Associations between Faculty Self-Perceived International Knowledge and their Perspectives on Strategies to Internationalize the Agricultural Curriculum

Maria Navarro

Texas A&M University and The University of Georgia

Address: 150 Timberland Trail, Arnoldsville, GA 30619
Phone: (706) 742 8658 and (706) 583 0225
Fax: (706) 542 0262
e-mail: mnavarro@uga.edu

Abstract

Curriculum internationalization is now accepted as a necessity in higher education. Participation of faculty is at the core of any successful endeavor, and the level of their international knowledge and experience may affect their ideas regarding what should be involved in the process. Traditionally, research analyzing the internationalization process only addressed the perspectives of the most internationally savvy and active faculty, therefore limiting the applicability of the information.

The purpose of this study was to analyze associations between faculty self-perceived levels of international and internationalization knowledge and participation, and their perspectives on the relevance and status of internationalization at their institutions; the different academic program strategies that could serve as vehicles for the process; and the institutional strategies necessary to support faculty in their curriculum internationalization efforts.

To gather data, the researcher asked a census of undergraduate teaching faculty in the colleges of agriculture of two land-grant universities to respond to an on-line questionnaire with both quantitative and open-ended questions, and also conducted eight one-hour interviews.

This study found a significant positive linear relationship between faculty self-perceived international knowledge, and 1) perception of relevance of internationalization; 2) ratings of all of the academic strategies; and 3) ratings of some of the institutional strategies (recognition, time, funds, and collaboration). It did not find a significant relationship between faculty international knowledge, and 1) opinion on the status of internationalization at their institutions; or 2) ratings for the strategy concentrating on intellectual support.
Introduction

For decades, political and educational leaders have pleaded for further internationalization in U.S. higher education (Boyer, 1994; Hamrick, 1999), arguing that internationalization is “a pressure no one who teaches can be unaware of” (Halliday, 1999, p. 99) and that “failing to internationalize . . . now and later finding that it was necessary may waste an entire generation of students” (Mestenhauser, 1998, p. 35). Today, the question is not whether to internationalize or not, but how to do it and who should do it. To this end, the curriculum is considered by many as “the most important element of a campus’s internationalization strategy” (American Council on Education [ACE], 2002; see also Fortin, 2001; Mestenhauser & Ellingboe, 1998), and faculty are considered its main drivers and actors (Acker, 1989; Association of International Education Administrators [AIEA], 1995a; Leibold, 1997; Liverpool, 1995; National Association of State Universities and Land-Grant Colleges [NASULGC], 1993).

While a number of the issues involving internationalization are today very well documented, there is still a need to increase research-based knowledge of the process and the factors affecting it (de Wit, 2002), as well as to update information on “what works most effectively and what priorities to follow” (AIEA, 1995a, p. 6). In addition, most of the information available is the result of studies that have included only the most internationally savvy and active faculty, leaving a question mark in the query about the opinions and needs of a great portion of teaching faculty, new to the internationalization dialogue. It is arguable that the needs, choices, and perspectives of faculty toward internationalization may qualitatively (as well as quantitatively) change depending on their level and type of international and internationalization knowledge and involvement. This is, for example, that faculty with considerable international knowledge may not opt for the same academic solutions to internationalize their teaching than the less knowledgeable, and that faculty with ample experience in the internationalization process may require different types of support from their administration than the less experienced.

There exists, therefore, a need to investigate how the level of international and internationalization knowledge and involvement of faculty affects their perspectives and needs for participation in the internationalization of the curriculum, and how the process is affected by the entire faculty body, and vice versa.

