Agricultural and Extension Education Faculty Members’ Use of Emerging Educational Technologies within Their Instruction

R. Warren Flood
State 4-H Extension Associate/Instructional Design
Dept. of 4-H Youth Development - North Carolina State University Cooperative Extension
207 Ricks Hall - Campus Box 7606
Raleigh, NC 27695-7606 USA
E-mail: warren_flood@ncsu.edu

Nikki L. Conklin
Associate Professor & Assistant Director, Training, Development, and Continuing Education
Ohio State University Extension
Agr. Admin. Bldg. Room 03 - 2120 Fyffe Road
Columbus, OH 43210 USA
E-mail: conklin.1@osu.edu

Abstract

Teaching faculty, are expected to use technologies with only rudimentary support, no incentives, and an inadequate awareness of how to incorporate technologies into instructional settings. A descriptive-correlational study of faculty of the College of Food, Agricultural and Environmental Sciences at The Ohio State University explored factors impacting faculty implementation of educational technologies within teaching/learning exchanges.

Data were gathered via the use of an on-line questionnaire to describe faculty in terms of six dimensions: characteristics (personal, professional, and educational technologies); attitudes and beliefs; access and support; reinforcement and recognition; awareness and interest; and use and frequency. Relationships were examined among the six dimensions. Stepwise multiple linear regression analysis was used to explore the predictive value of these dimensions.

The tenure-initiating unit was a predictor of the frequency of using and the implementation of educational technologies. A majority of faculty believed that educational technologies provide: potential for enhancing student learning; beneficial means for engaging students; and a stimulus for student problem-solving. More than 75% of the respondents reported that they did not currently receive support in the form of expert assistance and reported not having access to training opportunities or a sufficient infrastructure for supporting technology-enhance teaching. The majority of the faculty reported there were no existing incentives for teaching with technology. Awareness and interest were the most valuable predictors for the use of educational technologies within the teaching/learning exchange.
Introduction

Digital media are now challenging those most venerable information organizations - colleges and universities - to rethink the ways in which they serve society. Colleges and universities specialize in creating new knowledge, sifting and storing it, and then sharing it with the next generation. The new communications technologies offer higher education the opportunity to carry out its traditional mission with powerful new tools. Education has never been more important, and access to affordable higher education is increasingly a necessity rather than a privilege. The most imaginative colleges and universities will not hesitate to use the new technologies to make education more effective, more affordable, and more accessible as well (Farrington, 1999, p. 73).

Many authors suggest the first step in higher education reform is to overhaul the teaching and learning paradigm. Twigg (1994a) describes: “The primary goals of the restructuring movement - increased access, improved quality and reduced cost - cannot be achieved without a serious examination of how the teaching infrastructure stands in the way.” Metlitzky (1999) states that there is a widespread acceptance to reform teaching and learning evidenced by dialogue about alternative teaching methods at national meetings in every academic discipline.

Twigg (1994b) eloquently states the need for instructional reform: “Our current system was developed to serve a different student population and is based on old assumptions about teaching (e.g. viewing the teacher and the classroom as the only delivery method) and learning (e.g. mastery of a body of knowledge as the way to prepare for life). What was once the most effective and efficient way to teach and learn - the research university model of faculty who create knowledge and deliver it to students via lecture - now cracks under the strain of meeting new learning demands.”

The classroom itself may soon be replaced by more appropriate and efficient learning experiences. Indeed, such a paradigm shift may be forced on faculty by the students themselves. Today’s students are members of the ‘digital generation.’ They have spent their early lives surrounded by robust, visual, electronic media - Sesame Street, MTV, home computers, video games, cyberspace networks, MUDs, MOOs, and virtual reality. Unlike those of us who were raised in an era of passive, broadcast media such as radio and television, today’s students expect - indeed demand - interaction. They approach learning as a ‘plug-and-play’ experience: they are unaccustomed and unwilling to learn sequentially - to read the manual - and instead are inclined to plunge in and learn through participation and experimentation. Although this type of learning is far different from the sequential, pyramidal approach of traditional college or university curriculum, it may be far more effective for this generation, particularly when provided through a media-rich environment (Duderstadt, 1999, p. 7).

