PRIORITIZING CORE COMPETENCIES FOR FOOD SYSTEMS LEADERSHIP

Michael Jerome Bryan

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Approved by:

Jean Fleming

Rita O'Sullivan

Lynda Stone

ABSTRACT

MICHAEL BRYAN: Prioritizing Core Competencies for Food Systems Leadership
(Under the direction of Rita O'Sullivan)

Approaches to leadership development often center on the development of leadership competencies. The Food Systems Leadership Institute (FSLI) is a leadership development program that seeks to develop leadership competencies in personal leadership, organizational change, and food systems leadership. This study uses an expert panel made up of subjects with experience and expertise in leadership, including leadership in food system organizations to examine whether all 24 of the FSLI's core competencies are of equal importance. After two rounds of surveys using the Delphi technique descriptive statistics and comments of panel members suggest that the core competencies are not equally important and can be prioritized. "Self understanding and reflection", "visioning", "defining and understanding organizational culture", and "including/engaging diverse constituents of the food system" were among the most important competencies.

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CHAPTER 1

INTRODUCTION

The term "food system" represents a holistic and integrated perspective on the components, processes, participants, and outcomes of a complex system that supplies our food. The concept of a food system is a move beyond traditional food production-processing-distribution-marketing models to a systems approach that recognizes the far-reaching impacts of food on health, economies, culture, the environment, natural resources, technology, rural communities, and other aspects of society.

Higher education plays a particularly important role in the food system. America's land grant universities have a tradition of supporting agriculture in the U.S. These institutions and colleges of agriculture in particular have provided education, research, and extension (assisting communities to apply research findings) that have contributed to the creation of a food supply that is largely safe, affordable, and plentiful.

By several measures colleges of agriculture have not kept pace with change in recent decades. College enrollments have generally been flat or in decline, and the bright spots are often in non-food disciplines of the life sciences (Board on Agriculture, 1995). Federal funding for food and agriculture research, education, and extension also have remained flat or decreased while funding for other science and technology research areas such as medicine, public health, and engineering have grown (National Association of State Universities and Land Grant Colleges, 2007).

The National Association of State Universities and Land Grant Colleges (NASULGC) and the W.K. Kellogg Foundation (WKKF) are two organizations with a vested interest in the well-being and success of colleges of agriculture. NASULGC is a higher education association whose members include 214 institutions of public higher education. The WKKF is a philanthropic organization (independent from the food-producing Kellogg Company) whose mission includes support of higher education as well as sustainable, equitable food systems.

In Fall 2002, NASULGC and the WKKF assembled a group of senior university leaders and asked them to consider the changing landscape of higher education and food systems and to formulate a plan of action. The group concluded that cultural change was required within the land grant universities and that a cadre of new leaders was required to lead this change. A cultural change emphasizing food systems was proposed as a way to revitalize colleges of agriculture while simultaneously contributing to the health of humans, environments, communities, and economies.

The systems approach was viewed as mechanism to increase collaborative, interdisciplinary initiatives within food systems organizations, and particularly the land grant colleges of agriculture. A systems view, or "systems thinking", is described as holistic, embracing complexity, and seeking to better identify and understand the mix of inputs, outputs, impacts, and outcomes around dynamic phenomena (Banathy, 1992). A more linear way of thinking about food, in terms of a production-processing-marketing-distribution, is unlikely to foster examination of broader relationships between food/food production and environmental conditions, human health, local and global economic conditions, technology, rural communities, society and culture, and a host of other topics.

The group of senior university leaders became a design team responsible for designing a leadership institute that would develop this cadre of new leaders. Their first activity was to identify a series of core competencies that would be required to lead cultural change in land grant universities. They relied upon their personal experience, performed job analyses, and held conversations with leadership development experts in order to identify and articulate these core competencies. They also outlined a basic structure for this leadership development institute: a two-year program for leaders in higher education including three in-person, week-long training retreats; distance learning activities; mentoring; and a group capstone project.

The Food Systems Leadership Institute (FSLI) was created based on the design team's recommendations and with the financial support of the WKKF. The mission of the FSLI is to advance and strengthen the food system by creating a cadre of leaders who will create and recreate the food systems of the future. These leaders will have a broad, holistic view of the food system, focused on healthy humans, environments, economies, and communities. They will have personal leadership skills to increase their effectiveness in various leadership capacities and also skills for organizational change so that they may foster a cultural change within their organizations toward a food systems approach (National Association of State Universities and Land Grant Colleges, 2003).

The FSLI was designed for experienced leaders such as department heads, assistant or associate deans, and deans. Such individuals were already in positions of influence and therefore would be well positioned to assume greater responsibility within their organizations and to implement organizational/cultural change.

The previously-mentioned core competencies were the primary guide for developing and assessing the FSLI curriculum. The program activities, from in-person speakers to experiential learning projects were intended to develop or reinforce these core competencies in the participants. The core competencies were aligned with three program objectives: develop broader food systems perspectives among program participants, develop knowledge and skills for organizational change, and enhance personal leadership abilities. The list of core competencies is included in Appendix A.

North Carolina State University was selected to execute NASULGC and the WKKF's vision. The Ohio State University and the University of Vermont were selected as partner sites, with all three universities hosting residential leadership development retreats for cohorts of program participants from universities across the United States.

CHAPTER 2

LITERATURE REVIEW

The overarching conceptual framework for the FSLI as an educational, leadership development program was explored previously by Bryan (2006a). Peer-reviewed articles were reviewed and, for each FSLI core competency, multiple references were identified that articulated the essential concepts of the core competency. This process validated that the core competencies identified by the FSLI design team were recognized by others who have studied leadership.

While there are various definitions of competency, nearly all describe a combination of knowledge, skills, abilities, and often characteristics and values that are related to performing a particular function (Garman, 2006; Shipmann et al 2000). The use of competencies in defining and developing leadership is well established (Gamage & Pang, 2003; Avolio, 2005).

Also well established is the identification of competencies that are particularly pertinent to a given discipline, job category, or other category. Contino (2004) examined leadership competencies for nurses. Lepard and Foster (2003) identified and created development activities for school administrator competencies. Leadership development programs from the United State Department of Agriculture to the Kenan-Flagler Business School at the University of North Carolina at Chapel Hill define the leadership competencies they identify as important and work to develop in their staff or students.

The concepts of personal leadership and the organizational change process are well established whereas the concepts of food systems leadership competencies are largely unique to the FSLI. Personal leadership is the subject of literally hundreds of thousands of books as well as peer-review journals such as the *Leadership and Organizational Development Journal*, *School Leadership and Development*, and *Leadership Quarterly*. Organizational change has also been studied extensively, both as a process (Kotter, 1996) and as a task requiring specialized leadership competencies (Wren & Dulcewicz, 2005), and is also a subject for peer-review journals such as the *Journal of Change Management*.

Food systems leadership competencies are less well established and are not found, as such, in the literature. Validation of the food systems leadership competencies required examination of leadership competencies that were similar in intent but not linked to food systems, such as bringing together stakeholder groups (Hart & Sharma, 2004). Other soureces of validation for food systems leadership competencies were writings on the concepts and workings of food systems such as those by Auburn, Brown, and Grady (2003, 2005).

All three domains of core competencies clearly link to the particular results sought by the FSLI, which aims to create a cadre of leaders who will promote cultural change toward broad-based, interdisciplinary approaches to food systems. Linking leadership development to desired results, to create a distinct leadership culture, has been shown to be a productive approach (Intagliata, Ulrich, & Smallwood, 2003).

CHAPTER 3

RESEARCH DESIGN

The work of the design team and the subsequent literature review and validation project resulted in 24 core competencies to be addressed by the FSLI curriculum. Within the parameters of 12 in-person training days in the FSLI program, developing a curriculum that develops 24 distinct leadership competencies is ambitious. The purpose of this study, therefore was to gain insights on whether or not the competencies could be prioritized for program planning purposes.

The specific research hypothesis for this study is that not all FSLI core competencies are equally important. Knowledge that certain competencies are more important than others could guide curriculum development and areas of emphasis. Currently no data exist to suggest the relative importance or priority of certain competencies as compared to others, if such differences exist.