Purpose

The purpose of this study was to analyze associations between the self-perceived levels of international and internationalization knowledge and participation of undergraduate teaching faculty in the colleges of agriculture of two land-grant universities, and their perspectives on the relevance and status of the internationalization of the undergraduate agricultural curriculum at their institutions; the different academic program strategies that could serve as vehicles for the internationalization process; and the institutional strategies necessary to support faculty in their curriculum development and internationalization efforts.
Theoretical base

The following statements were essential to the development of a conceptual base for the study:

1. Internationalization of the curriculum is a process that integrates international and global dimensions and perspectives into the formal (structure, content, and materials) and operational (teaching and learning methods, grouping of students, place, and time) aspects of the curriculum (van der Wende, as cited in Association of Universities and Colleges of Canada [AUCC], 2000, p. 4);

2. Faculty participation is essential for a successful curriculum internationalization process. In fact, according to many authors, faculty are always at the core of any successful endeavor (AIEA, 1995b; Leibold, 1997; Liverpool, 1995; NASULGC, 1993). Faculty participation can be enhanced with the support (in a broad sense) of the administration, and with the appropriate academic program and institutional strategies;

3. Faculty members have different perceptions of the rationale for, as well as the meaning, significance, and relevance of, internationalization of the curriculum. Further, faculty have different ideas about what should be involved in the process, what are the best strategies to put in place, and the challenges associated with the different models. Some personal characteristics of faculty (e.g., international experience) may affect these perceptions and ideas.

Methods and data sources

The research for this paper was non-experimental and used descriptive, causal-comparative, and multivariate correlational methods. It used a researcher-developed on-line instrument with demographic questions (personal and professional), five-point Likert-type scale questions (measures of self-perceived level of international and internationalization knowledge and participation, opinion on relevance and status of internationalization, and perspectives on several academic program and institutional strategies to internationalize the curriculum), and qualitative, open-ended questions to provide an opportunity for the respondents to personalize, add to, or clarify answers given to the quantitative questions. In addition, the researcher performed eight one-hour interviews with selected individuals in order to complement the data from the questionnaires with additional examples and insights into faculty's perspectives and opinions. The researcher also used a reflexive journal throughout the study.

An e-mail requesting recipients to answer the questionnaire was sent to all faculty members with undergraduate teaching responsibilities in the colleges of agriculture of two land-grant universities (a total of 439). Two follow-up e-mails were sent. One-hundred and ninety three faculty responded to the inquiry (44% response rate). The researcher used several methods and procedures to assess and handle nonresponse error as described by Dillman (2000) and Lindner, Murphy, and Briers (2001), as well as a more detailed and stringent analysis than the traditional methods based on data from “reluctant respondents” (Navarro, 2004a). No significant differences were found between early and late respondents (Dillman, 2000) for any of the variables when data from “reluctant respondents” were not used. However, in a more in-depth analysis of nonresponse error performed for one of the
two colleges that included data from “reluctant respondents” (with a resulting response rate of 67% in this college), new patterns of non-response error appeared (Navarro, in preparation), suggesting limited external validity of the study.

Content and construct validity of the questionnaire were established by panels of experts at each of the two universities surveyed. The quantitative data obtained from the questionnaire were analyzed using the *Statistical Package for the Social Sciences* (SPSS), version 11.5.1, with the probability level of statistical significance set at 0.05. The interviews and open-ended questions were analyzed following procedures outlined by Lincoln and Guba (1985) including unitizing, categorizing, filling in patterns, member checks, and peer-debriefing.

**Results**

**Self-perceived international and internationalization knowledge and participation:**
The construct $K_{\text{Knowledge}}$, was quantitatively established using four variables from the questionnaire (see Figure 1), all with a significant and positive correlation with each other. All the questions forming these variables had responses based on a 5-point Likert-type scale. The Cronbach Alpha for reliability analysis for the $K_{\text{Knowledge}}$ construct was 0.8454.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Knowledge</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>International (General)</strong></td>
<td>$K_1$</td>
<td>$K_2$</td>
</tr>
<tr>
<td>$M = 3.9206$</td>
<td>$M = 3.37$</td>
<td></td>
</tr>
<tr>
<td>$SD = 0.86236$</td>
<td>$SD = 1.077$</td>
<td></td>
</tr>
<tr>
<td><strong>Curriculum internationalization</strong></td>
<td>$K_3$</td>
<td>$K_4$</td>
</tr>
<tr>
<td>$M = 3.45$</td>
<td>$M = 3.12$</td>
<td></td>
</tr>
<tr>
<td>$SD = 0.942$</td>
<td>$SD = 1.055$</td>
<td></td>
</tr>
</tbody>
</table>

Listwise $N = 189$

$K_1$: Self-perceived international knowledge; $K_2$: Self-perceived participation in international activities; $K_3$: Self-perceived ability to internationalize the curriculum; $K_4$: Self-perceived participation in curriculum internationalization efforts.