Hogle (1999) documented that technology is increasingly used for entertainment, business, and education in the United States. The public is accepting the value of technology in education evidenced by increasing sales of educational software and home computers. (Hoovers, 1998; National Center for Education Statistics (NCES), 1997; Spurgin, 1996). “As computers and related media are coming to be regarded as part of our social literacy, public concerns about the need for technology in schools have led to increased technology expenditures in primary grades through secondary institutions” (Hogle, 1999, p. 1). Much of higher education, however, has been traditionally slow in acceptance of new practices.
Revell (1999) stated that colleges and universities must move beyond just purchasing advanced technologies. Faculty must successfully integrate equipment and software into the learning processes. They must weave technologies into the actual learning experiences. Using technologies effectively for student learning requires a new pedagogy. It requires commitment to explore, expand teaching methodology, and venture into new pedagogical practice. (Revell, 1999, p. 12)

What, then, must occur for university faculty to change their pedagogical practices by integrating technology into teaching and learning? Learning occurs essentially with a change in attitudes and behaviors. How are faculty changing attitudes and behaviors to meet these new challenges in teaching and learning?

This study and the resulting findings are an attempt, as Hamilton (1998) suggested, to conduct further research on understanding factors influencing the degree to which faculty use educational technologies.

**Purpose and Objectives**

The purpose of this study conducted at The Ohio State University with the College of Food, Agricultural, and Environmental Sciences faculty was to enhance the knowledge base concerning their use of educational technologies within teaching/learning exchanges. Presently no baseline data for this population exists.

The specific objectives of the study were:

I. To describe faculty members in terms of:
   A. Characteristics including sex, race, age, professional rank, undergraduate and/or graduate teaching program, yearly appointment length, percentage of general fund appointment, teaching load, tenure initiating unit, teaching experience in higher education, computer operating system used, home connection to the internet, hours of training using educational technologies and reported enthusiasm for using educational technology in teaching/learning.
   B. Attitudes and beliefs about educational technology, perceived access and support for using educational technologies, reinforcement and recognition for using educational technologies, awareness and interest in using educational technologies, and reported use of educational technologies within teaching/learning exchanges.

II. To determine the relationships among characteristics, attitudes and beliefs, access to and support for using, perceived reinforcement and recognition, and reported awareness of and interest in employing educational technologies.

III. To determine the proportion of variance in use of educational technologies that could be explained by characteristics, attitudes and beliefs, access to and support for using, perceived reinforcement and recognition, and reported awareness of and interest in employing educational technologies.

IV. To determine the proportion of variance in frequency of use of educational technologies that could be explained by characteristics, attitudes and beliefs, access to and support for using, perceived reinforcement and recognition, and reported awareness of and interest in employing educational technologies.
Research Methods, Procedures, and Data Sources

This study was developed using a descriptive-correlational research design to study the population of faculty members in the College of Food, Agricultural, and Environmental Sciences with a minimum 50% general fund appointment on the Columbus campus during the 2001-2002 academic year. Faculty with general fund appointments are individuals with primary responsibility for undergraduate and graduate instruction. The target population was identified from the February 2002 listing obtained from the Dean’s Office database.

Data were collected using an on-line questionnaire developed by the researcher, consisting of four sections for a total of 95 questions. Section one included 16 questions for measuring faculty attitudes and beliefs about the use of educational technologies within teaching. Perceived access and support impacting the use of educational technologies for teaching/learning exchanges was the focus of section two and consisted of 17 questions. Section three consisted of 10 questions to identify desired and current forms of reinforcement and recognition received as incentives for using educational technologies, along with eight questions to gather background information on faculty members. The fourth section consisted of 44 questions for identifying awareness and use of educational technologies for teaching/learning exchanges.

Face and content validity were established for the instrument by utilizing a panel of experts. A pilot test was conducted on the instrument prior to the study to establish internal consistency of the instrument; a Cronbach’s alpha coefficient was calculated for each group of construct questions. Using the recommendations subscribed to by Hair, Anderson, Tatham, and Black (1998), a measure of .60 or higher was needed. The overall Cronbach’s alpha coefficient for the instrument was $\alpha = .79$. The constructs of the instrument ranged from $\alpha = .78$ to $\alpha = .92$, exceeding the Hair et al. recommendations.

All data generated by the study were coded, entered, and analyzed using the Statistical Package for Social Science (SPSS version 11.0) program. Descriptive statistics such as modal categories, means, standard deviations, and frequencies were used to describe the variables. Correlations were conducted to identify the relationships between the variables. The correlation coefficients used included point-biserial, Eta, Spearman rank-order, and Pearson product-moment. To determine the predictive value of the variance that could be explained in the variable implementation (use and frequency), stepwise regression was used.