Methods

This study uses two rounds of surveys using the Delphi technique (Dalkey, 1969; Linstone & Turoff, 1975) to determine if group consensus can be reached regarding the relative importance or prioritization of the FSLI core competencies. The Delphi method has proven useful in studying competencies, including teaching competencies in higher education (Tigelaar, 2004) and administrator competencies (Barry, 2003). The Delphi method has been used widely in agriculture education research, often in the area of curriculum planning (Martin, 1998).

The Delphi technique uses a panel of experts in a particular field to develop

consensus regarding a series of questions or issues. In this study the issues around which

consensus is sought are the 24 leadership competencies developed by the FSLI design team

and validated through a literature review.

Comments provided by subjects during the Delphi surveys were reviewed and

analyzed using qualitative methods. Content analysis (Marshall & Rossman, 2006) was

performed to identify categories or themes of comments.

Sample

Sample selection combined purposeful and convenience sampling. It is purposeful in

that the sample included 109 subjects who were experienced leaders from higher education,

non-profits, foundations, industry, government, as well as leadership development

professionals. As shown in Table 1 the sample includes University presidents, provosts,

chancellors, deans, department heads, center directors, and professors; industry executives

and directors; government administrators; non-profit sector presidents and program

managers; and others. The majority of these experts work directly in food systems

organizations, such as colleges of agriculture, foundations making grants for food system

projects, or private companies producing food products.

Table 1.

Sampling Frame

Subject Title	Number in Sample
University-level Administrators (Presidents, Chancellors; Provosts; vice, assistant, and associate Chancellors or Provosts; also industry presidents)	38
College or School-level Administrators (Deans; vice, assistant, and associate deans; also industry vice presidents and government administrators)	40

Department Heads or Chairs (also non-profit and industry program managers)	15
Center Directors	10
Faculty, including leadership development professionals	6

The sample is also a convenience sample in that the subjects selected have involvement in or awareness of the FSLI program. Subjects include FSLI Fellows, their mentors, those who nominated Fellows to participate in the program, members of the FSLI design team, individuals who have been engaged with the program as speakers or consultants, members of an advisory committee, and others who are in some way aware of the program. Using convenience sampling is intended to increase the response rate to the survey. Another benefit is that all members of the sample have awareness of and direct experience in food systems organizations and the leadership requirements therein.

Procedures

This study used the Delphi approach and an expert panel to rank the core competencies by relative importance. One hundred and nine subjects were invited to provide their personal rankings of the competencies in each category. Group rankings were then analyzed to determine if there was agreement on certain competencies being of greater importance than others.

Competencies were ranked within the domains of personal leadership, organizational change, and food systems leadership. In round one of the Delphi survey respondents completed an online survey instrument by ranking the competencies in each domain from "1st Most Important" to 7th, 8th, or 9th Most Important, depending upon on the number of competencies in a given domain. There are 8 personal leadership competencies, 7

organizational change competencies, and 9 food systems leadership competencies. A copy of the survey instrument is attached in Appendix B.

Forcing the subjects to rank the competencies was selected over asking the subjects to rate the importance of the competencies. Data from a pilot study (Bryan, 2006b) revealed that when subjects were asked to rate the competencies using a Likert scale from "very important" to "not important all" all competencies received high scores (very important) and it was not possible to prioritize the competencies using the data collected. This also influenced the wording of the ranking choices from "1st Most Important" to, for example, "5th Most Important"; using "most important" was intended to emphasize that ranking a competency lower was not equivalent to indicating it was unimportant.

A comment field was included for each set of competencies and at the end of the survey subjects were instructed to provide overall comments as they wished. Data from round one were compiled and analyzed to see what level of consensus the expert panel had reached regarding how important each competency was for food systems leadership.

For the second round of the Delphi survey all members of the sample received an email survey requesting they review and provide recommendations and/or comments on the group rankings. The survey included three separate tables that presented the competencies in each domain ranked according to input of the respondents to the first survey instrument. Competencies were presented in rank order according to mean ranking score. The tables also displayed standard deviations and frequencies of ranking. A copy of the second Delphi survey instrument is included in Appendix C.

In the second round the competencies were placed in rank order according to group ranking and separated into "tiers of relative importance". The top 2 or 3 competencies were

grouped into an "upper" category of importance. The lower 2 or 3 formed a "lower" category and the middle 3 or 4 were in a "middle" category. Subjects were instructed to recommend changes according to category rather than specific ranking. For example, a subject could recommend a competency in the middle category should be moved to a higher or lower category of relative importance.

In the second round subjects were not asked to re-rank the competencies or to make specific numerical ranking recommendations. Precise re-ranking of the competencies was viewed as an onerous task that would reduce response rate. For example, recommending precise changes such as "move competency 3.4 up to 3.2, move 3.2 down to 3.7, and move 3.7 to where 3.4 was" viewed as much more complex than recommending changes within three categories. Furthermore, the relative difference between a competency ranked 3rd or 5th cannot be measured.

CHAPTER 4

RESULTS

Fifty-five subjects responded to the first Delphi survey, a response rate of 51%. Their individual rankings were compiled and Tables 2, 4, and 6 present the competencies in numerical order according to the group's rankings. The tables present the mean scores for each competency as well as a grouped frequency score. The grouped frequency score represents the frequency at which a competency's ranking was in an upper, middle, or lower range. For example, in Table 2, "self understanding and reflection" was ranked 1st, 2nd, or 3rd 33 times, 4th, 5th, or 6th 7 times, and 7th, 8th, or 9th 15 times.

Respondents also provided comments on the competencies and their rankings. These comments were reviewed qualitatively to identify common themes and/or distinctive input. Summaries of the comments are provided in Tables 3, 5, and 7. General comments about the first survey also were requested and are presented in Table 8.

Table 2 presents means, standard deviations, and frequencies for personal leadership competencies. Mean scores for "self-understanding and reflection" and "visioning" were greater than one standard deviation below the mean of the means of all personal leadership competencies. Recall that lower mean scores indicate higher ranking of importance. While ranked first, "self-understanding and reflection" also had the highest individual standard deviation of all personal leadership competencies. "Developing and implementing political strategies both within the organization and externally", and "managing resources using budgets and financial strategies and systems" were both greater than one standard deviation

Table 2.

Personal Leadership Competencies' Mean Ranking, Frequencies of Rankings, and Relationship to the Mean of the Means

Competency	Mean[a]	SD	Frequencies[b]		
			1-3	4-6	7-9
Competencies with mean scores >1 SD below the Mean of the Means (M = 4.94, SD = .93)					
1.1 Self-understanding and reflection	3.85	3.19	33	7	15
1.2 Visioning	3.93	2.68	31	13	10
Competencies within 1 SD (above or below) of the Mean of the Means (M = 4.94, SD = .93)					
1.3 Maintaining core principles and values (e.g. interdisciplinary collaboration, passion for mission)	4.07	2.66	30	12	13
1.4 Communicating within organizations (internal communications)	4.18	1.84	19	29	7
1.5 Communicating with partners and stakeholders (external communications)	5.18	1.77	9	31	14
1.6 Continuing assessment, feedback and change; creating a personal professional development program	5.35	2.04	17	16	22
1.7 Valuing diversity and leading across cultures	5.75	2.37	12	17	26
Competencies with mean scores >1 SD above the Mean of the Means (M = 4.94, SD = .93)					
1.8 Developing and implementing political strategies both within the organization and externally	6.02	2.49	8	22	25
1.9 Managing resources using budgets and financial strategies and systems	6.11	2.79	11	13	31

[a]Mean of numerical rankings from "1st Most Important" to "9th Most Important"; a lower mean score represents a higher ranking of relative importance.

[b]Frequencies are grouped to present the number of times a competency was ranked 1st-3rd, 4th-6th, and 7th-9th.

above the mean of the means. All other personal leadership competencies were within one standard deviation of the mean of the means.

Thirty of the 55 respondents provided comments on personal leadership competencies. Table 3 presents common themes and selected individual remarks from the comments provided. Seven respondents indicated that they thought all of the competencies were important, with six describing the task of ranking the competencies as difficult. Several comments that were only provided by a single respondent are also included in Table 3 as "Selected individual comments".

