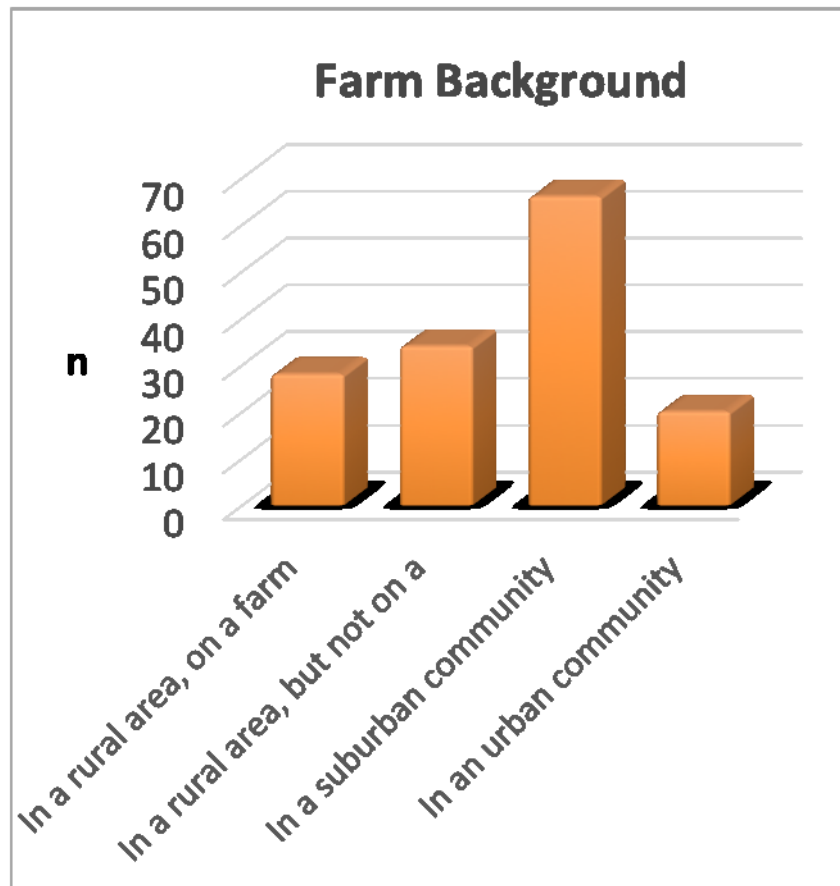
Gender



Residency

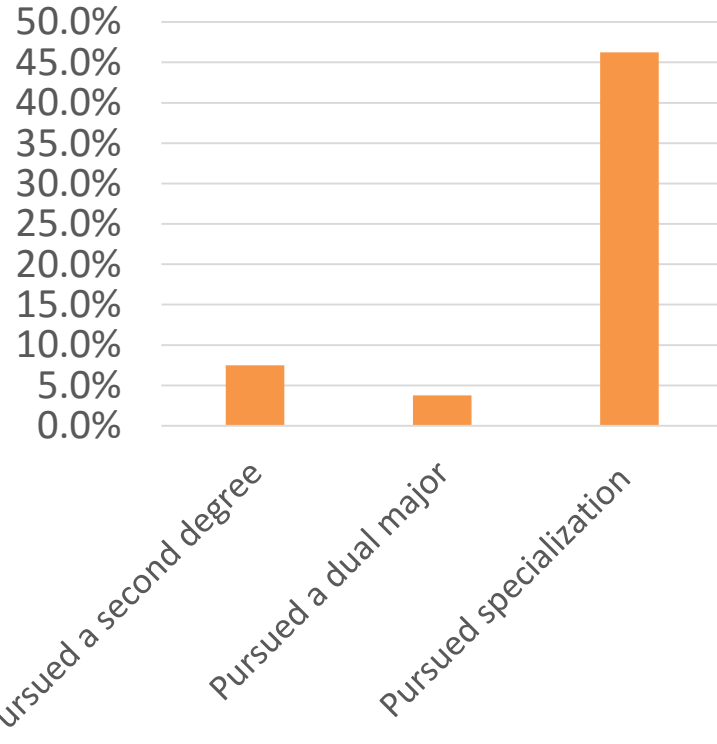


# Farm Background and Ethnicity (N = 147)

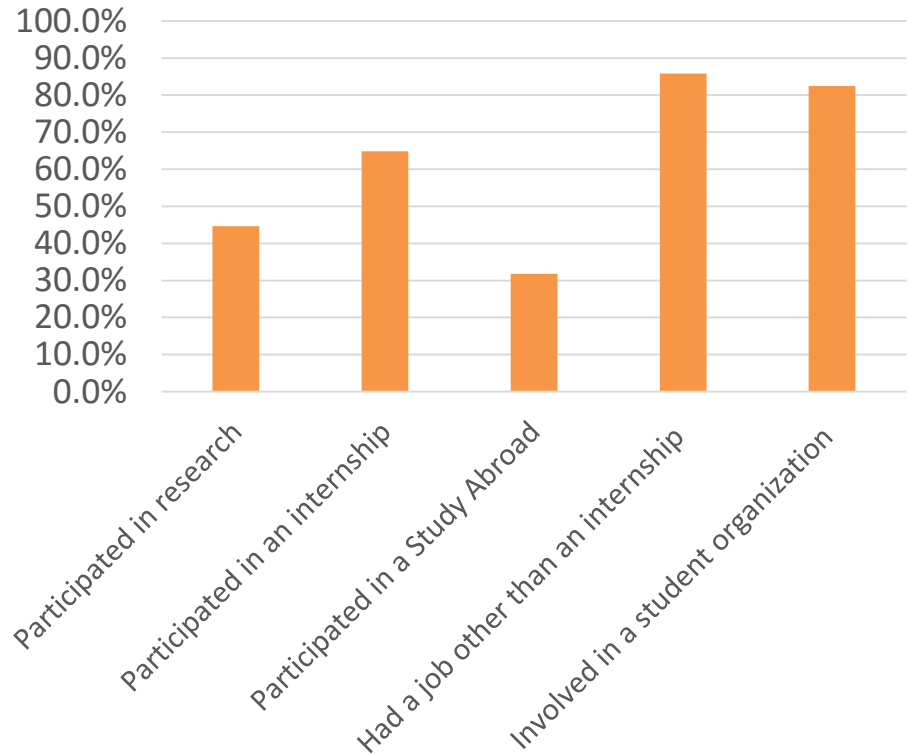


# Academic Preparation

Second Degree, Dual Major, Specialization (N =160)



Research, Study Abroad, Internship, Job, Leadership (N =147)



## Perceived Level of Competency

Learning Outcome Category	N	Mean (SD)
Analytical thinking	142	4.12 (0.53)
Cultural understanding	142	4.25 (0.65)
Effective citizenship	142	4.31 (0.60)
Effective communication	139	4.25 (0.65)
Integrated reasoning	140	4.28 (0.61)

Scale: 1 = Very low, 2 = Low, 3 = Neutral, 4 = High, and 5 = Very high



# MSU CANR's Contribution to Acquire Competency

Learning Outcome Category	<i>N</i>	<i>Mean (SD)</i>
Analytical thinking	142	3.92 (0.71)
Cultural understanding	142	3.52 (1.02)
Effective citizenship	142	3.98 (0.80)
Effective communication	139	4.00 (0.85)
Integrated reasoning	140	4.02 (0.81)