Findings

Personal Characteristics

Approximately 81% of the population was male and 19.1% was female. Almost 84% were White. The next largest ethnic heritage group was Hispanic with 5.9% followed by Asian at 4.4%. The mean age was 51.2 years with 55% of the respondents being 40 - 60 years old. The youngest individuals in the study were 30 and the oldest person was 79. No true differences in characteristics existed between the entire population of the college and the department responsible for Agricultural and Extension Education, the Department of Human and Community Resource Development (HCRD).
**Professional Characteristics**

Of those who participated in the study, 27.9% were assistant professors, 25.0% associate professors, and 47.1% were professors. Approximately 65% reported teaching both graduate and undergraduate level courses, while 23.5% reported teaching only undergraduate courses and 5.9% reported only teaching graduate level courses.

The college database provided information about the subjects who participated in the study. Nearly 46% had a nine-month appointment and 54.4% had a 12-month appointment. The mean percentage of general fund appointment was 62.1%. Of those who participated in the study, 16.1% reported teaching less than three courses per year and 24.2% reported teaching more than five courses per year. The mean years of experience of the reporting faculty was 19.7 with 17.5% of the respondents reporting 16 to 20 years of teaching experience in higher education.

Nine tenure-initiating units comprise the college departments with the largest departmental units that participated in the study being the School of Natural Resources (20.0%) and Agricultural, Environmental, and Developmental Economics (20.0%), closely followed by the Department of Human and Community Resource Development (18.8%).

**Educational Technologies Characteristics**

Nearly 35% of the respondents reported using the Windows 2000/NT operating system, 27.1% used Windows 98/ME, and 18.8% used Mac OS systems. Eighty-nine percent of the responding population reported having a home connection to the Internet.

Approximately 94% of the respondents indicated they participated in 0 to 10 hours of training in using educational technology in teaching/learning exchanges. None of the respondents reported having more than 30 hours of training on using educational technologies.

Nearly 86% of those responding to the study reported an intrigued or very enthusiastic level of enthusiasm for using educational technologies. Approximately 14% indicated they were uninterested in using educational technologies to enhance teaching/learning exchanges.

**Faculty Attitudes/Beliefs toward Using Educational Technologies in Teaching**

Within the population more than 66% of those responding agreed that the use of educational technologies within teaching/learning exchanges provided beneficial value to the process. Regarding this finding, Table 1 – *Educational Technologies Provide...* compares the summated mean scores of the population with the department engaged in the delivery of Agricultural and Extension Education, HCRD.

More than 79% of the faculty in the population agreed that the use of educational technologies can have a positive impact for both faculty and students. In excess of 77% disagreed that the use of educational technologies was an unnecessary expenditure or a waste of instructional time. Related to these findings Table 1 – *Educational Technologies Can Be...* compares the summated mean scores of the population with the department.

Over 80% of the responding population cited lack of preparation time and lack of time to learn how to use educational technologies as the primary barriers to incorporating technology into their teaching/learning exchanges. More than 50% of the respondents indicated limited training opportunities as a barrier to using educational technologies in teaching. Table 1 – *Barriers to Using Educational Technologies in Teaching...* compares the
summated mean scores of the college population with Department of Human and Community Resource Development.

Table 1

<table>
<thead>
<tr>
<th>Faculty Attitudes/Beliefs toward Using Educational Technologies in Teaching</th>
<th>Population (N=68)</th>
<th>HCRD (N=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Technologies Provide…</td>
<td>Mean 22.12</td>
<td>22.67</td>
</tr>
<tr>
<td></td>
<td>s.d. 4.31</td>
<td>4.29</td>
</tr>
<tr>
<td></td>
<td>Range 5-30</td>
<td>14-28</td>
</tr>
<tr>
<td>Minimum Score</td>
<td>Undecided = 0</td>
<td>Undecided = 0</td>
</tr>
<tr>
<td>Maximum Score</td>
<td>Strongly Agree = 30</td>
<td>Strongly Agree = 30</td>
</tr>
<tr>
<td>Educational Technologies Can Be…</td>
<td>Mean 17.46</td>
<td>18.00</td>
</tr>
<tr>
<td></td>
<td>s.d. 3.63</td>
<td>3.25</td>
</tr>
<tr>
<td></td>
<td>Range 7-24</td>
<td>13-23</td>
</tr>
<tr>
<td>Minimum Score</td>
<td>Do Not Know = 0</td>
<td>Do Not Know = 0</td>
</tr>
<tr>
<td>Maximum Score</td>
<td>Not A Barrier = 24</td>
<td>Not A Barrier = 24</td>
</tr>
<tr>
<td>Barriers to Using Educational Technologies in Teaching…</td>
<td>Mean 17.81</td>
<td>16.33</td>
</tr>
<tr>
<td></td>
<td>s.d. 4.29</td>
<td>4.30</td>
</tr>
<tr>
<td></td>
<td>Range 9-28</td>
<td>9-23</td>
</tr>
<tr>
<td>Minimum Score</td>
<td>Undecided = 0</td>
<td>Undecided = 0</td>
</tr>
<tr>
<td>Maximum Score</td>
<td>Strongly Agree = 28</td>
<td>Strongly Agree = 28</td>
</tr>
</tbody>
</table>