Table 3.

Personal Leadership Competency Comments (30 of 55 respondents commented)

Subject of comment:	Number of times expressed
All competencies are important	7
The task of ranking is difficult	6
Easier to group competencies than give individual rankings	4
Some competencies are part of others, "hard to separate", "connected", or "not mutually exclusive"	4
Competencies ranked last can be delegated	2

Selected individual comments

"The top competencies are required to move to the next level"

"Rank is influenced by the potential for derailment if the competency is not present"

"Without the ability to communicate, the other competencies don't matter"

Table 4 presents mean ranking scores, standard deviations, and frequencies for organizational change competencies. "Defining and understanding organizational cultures" was the only competency with a mean score greater than one standard deviation below the mean of the means. "Designing tactical plans for moving an organization forward" was the only organizational change competency with a mean score greater than 1 standard deviation above the mean of the means. All other organizational change competencies were within one standard deviation of the mean of the means.

Table 5 presents a summary of comments on organizational change competencies made by 23 of the 55 total respondents. Five respondents indicated that all competencies are important, which was also a common comment regarding personal leadership competencies. Four respondents indicated that competencies may be seen as steps in a process. Several comments that were only provided by a single respondent are also included in Table 5 as "Selected individual comments".

Table 4.

Organizational Change Competencies' Mean Ranking, Frequencies of Rankings, and Relationship to the Mean of the Means

Competency	Mean[a]	SD	Frequencies[b]		
			1-2	3-5	6-7
Competencies with mean scores >1 Standard Deviation below the Mean of the Means (M = 3.98, SD = .57)					
2.1 Defining and understanding organizational cultures	3.31	1.96	27	16	12
Competencies within 1 Standard Deviation (above or below) of the Mean of the Means (M = 3.98, SD = .57)					
2.2 Inspiring inclusive entrepreneurship and collaboration (inspirational leadership)	3.51	2.12	24	18	13
2.3 Accurately diagnosing and solving problems in a complex organizational environment	3.69	2.01	18	26	11
2.4 Setting goals and establishing targets	3.80	2.16	13	31	11
2.5 Understanding organizational design, structure, and governance	4.07	1.83	15	22	18
2.6 Publicly communicating changes and their impacts on programs, personnel, and stakeholders	4.55	1.88	10	23	22
Competencies with mean scores >1 Standard Deviation above the Mean of the Means (M = 3.98, SD = .57)					
2.7 Designing tactical plans for moving an organization forward	4.91	1.66	7	26	22

[a]Mean of numerical rankings from "1st Most Important" to "7th Most Important"; a lower mean score represents a higher ranking of relative importance.

[b]Frequencies are grouped to present the number of times a competency was ranked 1st or 2nd, 3rd-5th, and 6th or 7th.

Table 5.

Organizational change competency comments (23 of 55 respondents commented)

Subject of comment	Number of times expressed
All competencies are important	5
Competencies are viewed as a progression, chronologically, steps in a process	4
Some competencies are connected	3

Selected individual comments

"This was difficult"

"Some competencies are management, not leadership"

"May vary based on the situation"

"Diagnosing and solving a problem should be two competencies, not one"

Table 6 presents means, standard deviations, and frequencies for food systems leadership competencies. Only "including/engaging diverse constituents of the food system (holistic thinking)" had a mean score greater than one standard deviation below the mean of the means. "Integrating and aligning the organization with a food system vision" and "bringing current stakeholders to new levels of understanding of food systems (including changing demands and expectations of food system programs)" both had mean scores greater than 1 standard deviation above the mean of the means. All other food systems leadership change competencies were within one standard deviation of the mean of the means.

Table 6.

Food Systems Leadership Competencies' Mean Ranking, Frequencies of Rankings, and Relationship to the Mean of the Means

Competency	Mean[a]	SD	Frequencies[b]		
			1-3	4-5	6-8
Competencies with mean score >1 Standard Deviation below the Mean of the Means (M = 4.46, SD = .68):					
3.1 Including/engaging diverse constituents of the food system (holistic thinking)	3.49	2.32	31	11	13
Competencies within 1 Standard Deviation (above or below) of the Mean of the Means (M = 4.46, SD = .68)					
3.2 Understanding political, social, and economic contexts for changes in world food systems	4.06	1.97	26	8	20
3.3 Engaging stakeholders and clientele to address food systems challenges and opportunities	4.13	2.08	24	20	11
3.4 Thinking strategically and critically to solve problems and identify opportunities	4.17	2.59	24	12	18
3.5 Applying systems thinking to understanding food production, processing, distribution, and consumption relationships	4.18	2.35	23	13	19
3.6 Building partnerships to advance a food systems vision	4.93	2.26	15	17	23
Competencies with mean score >1 Standard Deviation above the Mean of the Means (M = 4.46, SD = .68):					
3.7 Integrating and aligning the organization with a food system vision	5.29	2.23	14	12	29
3.8 Bringing current stakeholders to new levels of understanding of food systems (including changing demands and expectations of food system programs)	5.42	2.11	12	14	29

[a]Mean of numerical rankings from "1st Most Important" to "8th Most Important"; a lower mean score represents a higher ranking of relative importance

[b]Frequencies are grouped to present the number of times a competency was ranked 1st-3rd, 4th-5th, and 6th-8th

Table 7 presents a summary of comments on food systems leadership competencies made by 19 of the 55 total respondents. While only two respondents commented that all competencies are important, it is possible that this is a result of respondents having provided this comment in response to the two prior categories of competencies. Three respondents identified "partnerships and engagement with diverse stakeholders as particularly critical for food systems leadership". Two respondents commented that the importance of competencies was affected by the situation, organization, or targeted group or action. Several comments that were only provided by a single respondent also are included in Table 4 as "Selected individual comments".

Table 7.

Food systems competency comments (19 of 55 respondents commented)

Subject of comment	Number of times expressed
Partnerships and engagement with diverse stakeholders is critical	3
Importance is unique to a situation, organization, or target	2
All are important; must perform all to succeed	2
Difficult to rank	2

Selected individual comments

"Difficult to differentiate between some competencies"

"Competencies can be performed in sequence"

"Some are redundant to organizational change competencies"

"You must perform all food systems competencies to succeed"

Respondents also were invited to comment generally on the competencies and ranking task. Seventeen of the 55 respondents provided general comments. Three respondents commented that the ranking of the competencies may be contextualized by the organization where a leader functions, the goals, or individual differences among leaders. The theme that all are important was also voiced again.

Thirty two subjects responded to the second survey of the Delphi technique, which requested recommendations and comments on the group's rankings. This is 30% of the 109 subjects in the sample and 58% of the 55 responses received in phase I. Tables 8, 9, and 10 present the recommendations for competencies to be moved to higher or lower categories. Competencies are again presented in numerical order according to group ranking and also divided into the upper, middle, and lower ranking ranges.

Table 8 presents recommendations for changes to the personal leadership competency grouped rankings. Of 32 respondents, 16 were in agreement with the group's rankings and 16 recommended changes. The greatest number of comments were made regarding "valuing diversity and leading across cultures", with 7 respondents suggesting this competency was more important than the group's ranking. All 7 recommended this competency should be in the middle range of importance.

Table 8.

Recommended Changes to Categories of Importance for Personal Leadership Competencies

Competency	Number of recommendations to change category of importance	
	move higher	move lower
Upper level of importance		
1.1 Self-understanding and reflection		
1.2 Visioning		1 (to middle)
1.3 Maintaining core principles and values (e.g. interdisciplinary collaboration, passion for mission)		2 (to middle)
Middle level of importance		
1.4 Communicating within organizations (internal communications)	3	
1.5 Communicating with partners and stakeholders (external communications)	3	1
1.6 Continuing assessment, feedback and change; creating a personal professional development program		1
Lower level of importance		
1.7 Valuing diversity and leading across cultures	7 (to middle)	
1.8 Developing and implementing political strategies both within the organization and externally		
1.9 Managing resources using budgets and financial strategies and systems	2 (to middle)	

Table 9 presents the respondents recommendations for changes to the grouped rankings of organizational change competencies. Of 32 respondents, 18 agreed with the group rankings, and 14 provided recommended changes. The greatest number of comments

(5) were recommendations that "inspiring inclusive entrepreneurship and collaboration (inspirational leadership)" should be moved down to the middle category.

