Effectiveness of Informal Education Methods in the Texas-Mexico Initiative

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Abstract

Selected agricultural producers in northeast Mexico who participated in the Texas Mexico Initiative through the Center for Grazinglands and Ranch Management have realized practical benefits in goat meat production since 1997. However, a lack of communication to broader groups of producers leads to a lack of knowledge, thus creating a gap through which innovations cannot be diffused (Freund, 1999). The purpose of this study was to evaluate informal educational methods used by three northeast Mexican agricultural universities to disseminate agricultural research results to agricultural producers in Mexico. Qualitative research methods were used. Data were collected via interviews (individual and focus groups) in the summer of 2003. The most popular informal educational method was using technicians who travel on site and work on a personal basis with producers to achieve optimal understanding of new technologies. Producers frequently took advantage of local livestock and/or feed grain associations to acquire new information. Although technology has allowed us to teach and communicate from thousands of miles away, nothing is more beneficial that working with an individual who demonstrates hands-on learning.
Introduction

“What one has not experienced, one will never understand in print.” Isadora Duncan is not a farmer, or rancher, nor is she closely linked to the agriculture industry, but her position supports the importance of both a solid formal and informal education. Education, in whatever form, is the beginning phase in the domino effect of economic well being (Rogers, 1995). As education occurs, development follows, finally resulting in economic stability, a factor of seminal importance when considering informal education methods.

The importance of informal education strongly depends on the proportion of the population that has access to formal education methods. That is, an inverse relationship exists between the importance of informal education and the availability of formal education. According to the United Nations Educational, Scientific, and Cultural Organization, 73% of American students pursue a college education, yet only 21% of Mexican students pursue a higher education. When considering this statistic one would perceive the importance of creating a strong communication channel from the university to the public in Mexico, to help educate the high percentage of individuals who were unable to peruse a college education. Over the past decade, the Mexican government and international donors reduced their investments in the public sector affecting extension. As a result, the extension program deteriorated (Swanson & Samy, 2002).

For the past 20 years, Mexico has failed to possess an extension service to provide educational aid to agriculture participants. Consequently, emphasis to disseminate agricultural information to the public was placed on the University system. For today’s agriculture producers, continuing education is essential to keep up with the complexity and sophistication of agriculture technology (Swanson & Samy, 2002).

A lack of communication leads to a lack of knowledge, thus creating a gap through which innovations cannot be diffused (Freund, 1999). Recent studies indicate that a preferred participatory approach where farmers decide which changes are desirable and what types of support and education are needed (Hassan & Gabrael, 2002). Participation in this method allows farmers to work with universities in order to achieve technological development. Another study indicated that the most effective teaching strategies in agriculture education centered on approaches such as demonstrations, contests, using real objects, discussions, and supervised experience (Shinn & Martin, 1999). The present study examined effectiveness of the educational methods used by the northeast Mexican universities to aid farmers, and what channels were used to communicate information. The three universities along with Texas A&M University (TAMU), collaborated through a much larger project known as the Texas-Mexico Initiative.

Texas comprises more than one-half of the US-Mexico borders, and shares agro-climatic conditions and food production system similarities. Through the process of improving communication between the two geographic areas, education is proposed, bringing about development (Freund 1999). Improving agricultural development, through appropriate communication channels to interested stakeholders in Texas and Mexico may improve economic successes for both. Texas A&M University (TAMU) and the W. K. Kellogg Foundation initiated a program to improve agricultural producer relationships between Texas and Mexico. Through this program, a student exchange was developed between TAMU agriculture students and students from Universidad Autonoma de Tamaulipas (UAT), Universidad Autonoma de Nuevo Leon (UANL), and Universidad...
Autonoma Agraria Atonio Narro (UAAAN). The researcher worked closely with the Initiative to acquire information for this study.

**Purpose**

The purpose of this study was to evaluate informal educational methods used by three northeast Mexican agricultural universities to disseminate agricultural research results to agricultural producers in Mexico. Specific objectives guiding this study included:

1. Identify components of informal educational methods at each participating university.
2. Determine the status of informal educational methods used in public dissemination programs.
3. Describe producers’ primary sources of information when choosing to adopt or reject agricultural innovations.