*Figure 1.* Graphical representation of variables forming construct $K_{\text{Knowledge}}$: Faculty self-perceived international and internationalization knowledge and participation.

**Relevance of internationalization:** $T_{\text{1Relevance}}$ quantifies the personal perspective of faculty about the relevance of internationalization of the curriculum at their respective colleges. The Cronbach Alpha for the reliability analysis of this construct was 0.8046. On a 1 to 5 scale, $T_{\text{1Relevance}}$ had $M = 3.70$ (representing a value between “average/neutral” and “high/somewhat positive”) and $SD = 0.75028$ ($N = 191$).

**Status of internationalization:** $T_{\text{2Status}}$ quantifies what faculty perceive to be the status of internationalization of the undergraduate agricultural curriculum at their institution. The Cronbach Alpha for the reliability analysis of $T_{\text{2Status}}$ was 0.7917. On a 1 to 5 scale, $T_{\text{2Status}}$
AIAEE 2005 Proceedings of the 21st Annual Conference San Antonio, TX

had $M = 2.90$ (representing a value between “not much” and “neutral”), and $SD = 0.95257$ ($N = 189$).

**Academic program strategies for the internationalization of the curriculum:** Eight variables were included in this group: $A_{1\text{Infusion}}$: Integrating internationalized lessons, examples, activities, and/or perspectives into existing courses and programs ($M = 3.68$); $A_{2\text{On-campus}}$: Offering on-campus international subject matter courses ($M = 3.08$); $A_{3\text{Virtual}}$: Internationalizing through technology and virtual mobility ($M = 3.03$); $A_{4\text{Concentrations}}$: Offering “international” subject matter certificates, minors, and majors ($M = 3.11$); $A_{5\text{ShortSA}}$: Offering short-term (2-5 weeks) cohort study abroad courses ($M = 3.81$); $A_{6\text{Cohort}}$: Offering cohort semester abroad courses ($M = 3.69$); $A_{7\text{Exchange}}$: Offering individualized semester exchange programs and internships ($M = 3.93$); and $A_{8\text{Environment}}$: Internationalizing the campus environment by increasing the number of international students and faculty and offering international campus-wide workshops and activities ($M = 3.30$).

**Institutional strategies to support faculty in their internationalization efforts:** Five variables were included in this group: $I_{1\text{Time}}$: Availability of release time for faculty internationalizing their courses ($M = 3.45$); $I_{2\text{Collaboration}}$: Collaborating with other faculty members in joint internationalization efforts ($M = 3.43$); $I_{3\text{Recognition}}$: Receiving recognition for internationalization efforts in evaluation processes (tenure, promotion, and salary increases) ($M = 3.44$); $I_{4\text{Intellectual}}$: Availability of an internationalization specialist, internationalized instructional materials, and seminars and workshops for faculty ($M = 2.69$); and $I_{5\text{Funds}}$: Availability of funds to pay for sabbaticals, course development, and student participation in mobility programs ($M = 3.84$).

For a detailed qualitative and quantitative study of faculty perspectives on these strategies, and the relationships between them, the reader can refer to Navarro (2004b). The present paper deals with the associations of these strategies with $K_{\text{Knowledge}}$, analysis not addressed in the cited paper.

**Associations with $K_{\text{Knowledge}}$**

To better understand the relationships between $K_{\text{Knowledge}}$ and the perception of relevance of internationalization ($T_{1\text{Relevance}}$) and the perception of the present status of internationalization ($T_{2\text{Status}}$), the researcher first calculated the parameter estimates of the linear regressions between the constructs, as shown in Table 1.