Table 9.

Recommended Changes to Categories of Importance for Organizational Change Competencies

Competency	Number of recommendations to change category of importance	
	move higher	Move lower
Upper level of importance		
2.1 Defining and understanding organizational cultures		
2.2 Inspiring inclusive entrepreneurship and collaboration (inspirational leadership)		5 (to middle)
Middle level of importance		
2.3 Accurately diagnosing and solving problems in a complex organizational environment	3	
2.4 Setting goals and establishing targets	2	2
2.5 Understanding organizational design, structure, and governance	1	1
Lower level of importance		
2.6 Publicly communicating changes and their impacts on programs, personnel, and stakeholders	3 (2 to upper, 1 to middle)	
2.7 Designing tactical plans for moving an organization forward	2	

Table 10 presents the respondents recommendations for changes to the grouped rankings of food systems leadership competencies. Of 32 respondents, 17 agreed with the group rankings and 15 provided recommendations for changes. Four competencies received 4 recommendations for changes to the categorized group ranking. Four respondents recommended moving engaging stakeholders and clientele to address food systems challenges and opportunities to lower categories. All three of the competencies in the lower category received four recommendations that they be moved higher. Recommendations were mixed on moving these competencies to upper or middle categories.

Table 10.

Recommended Changes to Categories of Importance for Food Systems Leadership Competencies

Competency	Number of recommendations to change category of importance	
	move higher	move lower
Upper level of importance		
3.1 Including/engaging diverse constituents of the food system (holistic thinking)		1 (to lower)
3.2 Understanding political, social, and economic contexts for changes in world food systems		2 (1 to lower, 1 to middle)
3.3 Engaging stakeholders and clientele to address food systems challenges and opportunities		4 (1 to lower, 2 to middle, 1 unspecified)
Middle level of importance		
3.4 Thinking strategically and critically to solve problems and identify opportunities	2	
3.5 Applying systems thinking to understanding food production, processing, distribution, and consumption relationships	3	
Lower level of importance		
3.6 Building partnerships to advance a food systems vision	4 (3 to middle, 1 to upper)	
3.7 Integrating and aligning the organization with a food system vision	4 (2 to upper, 1 to middle, 1 unspecified)	
3.8 Bringing current stakeholders to new levels of understanding of food systems (including changing demands and expectations of food system programs)	4 (2 to middle, 2 to upper)	

CHAPTER 5

DISCUSSION

The results of the Delphi survey support the research hypothesis that not all FSLI core competencies are equally important. If all competencies were equally important it would be expected that while mean ranking scores would vary, all scores would fall within one standard deviation of the mean of the mean ranking sores. However, all three categories contain competencies with mean ranking scores greater than one standard deviation both above and below the mean of the means.

Evidence suggesting that there are differences in the importance of particular competencies is important for individuals who wish to improve their leadership ability and also to educational programs that seek to develop competencies in individuals. For the individual, awareness of a competency's importance may impact desire to practice or master this competency. For an educational program, with limited resources, including contact and distance-learning time and finances for hiring faculty, an awareness of a competency's importance can impact allocation of resources.

However, it is also noteworthy that study participants frequently commented that all competencies are important and that the ranking task was difficult. While certain competencies may fall greater than one standard deviation from the mean score (indicating a lower ranking), this should not be interpreted as an indicator that the competency is unimportant or that mastery of the competency is not valuable for leadership.

Examination of the standard deviations and frequencies for individual competencies reveals disagreement among subjects on the relative importance of the competencies, and some more than others. For example, the highest ranked personal leadership competency, "self-understanding and reflection" has the highest standard deviation; while 31 subjects ranked it 1st, 2nd, or 3rd in importance, 13 ranked it in the bottom tier of importance. While this may be the result of genuine disagreement it could also be the result of a lack of common understanding of what is meant by "self-understanding and reflection".

The food systems leadership competencies are of particular interest, as they are less well established in the literature and more unique to the FSLI than other leadership development programs. The individual standard deviations for competencies ranked in phase I of the study reflect the range of subject's rankings. The recommendations for changes to categories of importance recorded in phase II reveal further disagreement among respondents. While only 15 subjects responded with recommended changes, these 15 subjects recommended 24 category changes. This was also the only domain of competencies where every competency received a recommendation to be moved to a different category.

Even when subjects agreed that a food systems leadership competency should be in a higher or lower category they frequently disagreed on the category it should be moved to. For example, 4 respondents recommended moving "bringing current stakeholders to new levels of understanding of food systems (including changing demands and expectations of food system programs)" to a higher category of importance, but 2 indicated it belonged in the upper category and 2 recommended the middle category.

Increasing clarity on the definitions of competencies may or may not result in greater agreement on their relative importance. As several respondents noted, the specific context in

which a leader operates may influence the competencies they apply, and this contextual disparity could also be influencing the lack of strong agreement on the competencies relative importance. However, for the purposes of an educational program a more robust definition of the core competencies could lead to the articulation of more concise learning objectives that could be used in developing components of the FSLI curriculum.

A limitation of the study, noted earlier and in several subject's comments, is the lack of context for ranking of the competencies. Context could be the organization or environment in which the leader operates, or the leader's specific role within the organization's hierarchy, if one is present. Context also could be the strategic objectives of the organization, the big-picture expectations for the leader. While food systems does provide some narrowing of context versus, for example, military leadership, there may still be differences in the importance of competencies for the department head of a small department within a college versus a vice provost operating at the university level.

It is unclear how the context for leadership might interact with more specific definitions for the competencies suggested earlier. Shorter definitions that are more open to interpretation may be evaluated through the context of the leader judging the importance of the competency. More specific definitions could make the competencies appear less applicable to certain leaders, based on their context. Therefore, there may be some tension between more specific definitions and a leader's context.

Regarding the context provided by organizational position or title, study respondents included individuals from all sectors of the sampling frame, from university-level administrators through faculty members. However the sample was not large enough to

provide statistically meaningful comparisons between sampling frame groups and their competency rankings.

Future investigation of the core competencies could include a more in-depth, qualitative study of specific leaders and their individual reactions to the leadership competencies. Case studies of leaders at different organizational levels and at different types of organizations could be developed using ethnographic methods to provide insights that would again benefit both individual leaders and leadership development programs.

The use of a convenience sample including FSLI program participants and others involved with program design, implementation, oversight, or mentoring and nominating participants, may have created a bias in the ranking data received. Comparing ranking scores between FSLI participant and non-participant study respondents is tempting but even the non-respondents had been heavily engaged or exposed to the FSLI curriculum making the comparison less meaningful. Non-participant respondents included mentors of participants who received periodic program summaries and engage with participants on various curriculum topics. They also included program instructors, facilitators, and members of the original design team who have had direct involvement in design and implementation of the curriculum. Further confounding the ability to extract meaningful interpretation from comparison of participants and non-participants, the FSLI participants represent varying administrative levels in the sampling frame.

In conclusion, the results of the study suggest that the relative importance of the FSLI core competencies varies. Subjects suggested that while relative importance varies there is value in all of the leadership competencies. These findings may be of use to individual leaders interested in self-improvement and to program staff of the FSLI or other leadership

development programs. Future research that provides greater definition of the meaning of

the competencies may or may not increase agreement on their relative importance but could

be useful in developing more precise learning objectives for each competency.