Scale: 1= Very low, 2 = Low, 3 = Neutral, 4 = High, and 5 = Very high



## Relationship between Learning Outcome and CANR's Contribution

Learning Outcome	CANR's Contribution		
	N	Pearson's Correlation	Sig.
Analytical thinking	142	0.587	0.01
Cultural understanding	142	0.396	0.01
Effective citizenship	142	0.587	0.01
Effective communication	139	0.467	0.01
Integrated reasoning	140	0.518	0.01



# Participation in Internship Program

Learning Outcome	Participated in Internship	<i>N</i>	<i>Mean (SD)</i>	<i>t</i> value	<i>df</i>	<i>p</i> value
Analytical thinking	Yes	96	4.17 (0.54)	0.99	145	0.32
	No	51	4.08 (0.53)			
Cultural understanding	Yes	96	4.30 (0.65)	1.13	146	0.26
	No	52	4.17 (0.63)			
Effective citizenship	Yes	96	4.40 (0.59)	2.15	146	0.03
	No	52	4.18 (0.59)			
Effective communication	Yes	96	4.35 (0.65)	2.06	146	0.04
	No	52	4.12 (0.60)			
Integrated reasoning	Yes	96	4.41 (0.57)	3.05	146	0.00
	No	52	4.10 (0.65)			