Faculty Perceptions of Access/Support for Using Educational Technologies in Teaching

One hundred percent of those responding cited that they must be provided access to technical experts for support in order to use effectively educational technologies within teaching/learning exchanges. Approximately 89% and more reported a need for a reliable infrastructure, an individual state-of-the-art computer, teaching facilities outfitted with presentation equipment, and financial resources to effectively use educational technologies in their teaching. More than 90% of the faculty agreed that they must have technical expert assistance in order to design and develop technology-enhanced courses. Table 1 – To Effectively Use Educational Technologies in Teaching, Access Must Be Provided to… compares the summated mean scores of the college population with Department of Human and Community Resource Development.

Table 2

<table>
<thead>
<tr>
<th>Faculty Perceptions of Access/Support for Using Educational Technologies in Teaching</th>
<th>Population (N=68)</th>
<th>HCRD (N=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To Effectively Use Educational Technologies in Teaching, Access Must Be Provided to…</td>
<td>Mean 45.39</td>
<td>49.40</td>
</tr>
<tr>
<td></td>
<td>s.d. 6.51</td>
<td>2.56</td>
</tr>
<tr>
<td></td>
<td>Range 26-54</td>
<td>45-54</td>
</tr>
<tr>
<td>Minimum Score</td>
<td>Undecided = 0</td>
<td>Undecided = 0</td>
</tr>
<tr>
<td>Maximum Score</td>
<td>Strongly Agree = 54</td>
<td>Strongly Agree = 54</td>
</tr>
</tbody>
</table>
Faculty Perceptions of Reinforcement/Recognition for Using Educational Technologies in Teaching

When the college population was queried about what technology support faculty currently had, less than 17% reported receiving any technical expert assistance from the university or the college, and only 53% indicated any form of departmental expert assistance. More than 80% of the respondents gave no account of current access to needed equipment, a sufficient infrastructure, or training opportunities for using technologies within course applications. Over 80% of the faculty reported having access to classrooms equipped to use multimedia teaching aids, while nearly 91% of the same population indicated a lack of financial resources needed to secure assistance for producing these teaching materials. Related to these findings, Table 3 – Efforts in Using Educational Technologies for Technology-Enhanced Courses, Should Result in... compares the summated mean scores of the college with the department.

Table 3
Faculty Perceptions of Reinforcement/Recognition for Using Educational Technologies in Teaching

<table>
<thead>
<tr>
<th>Efforts in Using Educational Technologies for Technology-Enhanced Courses, Should Result in…</th>
<th>Population (N=68)</th>
<th>HCRD (N=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>37.59</td>
<td>43.20</td>
</tr>
<tr>
<td>s.d.</td>
<td>10.11</td>
<td>5.44</td>
</tr>
<tr>
<td>Range</td>
<td>12-54</td>
<td>33-50</td>
</tr>
<tr>
<td>Minimum Score</td>
<td>Undecided = 0</td>
<td>Undecided = 0</td>
</tr>
<tr>
<td>Maximum Score</td>
<td>Strongly Agree = 54</td>
<td>Strongly Agree = 54</td>
</tr>
</tbody>
</table>

For the population of the college, a total of 80% of the variance in the dependent variable use was explained by two variables in the independent variable set: awareness and interest. The analysis revealed that 73% of the variance in the use of educational technologies was accounted for by faculty awareness. When faculty interest was added, an additional 7% of the variance was identified.

Conclusions and Implications

The conclusions and implications are divided into six sections: faculty characteristics; attitudes and beliefs; access and support; reinforcement and recognition; and awareness and interest.

Faculty Characteristics

Findings showed a moderate positive association between race and the two measures, use and frequency. For this population, the personal characteristic of race was also found to be valuable in predicting the frequency of using educational technologies. There was no relationship between age and use as was also concluded by Clark (1999) and Willson (2000). As was found in this study and supported by the findings of Mak (2000) and Willson (2000) there was no relationship between sex and use.