Appendix A
Food Systems Leadership Institute Core Competencies

Personal Leadership

1. Self-understanding and reflection
2. Continuing assessment, feedback and change; creating a personal professional development program
3. Visioning
4. Communicating within organizations (internal communications)
5. Communicating with partners and stakeholders (external communications)
6. Developing and implementing political strategies both within the organization and externally
7. Valuing diversity and leading across cultures
8. Managing resources using budgets and financial strategies and systems
9. Maintaining core principles and values (e.g. interdisciplinary collaboration, passion for mission)

Organizational Change

10. Publicly communicating changes and their impacts on programs, personnel, and stakeholders
11. Defining and understanding organizational cultures
12. Understanding organizational design, structure, and governance
13. Inspiring inclusive entrepreneurship and collaboration (inspirational leadership)
14. Setting goals and establishing targets
15. Accurately diagnosing and solving problems in a complex organizational environment
16. Designing tactical plans for moving an organization forward

Food Systems

17. Including/engaging diverse constituents of the food system (holistic thinking)
18. Engaging stakeholders and clientele to address food systems challenges and opportunities
19. Bringing current stakeholders to new levels of understanding of food systems (including changing demands and expectations of food system programs)
20. Understanding political, social, and economic contexts for changes in world food systems
21. Applying systems thinking to understanding food production, processing, distribution, and consumption relationships
22. Thinking strategically and critically to solve problems and identify opportunities
23. Integrating and aligning the organization with a food system vision
24. Building partnerships to advance a food systems vision

Appendix B
Delphi Survey Instrument I

FSLI Core Competencies Survey

Below are three categories of FSLI Core Competencies. The competencies were developed by a design team of experienced leaders and validated by scholarly literature on leadership. ALL competencies are considered to be important. However by ranking the competencies in order of importance you are assisting us in developing a richer understanding of the competencies, which will be used in program improvement activities.

1. Please type your name below:

Please rank the following Personal Leadership Competencies from from 1st through 9th in terms of importance.	1st Most Important	2nd Most Important	3rd Most Important	4th Most Important	5th Most Important	6th Most Important	7th Most Important	8th Most Important	9th Most Important
2. Self-understanding and reflection	○	○	○	○	○	○	○	○	○
3. Continuing assessment, feedback and change; creating a personal professional development program	○	○	○	○	○	○	○	○	○
4. Visioning	○	○	○	○	○	○	○	○	○
5. Communicating within organizations (internal communications)	○	○	○	○	○	○	○	○	○
6. Communicating with partners and stakeholders (external communications)	○	○	○	○	○	○	○	○	○
7. Developing and implementing political strategies both within the organization and externally	○	○	○	○	○	○	○	○	○
8. Valuing diversity and leading across cultures	○	○	○	○	○	○	○	○	○
9. Managing resources using budgets and financial strategies and systems	○	○	○	○	○	○	○	○	○
10. Maintaining core principles and values (e.g. interdisciplinary collaboration, passion for mission)	○	○	○	○	○	○	○	○	○

11. Please provide any insights on your ranking of the Personal Leadership Competencies:

Please rank the following Organizational Change Competencies from from 1st through 7th in terms of importance.	1st Most Important	2nd Most Important	3rd Most Important	4th Most Important	5th Most Important	6th Most Important	7th Most Important
12. Publicly communicating changes and their impacts on programs, personnel, and stakeholders	○	○	○	○	○	○	○
13. Defining and understanding organizational cultures	○	○	○	○	○	○	○
14. Understanding organizational design, structure, and governance	○	○	○	○	○	○	○
15. Inspiring inclusive entrepreneurship and collaboration (inspirational leadership)	○	○	○	○	○	○	○
16. Setting goals and establishing targets	○	○	○	○	○	○	○
17. Accurately diagnosing and solving problems in a complex organizational environment	○	○	○	○	○	○	○
18. Designing tactical plans for moving an organization forward	○	○	○	○	○	○	○

19. Please provide any insights on your ranking of the Organizational Leadership Competencies:

Please rank the following Food Systems Leadership Competencies from from 1st through 8th in terms of importance.	1st Most Important	2nd Most Important	3rd Most Important	4th Most Important	5th Most Important	6th Most Important	7th Most Important	8th Most Important
20. Including/engaging diverse constituents of the food system (holistic thinking)	○	○	○	○	○	○	○	○
21. Engaging stakeholders and clientele to address food systems challenges and opportunities	○	○	○	○	○	○	○	○
22. Bringing current stakeholders to new levels of understanding of food systems (including changing demands and expectations of food system programs)	○	○	○	○	○	○	○	○
23. Applying systems thinking to understanding food production, processing, distribution, and consumption relationships	○	○	○	○	○	○	○	○
24. Understanding political, social, and economic contexts for changes in world food systems	○	○	○	○	○	○	○	○
25. Thinking strategically and critically to solve problems and identify opportunities	○	○	○	○	○	○	○	○
26. Integrating and aligning the organization with a food system vision	○	○	○	○	○	○	○	○
27. Building partnerships to advance a food systems vision	○	○	○	○	○	○	○	○

28. Please provide any insights on your ranking of the Food Systems Leadership Competencies:

29. Do you have any additional comments regarding the FSLI Core Competencies?

Appendix C
Delphi Survey Instrument II

Dr. _____,

Thank you for your response to the first FSLI core competencies survey. We were pleased to receive 55 responses, with many respondents adding valuable comments that provide us with insights on their rankings.

Using these 55 responses we calculated mean, standard deviation, and frequencies and re-ranked the competencies to reflect the group's rankings from most to "least" important (however, the "least" important competency is still important, as all competencies were identified by a group of experts and validated by a review of scholarly literature).

In the attached tables the competencies have been grouped into three categories: upper, middle, and lower based on mean scores. Frequencies have likewise been grouped, and are shown in the tables.

For this second survey, we ask that you review the attached rankings and consider whether there are particular competencies you believe should be ranked in higher or lower categories. It is not necessary that you re-rank your original choices; simply indicate whether or not you think certain competencies should be placed in different groupings (upper, middle, or lower). Again we welcome any comments that provide insights on your recommendations.

Unfortunately we can not use the online survey tool for this second survey. Therefore I ask that you simply reply to this email with your responses following each question below. If you agree with the current rankings, please send an email with a simple "OK as is" so that we can record your response.

Thank you in advance for your consideration of the following questions. After we receive your responses we will share the final rankings with you.

Question 1. Are there personal leadership competencies that you think should be moved to a different category (upper, middle, or lower)? Which one(s) and why?

Question 2. Are there organizational change leadership competencies that you think should be moved to a different category (upper, middle, or lower)? Which one(s) and why?

Question 3. Are there food systems leadership competencies that you think should be moved to a different category (upper, middle, or lower)? Which one(s) and why?

FSLI Core Competencies: Results of Ranking Survey, Fall 2007

Table 1. Personal Leadership Competencies				Grouped frequencies of rankings (2):		
	Competency	Mean (1)	St. Dev.	Upper (1st-3rd)	Middle (4th-6th)	Lower (7th-9th)
Upper						
1.1	Self-understanding and reflection	3.85	3.19	33	7	15
1.2	Visioning	3.93	2.68	31	13	10
1.3	Maintaining core principles and values (e.g. interdisciplinary collaboration, passion for mission)	4.07	2.66	30	12	13
Middle						
1.4	Communicating within organizations (internal communications)	4.18	1.84	19	29	7
1.5	Communicating with partners and stakeholders (external communications)	5.18	1.77	9	31	14
1.6	Continuing assessment, feedback and change; creating a personal professional development program	5.35	2.04	17	16	22
Lower						
1.7	Valuing diversity and leading across cultures	5.75	2.37	12	17	26
1.8	Developing and implementing political strategies both within the organization and externally	6.02	2.49	8	22	25
1.9	Managing resources using budgets and financial strategies and systems	6.11	2.79	11	13	31

(1): Competencies were ranked from "1st Most Important" to "9th Most Important", therefore a lower mean score represents a higher ranking of relative importance.

(2): Grouped frequencies represent the number of times a competency was ranked in each grouping. For example, competency 1.1 was ranked 1st, 2nd, or 3rd thirty three times; 4th, 5th, or 6th seven times; and 7th, 8th, or 9th fifteen times.