From Table 1, one can see that $T_{1\text{Relevance}}$ increases with increasing $K_{\text{Knowledge}}$, consistent with the arguments of some internationalization scholars (Shetty & Rudell, 2000). This is, in part, intuitive, and it could be interpreted from both cause and effect perspectives: 1) The more one knows of and participates in international and internationalization activities, the more important and relevant these become, and 2) the more relevant these are from one’s point of view, the higher the motivation and effort to expand knowledge and increase participation. From a practical perspective, if one wants to increase faculty participation in internationalization activities without spending too many resources, one strategy that could help is directly addressing issues of perception of relevance (e.g., hold a workshop for faculty to discuss why internationalization is important and address misconceptions about the process, such as, for example, why internationalization does not necessarily compete with other educational purposes and objectives), and let knowledge follow suit.
Table 1

Parameter Estimates of Linear Regressions of Faculty Self-perceived International and Internationalization Knowledge and Participation (\(K_{\text{Knowledge}}\)) with Faculty Perception of Relevance of Curriculum Internationalization (\(T_{\text{1Relevance}}\)), and Faculty Perception of Status of Curriculum Internationalization at their Institutions (\(T_{\text{2Status}}\)).

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Parameter estimated</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>95% Confidence Interval for B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>SE</td>
<td>Beta</td>
</tr>
<tr>
<td>(T_{\text{1Relevance}})</td>
<td>Intercept</td>
<td>1.799**</td>
<td>0.204</td>
<td>.581**</td>
</tr>
<tr>
<td></td>
<td>Slope</td>
<td>0.542**</td>
<td>0.056</td>
<td></td>
</tr>
<tr>
<td>(T_{\text{2Status}})</td>
<td>Intercept</td>
<td>3.092**</td>
<td>0.325</td>
<td>-.043</td>
</tr>
<tr>
<td></td>
<td>Slope</td>
<td>-0.052</td>
<td>0.089</td>
<td></td>
</tr>
</tbody>
</table>

Listwise \(N = 185\).

\(*p < .05. \**p < .01.\)

Table 1 also shows that there is not a significant correlation between \(K_{\text{Knowledge}}\) and \(T_{\text{2Status}}\), which means that faculty’s knowledge and participation in international and internationalization activities does not affect their opinion on the status of internationalization at their institutions. This could, in principle, be intuitive. Still, one could argue that faculty with higher levels of knowledge and participation would tend to be more critical of the situation (negative correlation). One could argue, however, that these faculty would also be more aware and know more about what is being done at their colleges and be more positive about the levels attained so far (positive correlation).

To test whether or not there were significant associations between \(K_{\text{Knowledge}}\) and the choice of academic program (A variables) and institutional (I variables) strategies for internationalization, the researcher performed two multivariate analyses of variance (MANOVA), one for each group of variables. To test the statistical significance of the difference between group centroids, the researcher used Wilks’ lambda. For tests yielding a significant Wilks’ lambda, to determine which of the variables had significantly different value between levels of knowledge, the researcher analyzed the significance of the linear regression of \(K_{\text{Knowledge}}\) with each of the dependent variables of the group. The researcher followed this procedure instead of doing directly the analysis of the linear regressions for each of the variables of the study in order to reduce the risk of obtaining a “false” significant difference (Type I error) (Gall, Borg, & Gall, 1996). The results summarizing the multivariate analyses of variance for variables A and I are shown in Table 2.

The Wilks’ lambda of the multivariate analysis of variance for vector A (academic strategies) by \(K_{\text{Knowledge}}\) is not significant. This is an indication that one should not expect to find differences in faculty preferences for one or another strategy depending on the level of \(K_{\text{Knowledge}}\). In fact, when calculating the parameter estimates of the linear regressions between
K_{Knowledge} and the A variables, one confirms that there are no significant differences among any of the Pearson’s $r$ values of the linear regressions (all the 95% confidence intervals of the overlap) (not shown).