**Methods and Data Collection**

Qualitative research methods were used. Data were collected via interviews (individual and focus groups). The sample consisted of students, professors, and agricultural producers associated with the Texas Mexico Consortium. The study was conducted in collaboration with the Texas Mexico Initiative through the Center for Grazinglands and Ranch Management. Through the initiative, a student exchange program was conducted to aid in institutional development and sustainability. Interviews were scheduled in the summer of 2003 and four questions were developed to guide the interviews. A tape recorder was used during the interviews. The same set of questions was asked during each individual interview.

Qualitative data obtained from interviews were analyzed using inductive data analysis, including two essential sub-processes: coding and categorizing. Coding allowed identification of information units or single pieces of information that stand by themselves that are interpretable in the absence of additional information. Categorizing is a process whereby previously coded data are organized into provisional categories on the basis of “look alike” characteristics (Lincoln & Guba, 1985).

Trustworthiness (similar as validity and reliability in quantitative research) of this study was established by using “thick description techniques” (Lincoln & Guba, 1985). “Thick description” involved providing enough direct citations from the interviews so that readers could see where the conclusions were drawn. Interviews were conducted in Spanish, and the researcher translated the interviews for the study. The following questions were asked during each interview.

1. What type of informal education methods have you participated in or conducted?
2. Which informal education methods have you to found to be the most beneficial?
3. Which methods have or have not worked in the past and what are your recommendations for future methods?
Findings

Identify and define components of informal educational methods at each participating northeast Mexican agricultural university.

Each university had a primary focus in teaching agriculture. Although all three universities had the same focus, each was distinctly different. This observation was especially apparent when comparing the differences in the methods of informal education used to disseminate research to the public. The first university visited was UAT in Ciudad Victoria, Mexico. UAT students took advantage of technology learning programs and field days. Students had the opportunity to work alongside producers, participate in hands-on experiences, and most received the latest in technological information from the university. A UAT agriculture professor stated:

The only way the students will really learn what they have been studying in their classes is to actually go out and do it...they do this by working with neighboring ranchers who allow us to work in their ranch, in return the rancher benefits from learning from the student...one must realize the rancher has not been in school for a long time, in a way this collaboration allows them to benefit from donating their time and the facility of the ranch (UAT professor).

Students stated they found UAT’s methods of education very effective and were not only good learning tools, but also made the learning experience more enjoyable. A student emphasizing his studies in the management of whitetail deer populations stated, “I really love working on the ranches and working with deer, you can only learn so much from the classroom. If I could spend all my time outside working on projects I would” (UAT student).

UAT depends largely on student involvement with producers to disseminate information to the public. A problem observed during this study was that only participating producers benefited directly from informal education programs. Producers stressed the importance of communication between themselves for any highly visible progress to occur, “luckily, word of mouth travels fast, farmers are very nosey, they like to see what their competitors are doing” (UAT PhD student). During informal educational processes, farmers embark in face-to-face contact where they exchange information and thus continue the education cycle. UAT also participates in field days sponsored by private industries and the university, intended to educate farmers of new products available and research findings obtained by the university.

Of the three universities studied, UAAAN (Saltillo, Mexico) participated in the most forms of informal education methods. Informal education methods were incorporated into the curriculum and were required to receive credit for certain courses. UAAAN participated in yearly field days and presentations, where the public was invited to attend. In 1999, UAAAN participated in a Programa de Vinculación Y Capacitación Tecnología en Ganaderros. The objective of this program was to educate beef producers on the importance of collaborating with associations and the national government. In 2002, a new program was implemented to build upon the 1999 presentation.