Table 2. Organizational Change Competencies						
	Competency	Mean	St. Dev.	Grouped frequencies of rankings:		
				Upper (1st & 2nd)	Middle (3rd-5th)	Lower (6th & 7th)
Upper						
2.1	Defining and understanding organizational cultures	3.31	1.96	27	16	12
2.2	Inspiring inclusive entrepreneurship and collaboration (inspirational leadership)	3.51	2.12	24	18	13
Middle						
2.3	Accurately diagnosing and solving problems in a complex organizational environment	3.69	2.01	18	26	11
2.4	Setting goals and establishing targets	3.80	2.16	13	31	11
2.5	Understanding organizational design, structure, and governance	4.07	1.83	15	22	18
Lower						
2.6	Publicly communicating changes and their impacts on programs, personnel, and stakeholders	4.55	1.88	10	23	22
2.7	Designing tactical plans for moving an organization forward	4.91	1.66	7	26	22

Table 3. Food Systems Leadership Competencies		Mean	Std. Dev	Grouped frequencies of ranking:		
	Competency	Mean	Std. Dev	Upper (1st-3rd)	Middle (4th-5th)	Lower (6th-8th)
Upper						
3.1	Including/engaging diverse constituents of the food system (holistic thinking)	3.49	2.32	31	11	13
3.2	Understanding political, social, and economic contexts for changes in world food systems	4.06	1.97	26	8	20
3.3	Engaging stakeholders and clientele to address food systems challenges and opportunities	4.13	2.08	24	20	11
Middle						
3.4	Thinking strategically and critically to solve problems and identify opportunities	4.17	2.59	24	12	18
3.5	Applying systems thinking to understanding food production, processing, distribution, and consumption relationships	4.18	2.35	23	13	19
Lower						
3.6	Building partnerships to advance a food systems vision	4.93	2.26	15	17	23
3.7	Integrating and aligning the organization with a food system vision	5.29	2.23	14	12	29
3.8	Bringing current stakeholders to new levels of understanding of food systems (including changing demands and expectations of food system programs)	5.42	2.11	12	14	29

Revising FSLI Core Competencies

1. Introduction

The Food Systems Leadership Institute (FSLI) is a leadership development program designed for experienced leaders, primarily in higher education. Its mission is to change food systems culture by creating a cadre of leaders with a shared vision for integrated, broad-based food systems that are focused on healthy humans, environments, economies, and communities.

A culture that embraces this vision will recognize that the food system encompasses nutrition, health, environment, natural resources, biotechnology, economics, sustainability, rural communities, and a host of emerging issues associated with each of these components. This holistic view will lead to new partnerships and collaborations that better leverage the research, education, and extension assets of our nation's higher education system.

2. Background

The origins of the FSLI are traced to the work of a Design Team (Appendix 1) charged with designing a leadership development program for leaders who will effectively lead a transition to broader food systems approaches in the education and research programs of land grant universities. The Design Team was made up of experienced leaders including university chief executives (presidents, chancellors), vice-presidents, vice-provosts, and deans as well as an industry vice president and a non-profit institute president. These leaders also sought input from other senior executives and leadership development professionals.

The Design Team developed recommendations both for the FSLI structure (program components such as residential sessions, mentoring, and a national forum) and for a set of core competencies that would guide the FSLI leadership development experience. The core competencies (Appendix 2) were based on the personal leadership experiences and observations of this group of seasoned leaders. The Design Team identified these competencies through a series of job analyses, defining of attributes and competencies for food system leaders and senior university leaders, and facilitated discussions of major leadership challenges and opportunities facing higher education and the food system.

The original core competencies were as follows:

Leading, inspiring, motivating, and enabling people and organizations-
- Defining and understanding organizational cultures
- Visioning
- Communication within organizations
- Problem solving/critical and strategic thinking (identifying opportunities)
- Including/engaging constituents of the food system; holistic thinking
- Enabling organizational change

- Inspiring inclusive entrepreneurship and collaboration
- Self-understanding and reflection

Understanding the System
- Changes in the world food systems and political, social, and economic context
- Organizational design and structure
- University structure and governance
- Budget and finance
- Diversity and leading across cultures
- Communications with partners and stakeholders
- Building partnerships
- Engaging stakeholders and clientele
- Political strategies, both on and off campus

Reshaping, redirecting and controlling the organization
- Core principles and values (diversity, interdisciplinary focus, collaboration, partnerships, etc.)
- Understanding and interpreting the environment in which you are working
- Setting goals and establishing targets
- Integrating and aligning the organization with the larger system
- Solving problems in a complex organizational environment
- Designing tactical plans for moving an organization forward
- Publicly communicating changes and their impacts on programs, personnel, and stakeholders
- Continuing assessment, feedback and change; creating a personal professional development program

3. Revising the Core Competencies

The Design Team intended the core competencies list to be further developed and refined by the FSLI's Director, staff, Advisory Council, and Commission. This paper proposes a second iteration of the core competencies. These revisions were based on:

- the experience of implementing the Design Team's vision and operating the FSLI during its inaugural year
- a review of literature on upper-level leadership, organizational change, higher education, and food systems;
- input from leaders and leadership development professionals; and
- further review of notes from the Design Team's original work.

The revised core competencies proposed here are not intended as a final list; they are expected to continually evolve. Most of the activities listed above are ongoing. Indeed, this revised list of core competencies is viewed as a starting point for additional activities, including:

- Review by the Design Team: members of the initial FSLI Design Team will be asked to review the revised core competencies to provide comments, and in some cases clarification.

- Using a Delphi technique, collect input on the competencies from a group to include FSLI Fellows and their mentors as well as other senior leaders and leadership experts. Each FSLI Fellow has a mentor at their home institution, and as a senior leader within their institution the mentor has a valuable perspective on leadership requirements and competencies, including what they "wish they had known" before advancing to their current roles. Additional leaders invited to participate in the Delphi process may include senior leaders from the FSLI partner institutions and leaders these partners may help identify.

- Develop an assessment instrument for FSLI Fellows: a retrospective pre-post evaluation instrument may be developed to assess the Fellows knowledge, skill, and comfort performing each core competency both before and after entering the program. Such an instrument could provide valuable insights to the FSLI staff for continual development of the curriculum. By evaluating feedback generated using this instrument we may also gain greater insights on specific competencies, including potentially redundant or unclear competencies. Furthermore, once validity and reliability of the instrument has been established, additional applications beyond the FSLI may be identified.

- Closer examination of food systems competencies: while the Design Team members were experienced in food systems, this experience was largely in land grant universities. A broader examination of food systems leaders, moving beyond higher education, could lead to a more robust series of food systems competencies.

3.1: Alignment with Program Objectives

The first alteration to the original core competencies was a revision of the three categories of competency, to align them with three key objectives of the FSLI curriculum. In developing a curriculum to achieve the Design Team's vision, FSLI staff identified three primary objectives:

1. Develop a Food Systems Vision by broadening the food systems perspectives of FSLI Fellows.
2. Develop knowledge and skills for Organizational Change so Fellows are able to implement their vision.
3. Enhance Personal Leadership abilities to increase leadership effectiveness.

(Note: original core competency categories were: Leading, inspiring, motivating, and enabling people and organizations; Understanding the system; and Reshaping, redirecting, and controlling the organization.)

Organizing the core competencies according to the primary objectives enables a smoother incorporation of the competencies into the leadership development curriculum. Alignment of the competencies with the objectives also clarifies which competencies should be emphasized in each session or program component. This is useful both for instructors, who can be coached on which competencies to incorporate into their sessions, and for program participants, who can recognize how the leadership competencies support their growth and development around program objectives.

Furthermore, alignment of competencies by objectives facilitates the evaluation process. Each component of the FSLI curriculum is to be evaluated to determine how effectively the program objectives are being accomplished. Evaluation instruments designed using the core competencies may be useful for evaluating components and the program as a whole.

3.2: Rewording for "Competency Language"

Several of the original core competencies were modified to make them consistent with a generally accepted definition of a competency. While there are various definitions of competency, nearly all describe a combination of knowledge, skills, abilities, and often characteristics and values that are related to performing a particular function (Garman 2006, Shipmann et al 2000). Therefore, FSLI leadership competencies were edited to be action-oriented, complying with a generally-accepted definition of competencies.

3.3: Literature Review and Competency Validation

A review of literature on leadership, and leadership competencies in particular, was undertaken to validate the FSLI core competencies and to identify potential revisions, consolidations, and additions.