Table 2

*Multivariate Analysis of Variance for Vectors A Academic Strategies, and I Institutional Strategies, by Faculty Self-perceived International and Internationalization Knowledge and Participation (K_{Knowledge})*

<table>
<thead>
<tr>
<th>Vector</th>
<th>Wilks’ lambda</th>
<th>Value</th>
<th>F</th>
<th>Hyp. df</th>
<th>Error df</th>
<th>Sig.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Academic strategies</td>
<td>.488</td>
<td>0.917</td>
<td>126.000</td>
<td>1001.915</td>
<td>.727</td>
<td>176</td>
<td></td>
</tr>
<tr>
<td>I Institutional strategies</td>
<td>.536</td>
<td>1.544**</td>
<td>72.000</td>
<td>647.248</td>
<td>.004</td>
<td>186</td>
<td></td>
</tr>
</tbody>
</table>

**$p < .01$.**

Because the level of knowledge of faculty does not affect which academic strategies they favor, one can analyze the relationship between $K_{Knowledge}$ and the A variables using a construct that groups together in a single variable all of the academic program strategies, construct $A_{10Academic}$. The regression and correlation data from Table 3 between $A_{10Academic}$ and $K_{Knowledge}$, shows that there is a significant positive linear relationship between $K_{Knowledge}$ and $A_{10Academic}$, which means that the “overall and general” appreciation for the academic program strategies increases with increased knowledge of the respondent.

Table 3

*Parameter Estimates of Linear Regression of Faculty Self-perceived International and Internationalization Knowledge and Participation (K_{Knowledge}) with the Construct Grouping Faculty Ratings of all Academic Program Strategies (A_{10Academic})*

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Parameter estimated</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>$A_{10Academic}$</td>
<td>Intercept</td>
<td>2.611**</td>
<td>.161</td>
</tr>
<tr>
<td></td>
<td>Slope</td>
<td>.238**</td>
<td>.044</td>
</tr>
</tbody>
</table>

$N = 189$. 

**$p < .01$.**
According to the value and significance ($p<0.01^{**}$) of Wilks’ lambda of the multivariate analysis of variance of Vector I (institutional strategies) by $K_{Knowledge}$ in Table 2, one expects to find significant differences among the Pearson’s $r$ estimates of the linear regressions of $K_{Knowledge}$ with the I variables. This means that, contrary to what was found for the academic program strategies (A variables), the level of international and internationalization knowledge and participation of faculty does affect which institutional strategies faculty choose for the support of their efforts to internationalize the curriculum. Table 4 shows the parameter estimates of linear regressions of faculty self-perceived international and internationalization knowledge and participation with faculty ratings of each of the institutional strategies to support them in their internationalization efforts.

Table 4

*Parameter Estimates of Linear Regressions of Faculty Self-perceived International and Internationalization Knowledge and Participation (K_{Knowledge}) with Faculty Ratings of each of the Institutional Strategies to Support Faculty in their Internationalization Efforts*

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Parameter estimated</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>95% Confidence Interval for B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>SE</td>
<td>Beta</td>
</tr>
<tr>
<td>$I_{1\text{Time}}$</td>
<td>Intercept</td>
<td>2.206**</td>
<td>.428</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Slope</td>
<td>.351**</td>
<td>.118</td>
<td>.215**</td>
</tr>
<tr>
<td>$I_{2\text{Collaboration}}$</td>
<td>Intercept</td>
<td>2.694**</td>
<td>.307</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Slope</td>
<td>.206*</td>
<td>.085</td>
<td>.177*</td>
</tr>
<tr>
<td>$I_{3\text{Recognition}}$</td>
<td>Intercept</td>
<td>1.224**</td>
<td>.395</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>Slope</td>
<td>.624**</td>
<td>.109</td>
<td>.390**</td>
</tr>
<tr>
<td>$I_{4\text{Intellectual}}$</td>
<td>Intercept</td>
<td>2.402**</td>
<td>.342</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Slope</td>
<td>.082</td>
<td>.094</td>
<td>.064</td>
</tr>
<tr>
<td>$I_{5\text{Funds}}$</td>
<td>Intercept</td>
<td>2.222**</td>
<td>.298</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Slope</td>
<td>.456**</td>
<td>.082</td>
<td>.379**</td>
</tr>
</tbody>
</table>

Listwise $N = 186$.