The tenure initiating units of Human and Community Resource Development and Agricultural, Environmental, and Developmental Economics exhibited more frequent use of educational technologies within their teaching/learning exchanges than other departments within the college. A substantial positive association was found between tenure initiating unit and frequency. The professional characteristic of tenure-initiating unit was also found to
be valuable in predicting the frequency of using and implementing educational technologies. In contrast to Sells-Lewallen (2000), no relationship between professional rank and use of educational technologies could be concluded from this study. As Clark (1999) and Mak (2000) found, there was no relationship between teaching experiences and use.

The educational technology of home connection to the Internet was also found to have a moderate positive association with implementation and the measure frequency of using educational technologies. A substantial positive association was found between reported enthusiasm for using educational technologies and the measure use. As was the case for Clark (1999), no relationship between training and use was established.

**Attitudes and Beliefs**

A majority of the faculty believe that educational technologies provide: potential for enhancing student learning; beneficial means for engaging students in the learning process; and a stimulus for creative thinking and/or problem-solving with students. These supported findings of Revell (1999) and are advancement beyond the conclusions of Metlitzky (1999), who reported faculty were undecided on whether the use of educational technologies improved student learning.

The primary barriers to incorporating technology into teaching/learning exchanges cited by faculty were a lack of preparation time and a lack of time to learn how to use educational technologies. These findings are reinforced by the deductions of Hall (1997), Hogle (1999), Hoppe (2000), Jones (1999), Revell (1999), Spotts (1998), and Williams-Glaser (1998). The findings of this study showed a moderate positive association between attitudes and beliefs and implementation as well as with the measure use. This conclusion is supported by the work of Mak (2000), Noble (2000), Revell (1999), and Willson (2000) who found direct relationships between faculty attitudes and their use and successful integration of educational technologies.

**Access and Support**

All faculty reported that they must have access to technical experts to whom they can take questions and nearly all the faculty indicated that they must have expert technical assistance for producing technology-based course applications. Hogle (1999), Metlitzky (2000), Revell (1999), Sells-Lewallen (2000), Spotts (1998), Williams-Glaser (1998) all found expert technical assistance as a vital support factor in faculty implementation of educational technologies. Within The Campus Computing Project (1999), Green reported “providing adequate user support” as the second most important concern in assisting faculty to integrate technology into instruction.

More than three-quarters of the faculty indicated that they must be provided with training opportunities in order to learn educational technology applications for teaching and identified lack of training as a current barrier. Similar findings were also reported by Hall (1997), Noble (2000), Revelle (1999), Spotts (1998), and Willson (2000). While half of the respondents reported having some form of curriculum-specific technology-enhanced teaching materials and/or applications for the courses they teach, less than a quarter reported receiving any type of training. This implies that while faculty are willing to try technology-enhanced approaches, assistance in the form of training could result in a much higher portion of the faculty implementing technology-enhanced approaches within their teaching/learning exchanges. While the majority of faculty (80%) indicated that they had access to classrooms...
equipped to use multimedia teaching aids, more than 80% also reported not having the needed training opportunities or a sufficient infrastructure to support technology-enhanced teaching.

**Recognition and Reinforcement**

The findings of this research showed that more than 80% of the respondents indicated that they desire the following incentives for using technology-enhanced approaches within their courses: increased access to instructional design and/or technical support; opportunities for project development grants from the university, college, and/or department; and additional training opportunities focused on using technology in teaching. More than three-quarters of the faculty wanted their efforts to result in professional advancement and priority for upgrading of hardware and software technologies.

To contrast the desired with the current incentives received, more than 90% of the responding faculty reported that, as a result of using technology-enhanced teaching approaches, they presently had no increased instructional design and/or technical support, no prospects for university based development grants, no enhancement of tenure/promotion documentation, no augmented priority for upgrading of technologies, and no policies addressing copyright and/or ownership of technology-enhanced courses. Green (1999) in *The Campus Computing Project* reported that only 13% of the universities within the United States had in place some form of institutional program to recognize and reward the use of educational technologies as a part of the faculty review process. As Green (1999) and Hoope (2000) stated, recognition, reward, reinforcement, and an incentive program are essential elements to faculty utilization of educational technologies for teaching, but are widely ignored elements.