The UAAAN also participates with the national government to educate técnicos (technicians) who are used as educational tools to communicate new research results to producers. This was especially apparent in a small rural town where community women joined together to start a business producing ornamental flowers. The women’s group had little experience in agriculture, but with the technician’s aid, they learned the fundamentals of
flower production and starting a business. The women formed a cooperative, which was
described to be the backbone of the business. They set rules and standards that each member
had to abide by in order to continue as a member. The president of the cooperative stated,
"We rely on the technician for new information, last week we had a demonstration on using
pesticides, the ladies were all very eager to learn about the new product" (rural citizen).
Rural citizens indicated that without the aid and support of the technician, the organization
would fail to exist. Due to a well-organized member-group, combined with dedication of the
technician, the women’s group plans to acquire business in the international flower market.

The final university observed for this study was UANL in Monterrey, Mexico. Once
again, it was found that the university participated in using technicians to disseminate
information to the public. Two technicians interviewed at this location were both college
students working on their masters’ degrees. One technician worked with a dairy producer in a
nearby rural community. The technician informed the producer through weekly face-to-face
visits, during which he would inform the producer of new technologies and products
available, at this time the technician would also check the status of the farmer’s production.
“The technician educated me on the use of an electric milk pump, this has made my work a
lot easier, I am eager to learn new things from him” (dairy producer). The researcher
observed immense interaction between the technician and producer and how important it was
in relaying new information between the two parties.

Determine the status of informal educational methods; compare programs from the past,
present, and future.

Status of informal education methods was measured by methods effectiveness, based
on the opinion of the producers in the areas visited. Producers were asked how programs
have changed during their agricultural career and what they suggest to be useful in the future.
One-on-one interview sessions were conducted with producers to acquire results.

During an interview with a goat rancher in Ciudad Victoria, the operation manager
explained how management strategies have changed dramatically during his time in the
business. The manager, a certified veterinarian, explained that a new technique currently
implemented in goat production was elevated cage-like pens, which allowed feces to fall
through the floor to the ground. The manager emphasized how this simple invention has
helped control disease and sanitation. The manager obtained this information by joining an
association, linked to UAT, which helped to educate goat producers on establishing the new
facilities. A field day was created to cover all aspects of utilizing the new procedure. The
manager of the facility explained how participation in the new technique grew.

Other neighboring farmers caught on to the new trend and joined the association.
Farmers would then come out to our facility to examine the system we are using, we
showed them how to build the pens, and explained some of the mistakes we made so
they may avoid them. The easiest way to promote this type of advancement is to allow
the other ranchers to come and see the progress for themselves. We showed them
everything, positive and negative aspects (goat production manager).

When one producer obtains information, education continues as that producer informs
another of the new technologies implemented. In this case, face-to face interaction was used
as the primary source of informal education. The manager also indicated that he utilized the
Internet and journals as alternative sources of education, to keep up with the latest findings.
The manager indicated that he always shares new information with his fellow association
members, since they all do not have the same opportunity to acquire new information. He speculated as more producers obtain sources of technology, e.g. computers, more of their information will be derived from those sources.

The second area studied revealed that agricultural producers participated in more field days and presentations than any other form of informal educational method. Producers utilized face-to-face interaction, and depended less on computers and the Internet. According to a cactus producer, the forms of acquiring new information have not changed that much from the time he began working in the industry. This particular producer had no experience in using a computer and indicated lack of interest in utilizing one in the future.

A second producer, a former agriculture major, used himself as an education tool, stating that he would conduct field days to educate the public on new products available to them. The producer also indicated he would travel to surrounding areas to present information in animal reproduction. He stated the importance of relaying information to other farmers and ranchers, “by educating others, the quality of livestock and produce increases, this is good for everyone” (goat producer). When asked what he foresees for the future of informal education strategies, he explained that when Mexico becomes more advanced technologically, more dependence will be placed on computer technology and utilizing the Internet, “now a very select few have access to computers, I hope this will change in the future” (goat producer).

The final area studied indicated little change in the strategies of acquiring new education and information. One-on-one interaction, once again appeared to be the method of choice for disseminating information to the public. According to producers, the aspect that has changed the most was the incorporation and use of technicians to disseminate information. “In the past we relied only on what our fathers taught us, and what their fathers taught them through trial and error, now we have an expert in the field guiding us and my yields have improved” (corn producer).