## Residency Status

Learning Outcome	Residency Status	N	Mean	SD	df	F	Sig.	Post-hoc test
Analytical thinking	In-state student	128	4.14	0.50	2, 143	14.37	0.01	Group 3 & 1 < Group 2
	Out-of-state student	9	4.68	0.42				
	International student	9	3.44	0.46				
Cultural understanding	In-state student	129	4.27	0.65	2, 144	4.25	0.01	Group 3 < Groups 1 & 2
	Out-of-state student	9	4.52	0.50				
	International student	9	3.70	0.45				
Effective citizenship	In-state student	129	4.36	0.58	2, 144	6.76	0.01	Group 3 < Groups 1 & 2
	Out-of-state student	9	4.39	0.65				
	International student	9	3.64	0.42				
Effective communication	In-state student	129	4.31	0.56	2, 144	6.99	0.01	Group 3 < Groups 1 & 2
	Out-of-state student	9	4.30	1.29				
	International student	9	3.52	0.44				
Integrated reasoning	In-state student	129	4.32	0.59	2, 144	6.02	0.01	Group 3 < Groups 1 & 2
	Out-of-state student	9	4.56	0.75				
	International student	9	3.67	0.53				



## Difference Between the U.S. and International Students

Learning Outcome	Groups	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>t value</i>	<i>df</i>	<i>p value</i>
Analytical thinking	U.S. Student	137	4.18	0.51	4.18	144	0.01
	International	9	3.44	0.46			
Cultural understanding	U.S. Student	138	4.29	0.64	2.68	145	0.01
	International	9	3.70	0.45			
Effective citizenship	U.S. Student	138	4.36	0.58	3.69	145	0.01
	International	9	3.64	0.42			
Effective communication	U.S. Student	138	4.31	0.62	3.75	145	0.01
	International	9	3.52	0.44			
Integrated reasoning	U.S. Student	138	4.34	0.60	3.27	145	0.01
	International	9	3.67	0.53			



# Difference by Farm Background

Learning Outcome	Resided before Coming to MSU	N	Mean	SD	df	F	p value	Post-hoc test
Analytical thinking	In a rural area, on a farm	28	4.16	0.44	3, 143	3.34	0.01	Group 4 < Groups 1, 2, 3
	In a rural area, but not on a farm	34	4.17	0.51				
	In a suburban community	65	4.21	0.52				
	In an urban community	20	3.79	0.67				
Cultural understanding	In a rural area, on a farm	28	4.14	0.62	3, 144	0.98	0.40	
	In a rural area, but not on a farm	34	4.30	0.71				
	In a suburban community	66	4.32	0.60				
	In an urban community	20	4.10	0.72				
Effective citizenship	In a rural area, on a farm	28	4.46	0.49	3, 144	3.03	0.05	Groups 3, 4 < Groups 1, 2
	In a rural area, but not on a farm	34	4.43	0.51				
	In a suburban community	66	4.32	0.62				
	In an urban community	20	3.99	0.69				
Effective communication	In a rural area, on a farm	28	4.30	0.47	3, 144	6.99	0.01	Group 4 < Groups 1, 2, 3
	In a rural area, but not on a farm	34	4.42	0.53				
	In a suburban community	66	4.35	0.58				
	In an urban community	20	3.70	0.90				
Integrated reasoning	In a rural area, on a farm	28	4.29	0.56	3, 147	1.90	0.13	
	In a rural area, but not on a farm	34	4.41	0.56				
	In a suburban community	66	4.33	0.64				
	In an urban community	20	4.02	0.64				

Note. Groups 1 to 4 represent the places where respondents resided before coming to MSU: 1 = in a rural area, on a farm, 2 = in a rural area, but not on a farm, 3 = in an suburban community, and 4 = in an urban community



# Strengths, Weaknesses and Suggestions for Improvement



## Strengths (N = 132)

Strengths	<i>f</i>
Helpful professors/faculty/advisors	48
Opportunity to apply skills, hands on sessions, outreach opportunity	32
Broad/multidisciplinary program/comprehensive course	25
Small-sized classes	10
Career-focused course	9
Business-focused classes	7
Opportunity for an internship	6
Discipline-focused courses	6
Opportunity to link to employers and/or company people	6
Communication, information given in class	5
Other: Helpful staff, research-based course, rigorous curriculum, etc.	34

*Note: Frequency counts exceed 132 due to multiple answers.*



# Conclusions

- Graduating seniors' perceived higher level of competency on all learning outcomes.
- A moderate to strong positive relationship was found between perceived level of competency and MSU CANR's contribution to acquire the competency.
- Students not pursuing a second degree perceived more competent on effective citizenship and integrated reasoning.
- Students participating in internship rated higher competency on effective citizenship, effective communication, and integrated reasoning.
- The U.S. students rated the competency higher on all learning outcomes than international students.
- Students coming from urban areas perceived a lower level of competency for analytical thinking, effective communication and effective citizenship.



## Implications

- *Review courses to avoid overlap/duplication of contents*
- *Review courses to improve rigor and skills for a career*
- *Focus on career development*
- *Make internships a mandatory requirement.*

*“In agriculture today no one wants someone with just a piece of paper that says they have a degree, employers want experience out of the class to make a student more appealing to hire.”*





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