**Awareness and Interest**

A very strong positive association was found between the items awareness and interest, and implementation. A substantial positive association was found between awareness and interest and the measures use and frequency. Awareness and interest were also found to be valuable predictors for the implementation of educational technologies. While more than 80% of the population indicated some level of interest in using educational technologies for teaching, less than one-half of the faculty reported an awareness of how to use the applications within their teaching.

**Implications for the College of Food, Agricultural and Environmental Sciences, The Ohio State University**

The implication of the findings are that faculty truly desire technical expert assistance and training opportunities for using educational technologies but perceive that there are none available to them. If the university desires to enhance higher education teaching and learning through the delivery of distributive and/or distance educational programs, faculty must be aware of the technologies available for their use.

With such a limited number of faculty reporting current access to electronic publishing, The Ohio State University Graduate School (2002) policy change of publishing of dissertations electronically will not only be impacting graduate students but also the faculty members that advise them. Given that less than one-third of the college faculty reported access to listserv applications and network-based courseware development tools, it will be challenging for faculty to create technology-enhanced courses; and with less than
one-third of the faculty citing access to design, development, and production applications it will be extremely difficult for the majority of the college faculty to create “media-rich interactive learning environments,” without assistance from others.

The implication is that a chilling, even stifling message is being sent to faculty in terms of implementing technology-enhanced approaches into their teaching/learning exchanges. This seems especially poignant for the population of this study, where a majority of the desired “incentive” items are more aligned with issues of support and access, those of: increased instructional design and/or technical support; opportunities for securing university based development grants; and priority for upgrading of technologies. There is also an implicit message being communicated that the development of technology-enhanced teaching approaches is not scholarly work when these actions do not lead to the enhancement of tenure/promotion documentation (Green, 1999 & Hoope, 2000).

Without an awareness of how to use educational technologies for teaching, it is apparent that the “diffusion” to faculty of the “innovation” has not occurred (Rogers, 1995). Owen (1999) also identified the time it takes for an individual to pass from knowledge to adoption or rejection as an inhibitor to rate of adoption. Bennett’s Hierarchy (Bennett, 1975) also supports the concept that if a desired impact is to occur such as, faculty implementation of educational technologies into teaching/learning exchanges, there must first be an awareness, “activity,” constructed before any knowledge, attitude, skill, and/or aspiration, “KASA” change can take place. Bloom’s (1956) taxonomy level of cognitive learning prescribes a sequential order of learning, in which the preceding level must be met before the next level can be addressed, sustaining that an awareness must exist before any knowledge gain will occur. Agricultural educators and rural sociologists teach these principles to students internationally as a basis for technology transfer. Yet the findings of this study imply that many of the factors known from research to facilitate change are not being implemented.

**Implications for Colleges of Agriculture and the field of Agricultural Education**

Though the findings can be generalized only to the population studied, there are implications for Colleges of Agriculture internationally. Administrators in colleges and departments are wasting a huge investment in the infrastructure of technology hardware and software if faculty are not prepared to utilize the tools to fulfill the mission of teaching and learning. As agricultural educators, could we provide leadership in applying sound principles and practices for teaching and learning to faculty training and development in using educational technologies? Perhaps faculty in Agricultural Education can serve as mentors to faculty in other disciplines concerning sound teaching and learning enhanced by technology. Are we challenging ourselves as educators to conduct research about the impact of use of specific educational technologies on student learning? Are we going to lose the interest of the student of the future if we don’t broaden approaches to teaching and learning in higher education? In many nations, the access to technology is skipping some of the infrastructure stages that have occurred in the United States. The time frame for adoption of change in those settings is even more rapid. Are educators in those settings adopting the use of technologies for teaching more rapidly as a result? It is also imperative to explore what students are left behind in the learning process through current teaching and learning strategies. Technological applications offer potential to assist learners who do not currently
flourish with predominant models of pedagogy.

There is a need for continued research to address many of the above questions. The researchers recommend this study be replicated in institutional settings globally with agricultural sciences programs where goals exist to use technology to enhance teaching and learning. Further studies must explore the factor of racial/ethnic diversity to see if it has the same predictive value in other populations. More study is needed to identify factors which motivate faculty and the effectiveness of various support services to enhance the use educational technologies in teaching and learning exchanges. What training strategies are most effective with university faculty? What are the expectations of today’s students concerning the use of educational technologies? Does the use or lack of modern technology make a difference in student choices of academic disciplines and/or institutions in which to study? The answers to these will help position Colleges of Agriculture and Agricultural Educators worldwide to be leading edge teachers in the 21st century.

References