Entire books are written on competencies, traits, characteristics, behaviors, or aspects of leadership. Many valuable upper-level leadership competencies (e.g. establishing measurement and evaluation systems, motivating others, managing meetings effectively, developing "soft skills") were identified through the course of the literature review.

However, rather than greatly expanding the list of FSLI competencies, the literature review focused on the core competencies identified by the Design Team. The Design Team represents a group of leaders with experience in the leadership demands of both the primary organizations (higher education) and the subject matter (food systems) critical to the FSLI Fellows. As such their assessment of the core food systems leadership competencies remains the essential framework around which the FSLI program will be operated.

The first phase of the literature review sought articles describing leadership competencies, themes, skills, knowledge, or traits that correspond to specific FSLI core competencies. Competencies identified through the literature review were compared to the FSLI competencies and corresponding competencies were noted as "validating" references. Leadership competencies found in the literature that were not among the FSLI core competencies were also tracked for review and consideration as potential additions.

The food systems competencies are largely unique to the FSLI. These competencies clearly link to the particular results sought by the FSLI: to create a cadre of leaders who will promote cultural change toward broad-based, interdisciplinary approaches to food systems. Linking leadership development to desired results, to create a distinct leadership culture, has been a productive approach (Intagliata, Ulrich, Smallwood, 2003).

Revised Core Competencies
The following table includes the reorganized, reworded, and revised list of core competencies. Corresponding with each competency are at least two literature sources used to validate its inclusion.

Table 1. Revised Core Competencies		
Core Competencies		**Supporting Literature**
Personal Leadership		
1	Self-understanding and reflection	16, 18
2	Continuing assessment, feedback and change; creating a personal professional development program	6, 5
3	Visioning	6, 8, 11, 17, 23, 25
4	Communicating within organizations (internal communications)	6, 16, 18, 25
5	Communicating with partners and stakeholders (external communications)	6, 25
6	Developing and implementing political strategies both within the organization and externally	10, 12
7	Valuing diversity and leading across cultures	1, 3, 9, 21, 13
8	Managing resources using budgets and financial strategies and systems	6, 16
9	Maintaining core principles and values (e.g. interdisciplinary collaboration, passion for mission)	12, 17
Organizational Change		
10	Publicly communicating changes and their impacts on programs, personnel, and stakeholders	6, 25
11	Defining and understanding organizational cultures	12, 16
12	Understanding organizational design, structure, and governance	6, 12, 16
13	Inspiring inclusive entrepreneurship and collaboration (inspirational leadership)	4, 18, 13
14	Setting goals and establishing targets	6, 23
15	Accurately diagnosing and solving problems in a complex organizational environment	6, 8, 16
16	Designing tactical plans for moving an organization forward	6, 12
Food Systems		
17	Including/engaging diverse constituents of the food system (holistic thinking)	6, 7, 14
18	Engaging stakeholders and clientele to address food systems challenges and opportunities	10, 14

19	Bringing current stakeholders to new levels of understanding of food systems (including changing demands and expectations of food system programs)	2, 22
20	Understanding political, social, and economic contexts for changes in world food systems	19, 22
21	Applying systems thinking to understanding food production, processing, distribution, and consumption relationships	16, 17, 23
22	Thinking strategically and critically to solve problems and identify opportunities	6, 10, 17, 18
23	Integrating and aligning the organization with a food system vision	18, 19, 20
24	Building partnerships to advance a food systems vision	6, 7, 10

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Appendix 1: Design Team Members and Process

(Source: NASULGC RFP for establishing the FSLI)

Design Team members:

Carolyn Brooks, Dean, Agriculture & Natural Science & 1890 Research Director, University of Maryland Eastern Shore
John DiBiaggio, President Emeritus, Tufts University and Michigan State University
Art Hecker, Vice President for Research & Development, Ross Laboratories Division of Abbott Laboratories
Stan Johnson, Vice Provost for Extension, Iowa State University
Stephen Jones, Vice Chancellor, Extension & Engagement, North Carolina State University
Colin Kaltenbach, Vice Dean & Director, Agricultural Experiment Station, University of Arizona
Vic Lechtenberg, Dean of Agriculture, Purdue University
Bobby Moser, Vice President for Food, Agricultural & Environmental Sciences, The Ohio State University
Penny Ralston, Professor & Dean, College of Human Sciences, Florida State University
Mark Ritchie, President, Institute for Agriculture & Trade Policies
James Zuiches, Professor of Community and Rural Sociology, and former Dean, College of Agriculture & Home Economics, Washington State University

Also involved in Design Team meetings:
L. H. Newcomb, Senior Associate Dean, College of Food, Agricultural & Environmental Sciences, The Ohio State University (joined the team during the process)
Mort Neufville, Executive Vice President, NASULGC (Project Director)
Gail Imig, Program Director, W. K. Kellogg Foundation
Roy Arnold, Executive Associate Dean, College of Agricultural Sciences, Oregon State University (Project Consultant)
Lorna Dwyer (Process Consultant)

Design Team process:

The work of the Design Team was accomplished through face-to-face meetings, telephone conference calls, and e-mail communications. Notes from the meetings, requests for input from team members, summaries of members' input, and documents resulting from specific task assignments were communicated by e-mail.

Prior to their first meeting, Design Team members were asked to respond to a series of questions regarding major leadership issues, challenges and opportunities within land-grant universities, perceptions regarding the competitiveness of agriculture or food systems administrators for broader university leadership roles, strategies to broaden and enhance the food systems vision, strategies to expand and diversify the future constituent base for food systems programs in higher education, and suggestions regarding the design of a leadership program for future food systems leaders. A summary of the responses to these questions was

developed, and then reworked into the following overarching themes: culture, shared vision, leadership and shared values, leadership development programs, structure, strategies, and processes & procedures. Design Team members subsequently identified the most important points under each theme, resulting in a summary document that provided useful insights regarding design elements for a proposed food systems leadership development program.

The first three face-to-face meetings were facilitated by Process Consultant Lorna Dwyer. The agendas for these meetings were constructed to lead the group through a series of steps culminating in the design of a leadership development program that would accomplish the goal of preparing effective leaders for food systems. In its first meeting, the Design Team built the foundation for the program design by defining who we are at our best (as a system); identifying collective leadership qualities, values, characteristics and skills; building a historical timeline of major developments and factors influencing land-grant universities; identifying the factors that have sustained the system over time and that will be desirable in the future; and, envisioning the future of food systems and land-grant universities.

The second Design Team meeting focused on the development of actionable recommendations needed to support leadership development and identifying which actions would have the greatest impact; completing a job analyses and defining attributes and competencies for food system leaders and senior university leaders; and, developing a proposed curriculum for a food systems leadership development program.

A draft proposal was developed and distributed to Design Team members prior to the group's third meeting. Two university presidents, James Stukel, President of the University of Illinois, and Sam Smith, President Emeritus of Washington State University, joined the Design Team at the beginning of the meeting to share their expectations for food systems leaders within their universities and their comments and suggestions regarding the proposal. The insights provided by these senior university executives and implications for the proposed program were considered by the Design Team, resulting in several suggested revisions in the proposal. Another revised draft was developed and circulated to members of the Design Team.

The Project Leader and Project Consultant met with Rick Foster and Gail Imig at WKKF to discuss the proposal. It was determined that the next step should be another meeting of the Design Team plus some additional university presidents, leadership development professionals, and representatives from potential partner organizations. Attending this meeting were current or former chief executives of land-grant universities (C. Peter Magrath, University of Minnesota and University of Missouri System; William "Brit" Kirwan, Ohio State University and University of Maryland System; Karen Holbrook, Ohio State University; and Joan Leitzel, University of New Hampshire), along with leadership development professionals (Bruce Avolio, University of Nebraska-Lincoln; Karen Zotz, North Dakota State University; and John Kelly, Clemson University and LINC leadership development program), and representatives from potential partner organizations (Colien Hefferan, USDA/CSREES; and Walt Armbruster, Farm Foundation). Valuable feedback regarding the concepts in the proposal resulted in several modifications to the proposal.