Describe producers’ primary sources of information when choosing to adopt or to reject an agriculture innovation.

The process of informing or educating a producer is only as effective as the trustworthiness of the source; one must also take into consideration the culture of the subjects of the study, traditions are highly valued, including traditions in the agriculture field (UAT professor).

From the interviews conducted, producers indicated the importance of the validity of their information sources. Producers indicated the informer must also possess skills in teaching and persuasion. It was also implied that introducing new methods and technologies was difficult to portray to the producer in a convincing manner. This study examined the methods that the informer found effective in convincing the producer to engage in new technologies, based on research findings established in the university.

During the first visit, students who worked in a joint effort with local ranchers to test new research strategies, stated:

The rancher is willing to try new procedures, I believe he realizes the benefits of the new technologies the university has available. The ranchers we work with are also at an advantage since they benefit from our work at their ranch...I have also worked with producers who were not willing to try new things, I think it depends on their level of education (UAT student).
The second location studied, technicians were interviewed as to how well producers were willing to accept new methods. One technician stated:

_The women working in the rural flower development project are always willing to try new methods, you must remember this project was their idea, I came in to help them and implement their ideas, I also helped to lead them in the right direction. The last demonstration we had focused on fertilizer use almost all of the 20 participants of the group were present, this shows how dedicated they are (UAAAN technician)._ During the third and final part of the study, the same question was asked of the participation technicians. One technician informed the researcher:

_At first, the producer I work with was hesitant to implement new production methods, after a strong relationship was established the task became easy, now the producer participates in artificial insemination. This was a method I educated him on not too long ago, and he administers the semen himself (UANL technician)._ 

Conclusion and Implications

The universities studied used several methods to relay information to producers. The most popular approach utilized technicians who travel on site and work on a personal basis with producers to achieve optimal understanding of new technologies. The researcher observed this method of informal education to be the most beneficial. The interpersonal contact allows for relationships to occur, resulting in better communication between technicians and producers. When farmers acquire new information, it is essential to receive such information from a trustworthy source. Knowledge exchange and experiences take place though face-to-face interaction, both parties can reach consensus on what is needed to improve production practices. Producers became more confident in professional’s help, without imposing solutions on them. Through this participatory approach, a visible impact on agriculture and rural development is destined to occur. Through this partnership, appropriate and adaptable technology takes place, which allows local indigenous knowledge to coincide with the normal experimental capacity of farmers to influence and guide the research process (Sadighi & Mohammadzadeh, 2002). The researcher observed a strong relationship between producers and technicians at all three areas visited.

During the process of acquiring new information, producers frequently took advantage of local livestock and/or feed grain associations. The local associations worked in collaboration with the universities to conduct field days and distribute monthly publications within the surrounding areas. Field days and demonstrations served as popular methods of disseminating information to the public at all three participating universities. After conducting interviews with producers, it can be concluded that participation with local associations was beneficial for producers by both allowing them to participate in hands-on activities during field days and through reviewing the latest news in monthly association periodicals.

The idea of informal education methods has experienced much change. The use of computer technology is becoming more prevalent within the region of northeast Mexico, especially among producers affiliated with the participating universities. One aspect that has not changed is the dependence of one-on-one personal interaction. This method not only allows for professional supervision, but also allows producers to develop a relationship with the university, where both parties work together in a team effort. Development of such
relationships may be mutually beneficial to producers and university technicians in other rural Mexican communities. Participation in a similar collaboration with an agricultural university that is committed to the public education would benefit these communities tremendously. Also, as evidenced by the present study, when a university reaches out to the public, interpersonal contact must occur to develop trust, as well as accountability between all participants.

Although technology has allowed us to teach and communicate from thousands of miles away, nothing is more beneficial that working with an individual who demonstrates hands-on learning. Trust must be established in order for acceptance to occur. When acceptance occurs, the development phase begins. Development slowly brings about economic advancement, the ultimate goal. When examining northeast Mexico, education is the key to stability, and informal education methods play a key role in the education of agricultural producers’ conceptual understanding of new technology.

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