*p < .05. **p < .01.*

Table 4 shows that while $K_{Knowledge}$ is directly and positively correlated with $I_{1\text{Time}}, I_{2\text{Collaboration}}, I_{3\text{Recognition}},$ and $I_{5\text{Funds}}$ (the higher the knowledge, the higher the appreciation for the institutional strategy), it is not correlated with $I_{4\text{Intellectual}}$ (level of knowledge does not affect appreciation for the strategy). Intuitively this makes sense, for intellectual support is a strategy that tends to target faculty with lower international or curriculum internationalization
experience, for it is assumed that faculty with higher experience are not so much in need of basic literature and materials, help from an internationalization specialist, or even curriculum development workshops. It is interesting to note that $I_{Collaboration}$ not only does not decrease with $K_{Knowledge}$, but it significantly increases. This direct and positive correlation is, however, significantly lower for $I_{Collaboration}$ than for $I_{Recognition}$ (the Pearson’s $r$ 95% confidence intervals of the linear regressions do not overlap), meaning that the need for collaboration does not increase with knowledge and experience as much as the need for recognition.

Conclusions

This study found a significant direct and positive linear relationship between faculty self-perceived international and internationalization knowledge and participation, and

1. Faculty perception of relevance of internationalization;
2. Faculty ratings of all the academic program strategies for internationalization. There were no significant differences between academic program strategies relative to their association with knowledge;
3. Faculty ratings of some of the institutional strategies to support them in their internationalization efforts. These strategies were recognition, time, funds, and collaboration, with recognition having the highest correlation with knowledge, and collaboration the lowest (with associations significantly different).

This study did not find a significant relationship between faculty self-perceived international and internationalization knowledge and participation, and

4. Faculty opinion on the status of internationalization at their institutions;
5. Faculty ratings for the strategy concentrating on intellectual support.

Given the low response rate, there are restrictions on generalizability of this study.

Recommendations

Internationalization should be a multifaceted effort of curricular reform, with a variety of academic program and institutional strategies implemented in a balanced and synergistic manner (Ellingboe, 1997; Kezar, 2000; Shetty & Rudell, 2000; Whalley, 1997). Internationalization plans should include all faculty in the internationalization process. To include both internationally savvy and inexperienced faculty, administrators should invest in faculty development efforts, balancing between programs seeking to increase faculty international knowledge and activities (e.g., sabbaticals, faculty exchanges, and other international opportunities), programs to increase faculty curriculum development skills and curriculum internationalization abilities (e.g., courses, seminars, workshops, and one-on-one consultations) (Graham, 1998; Hamrick, 1999), and programs to clarify the meaning and purpose of internationalization and what it involves. Increased international knowledge and understanding of internationalization will not only increase faculty perception of relevance of internationalization and willingness to participate in the process, but will also increase
appreciation for most of the academic program and institutional strategies to support the process.

**Educational and practical importance**

This research contributes to updating and increasing the knowledge base of the process of internationalization of the undergraduate curriculum in colleges of agriculture, and helps us put together more pieces of the internationalization puzzle. The paper provides information about academic program and institutional strategies that can help enhance the internationalization process and support faculty in their efforts to improve the curriculum for which they are responsible.

Traditionally, both qualitative and quantitative research analyzing the internationalization process only addressed the needs and perspectives of the most internationally savvy and active faculty, therefore limiting the applicability of the information. This study expands the knowledge base by taking into account perspectives of all faculty and analyzing differences between faculty with varying levels of knowledge, experience, and prior participation in international activities.

**References**