In November, 2003, the Design Team met at the NASULGC Annual Meeting to consider the work of three sub-groups on the selection of a host institution for the Food Systems Leadership Institute, the composition of the Institute Board of Directors, and the curriculum for the Food Systems Leadership Development Program. Statements of interest in hosting the Institute were requested from NASULGC member institutions. Six institutions submitted statements, which were reviewed at a meeting of the Design Team in January, 2004. It was determined that a formal RFP would be sent to each of the six interested institutions in early February, 2004, with a March 31, 2004 deadline for submission of formal proposals. At the January meeting, the Design Team also identified potential candidates for the Institute Board of Directors, and finalized the wording of the RFP for host institution site and the expected outcomes for the curriculum of the Food Systems Leadership Development Program.

**Leadership Competencies for Leading Change in
Higher Education and Food Systems**

**Michael Bryan
December 13, 2006**

I. Context of Case

America's land grant universities, created by the land grant act of 1862, have a tradition of supporting agriculture in the U.S. These institutions have provided education, research, and extension (assisting communities to apply research findings) that have contributed to creation of a food system that is largely safe, affordable, and plentiful.

Both food and higher education systems have experienced tremendous change since 1862, and the rate of change has only increased in recent decades. Scientific and technological advancements have changed not only food production and processing but also our understanding of relationships between food and health, and food production and the environment. Land grant universities now receive smaller portions of their funding from public sources, and the profile of the "average" student continues to evolve with increasing diversity in culture, age, experience, and student expectations.

These sorts of far-reaching changes are important to a variety of stakeholders, including the National Association of State Universities and Land Grant Colleges (NASULGC) and the W.K. Kellogg Foundation (WKKF). NASULGC is a higher education association whose members include 214 institutions of public higher education. The WKKF is a philanthropic organization whose mission includes support of higher education as well as sustainable, just food systems.

In the fall of 2002, NASULGC and the WKKF assembled a group of senior university leaders and asked them to consider the changing landscape of higher education and food systems and to formulate a plan of action. The group concluded that cultural change was required within the land grant universities and that a cadre of new leaders would need to lead this change. This cultural change would bring broader food systems perspectives and move beyond traditional production-processing-distribution-marketing models into an integrated food system that recognizes the far-reaching impacts of food on health, economies, culture, the environment and natural resources, technology, and other aspects of society.

II. Case Description

The senior university leaders who identified a need for cultural change took on the responsibility of designing a leadership institute that would develop the cadre of new leaders

to bring about this change. Using their personal experience, job analyses, and conversations with leadership development experts this design team identified a series of core leadership competencies that would be required to lead cultural change toward integrated food systems in higher education. They also outlined a basic structure for this leadership development institute: a two-year experience for leaders in higher education including three in-person week-long training retreats, distance learning, mentoring, and a group capstone experience.

The Food Systems Leadership Institute (FSLI) was created based on the design team's recommendations and with the financial support of the WKKF. FSLI is designed for experienced leaders such as department heads, assistant or associate deans, and deans who are already in positions of influence and who may be well positioned to assume positions of greater responsibility within their organizations.

FSLI constructed a curriculum to develop or reinforce the design team's core leadership competencies in program participants. During the curriculum design process three objectives emerged:

- Develop a food systems vision by broadening the food systems perspectives of FSLI Fellows;
- Develop knowledge and skills for organizational change so Fellows are able to implement their vision; and
- Enhance personal leadership abilities to increase leadership effectiveness.

The core competencies were aligned with these three objectives. A literature review was performed to provide validation of the core competencies against peer-reviewed leadership literature (Bryan, 2006.).   From this effort language used to describe some of the competencies was modified to comply with generally accepted definitions of competencies.

The definition of food systems used for this study represents a broad and integrated system. This definition expands upon a simplified food production-processing-distribution-and-marketing model, broadening to include interactions between human health and food, impacts on environmental systems, macro and micro economics, and community and cultural dimensions of food. This food systems definition recognizes that diverse food system components have varied impacts on one another. Some are obvious and/or intentional while others may be less obvious or unintended.

III. Issues of Case

The work of the design team and the subsequent literature review resulted in 24 core competencies to be addressed by the FSLI curriculum. With approximately 15 in-person training days in the FSLI experience, this is an ambitious number of leadership competencies to cover with the depth required to change leadership behaviors.

The competencies associated with personal leadership and organizational change are fairly well established in the literature and in other leadership development programs. The food systems leadership competencies, however, are less well established. Members of the

design team are leaders within food systems organizations, and their articulation of leadership competencies can be viewed as the work of an expert panel. Validation against the literature further supported the competencies they identified. However, literature on food systems leadership is not common, and some literature supporting these competencies speaks to general themes within integrated food systems or leadership of complex systems rather than specifically to "food systems leadership."

As a result of these issues, FSLI has a desire to further refine and validate the core competencies. Refinement will include an effort to prioritize the competencies and to potentially reduce the total number. Further validation will reassure staff, program participants, and other stakeholders that the appropriate competencies are being developed. This will include a special emphasis on the validation of the food systems leadership competencies.

IV. Methods and Procedures

Procedure

This study will include two to three rounds of a survey using the Delphi technique (Dalkey 1969, Linstone and Turoff 1975). The Delphi method has proven useful in studying competencies, including teaching competencies in higher education (Tigelaar 2004) and administrator competencies (Boyd 2003). The Delphi method has been used widely in agriculture education research, most frequently in the area of curriculum planning (Martin 1998).

The Delphi technique uses a panel of experts in a particular field to develop consensus regarding on a series of questions or issues. In this study the issues around which consensus is sought are the 24 leadership competencies developed by the FSLI design team and validated through a literature review. Two or possibly three rounds are anticipated.

In round one the expert panel will be asked to respond to an online questionnaire by rating each competency from 1-10 where 1 is "very important" and 10 is "not important". "Unsure" is a further option. The competencies are organized by objectives, and a comment field is included after each set of competencies. The data from round one will be compiled and analyzed to see what level of consensus the expert panel has reached regarding how important each competency is for food systems leadership.

Round two will send another online questionnaire to the expert panel. This questionnaire will show panel members the mean and possibly the frequency for each competency and give them the opportunity to change their rating. In addition, a new rating will be introduced: the panelists will be asked to indicate whether they view this competency as necessary for "basic" or "superior" food systems leadership.

A third round may be implemented if analysis of scores on the basic versus superior rating does not indicate consensus. If this is the case a questionnaire will be created that

shows the superior and basic scores and asks the panelists to assess this information and then give them the opportunity to change their rating if they wish.

Sample

A purposeful sample will be used in this study; a group of experienced leaders were identified and recruited to serve as an expert panel. The individuals selected to serve on the expert panel have extensive leadership experience in higher education, non-profits and foundations, industry, government, and leadership development. The panelists include University presidents, provosts, chancellors, deans, department heads, center directors, and professors; industry executives and directors; government administrators; non-profit sector presidents and program managers, and others. The majority of these experts work directly in food systems organizations, such as colleges of agriculture, foundations making grants for food system projects, or private companies producing food products.

V. Pilot Test

A pilot test of the Round 1 questionnaire was performed with 4 subjects. Mean and frequency were calculated from the ratings for each competency.

The results suggested a potential problem with the Round 1 questionnaire. Combining all scores for all competencies, the mean score was 2.0. The frequencies of all scores (96 total data points) were as follows (score:frequency):

- 1:31
- 2:39
- 3:17
- 4:8
- 5:1
- 6, 7, 8, 9, and 10:0

The pilot data results suggest the small sample of subjects found all of the competencies important. Given the efforts of the design team to identify and agree upon these competencies, perhaps this should not be a surprise.

Proposed changes to the questionnaire include changing the wording associated with the 1-10 scale to "very important" to "LESS important" rather than "not important". This respects the work of the design team, which was unlikely, as a group, to include a competency that is not important.

The second change will be to request that the expert panel members rank the competencies in each objective category. This will force them to select the competency they believe is most important in each category. The results of this ranking will provide a second source of information on which competencies should be prioritized and which may be viewed as less important by the expert panel.

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