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EXAMINATION REPORT

THE MILWAUKEE SCHOOL OF ENGINEERING
MASTER OF SCIENCE IN ENGINEERING MANAGEMENT

I hereby confirm that this thesis is my original work.

[signature] 1-8-99

Candidate for Degree — Date

As members of the MSEC Project, Graduate Studies Examination Committee, we certify that we have read the thesis and heard the oral presentation

prepared by Jon Mixdorf

entitled Entrepreneurial Agricultural Management

and recommend that it be accepted as fulfilling the thesis requirement for the Degree of **Master of Science in Engineering Management.**

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Final approval and acceptance of this thesis is contingent upon the candidate's submission of the final copy of the thesis to the Center for Business Management.

I hereby certify that I have read this thesis prepared under my direction and recommend that it be accepted as fulfilling the thesis requirement.

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January 24, 1999

Milwaukee School of Engineering
Attn.: David Tietyen
1025 N. Broadway
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Dear Mr. Tietyen,

Enclosed is a revised copy of my thesis *Entrepreneurial Agricultural Management: A Case Study of Farm Service Agency Borrowers Educational Needs for At-risk Farmers* submitted in partial fulfillment for the degree of Masters of Science in Engineering Management at Milwaukee School of Engineering. The agricultural community and government research acknowledge the ultimate take over of the traditional family farm by corporate interests. The professional management techniques used by corporations are a key factor in the success of the corporations. *Entrepreneurial Agricultural Management* was proposed as a guide to introduce the concepts of management to the family farmer.

Before developing a curriculum, it was necessary to interview several agricultural-management educators to obtain their suggestions for a inclusive curriculum. Additionally, a survey of educational management needs of the family farmer was prepared and submitted to the loan officers for the United States Department of Agriculture to obtain their suggestions.

Conclusions as to the curriculum content were made as a result if the interviews and the survey. Suggested curriculum topics include accounting, goal setting, decision making, financial analysis, and commodity marketing. A curriculum model by Dick and Carey was chosen as a basis for the core elements of the thesis. The intent of the thesis focuses on the production of a curriculum for the benefit of the instructors or instructional designers responsible for the production of borrower curriculum.

The merit of this thesis lies in the unique approach to adult education. The approach involved identifying the opportunity to better serve the target learner group. Secondly, a needs assessment was conducted through a specifically designed survey and evaluation. Third, a curriculum development model was used as the basis for the instructional design. Finally, instructional material was prepared to meet the special needs of the target learners.

The thesis topic was authorized by David Tietyen and Dr. Bruce Thompson in July of 1997. A special acknowledgment is given to Dr. Bruce Thompson and David Tietyen at Milwaukee School of Engineering, Paula Volesky, Educational Coordinator for the Farm Service Agency, and the Farm Service Agency Loan Officers in the State of Iowa. Please direct any questions to the undersigned concerning the survey, conclusions, and curriculum.

Sincerely,

Jon Mixdorf

Encl.: Entrepreneurial Agricultural Management Thesis

Entrepreneurial Agricultural Management: A Case Study of Farm Service Agency Borrowers Educational Needs for At-risk Farmers

Submitted to:
David Tietyen

Submitted by:
Jon Mixdorf

Milwaukee School of Engineering
September, 1998

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Abstract

The traditional family farm is being financially challenged by rapidly emerging corporate farming, resulting in many family farmers becoming dependent on the government for financing. The U. S. Department of Agriculture, Farm Service Agency (FSA) is responsible for issuing non-standard loans to farm borrowers unable to obtain credit through commercial banks. The borrowers are required to attend 33 hours of management training to qualify for the loans. The problem facing the management educators and the subject of the thesis is how best to utilize the mandatory training to reach optimum training success and, in turn, success in farm management.

After identifying the problem, the second step was to gather information as to the specialized educational needs of the target learners. The FSA approved a survey directed to the 41 FSA Loan Officers who service the borrowers in Iowa. Upon completion of the survey, the results were shared with educators familiar with FSA borrowers and agricultural managerial education.

The solution to the problem identified in the thesis involves applying the systematic design of instruction model developed by Walter Dick and Lou Carey as the paradigm for creating the FSA curriculum. The first step in the instructional curriculum was to identify the instructional goals based on the survey results and expert evaluation. The survey data provided information necessary to evaluate learner entry characteristics. Performance objectives and instructional analysis were also prepared in accordance with the instructional model using survey data. The survey was used to provide direction and analysis in all phases of the instructional development model.

The need for instructional material specifically prepared for the target audience was revealed through the survey process and expert evaluation. A set of instructional materials specifically designed for the target group is included in the thesis appendix.

Introduction

Hoyt Gimlin reports in his publication *The Continuing Decline of Rural America* that, "Across the country there are huge pockets of fast-emptying countryside. Some analyses of economic and social distress in those areas suggest America's own 'third world' is in the making." Gimlin refers to Calvin L. Beale, a senior demographer with the Department of Agriculture, who believes fewer people left the countryside in the past decade than in the 1950s or 1960s, but that the later departures may have been the worst blow of all in many struggling communities "It's a critical mass they are losing," Beale says. "The sense of community is impaired."[1]

The number of family farms is in the decline, according to Agriculture Management Consultant Alan Lash in his Agricultural Entrepreneurship Workshop entitled "Agriculture Without Boundaries." Lash states that it is generally held by the public that the family farmer is being steadily replaced by a number of new farming entities. The substance of his presentation explains what is happening to the family farm and suggests management practices that may allow some of the family farmers to survive.

According to Lash, one of the chief competitors is the "mega-farm" corporation, which produces in excess of $5,000,000 in annual gross revenue. The mega-farm is composed of individual investors or groups of investors who may or may not be involved in the day-to-day farming operations. A corporate structure exists with production, financial, and management experts overseeing the operation and reporting to a chief executive officer and board of directors. This group is typified by the corporate style hog, chicken, and dairy operations rapidly expanding in the Midwest.[2]

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[1]U.S. Department of Agriculture, Editorial Research Reports, 1990, *The Continuing Decline of Rural America* (Washington, D.C.: Congressional Quarterly Printing)
[2]Alan Lash, "Agriculture Without Boundaries," January 29, 1998. *Agricultural Entrepreneurship Workshop*, Iowa Communications Network, Waterloo, Iowa.

The "superfarmer" is a second rapidly expanding class of farmer. Superfarmers are formerly large-scale family farmers with goals of rapid expansion. The superfarmer may be a subchapter S corporation, sole proprietorship, or C corporation with sales ranging from $3,000.000 to $5,000,000. This group continues to expand their operation through renting or buying additional farm land and accounts for the greatest share of commodity production.[3]

A third competing force in farming is the "sundowner." This farmer is retired or operating the farm on a basis of a recreational activity. Because sundowners have off-farm income and are allowed to deduct farming expenses from their off-farm income, they can be formidable resource competitors to the family farmer.[4]

Lash suggests the decline in the family farm is attributed to poor management. Specifically, the family farmer is not profitable due to the inefficient use of assets. Family farmers must be selective in purchasing assets. Many fail to consider the return on investment (ROI) when making purchasing decisions and often buy farmland and/or expensive tractors and combines that have a low ROI and fail to make a profit. This results in farmers carrying too much debt, which, in turn, creates a stressful situation.

The solution, according to Lash, rests in management training for all farmers, their customers, vendors, and constituents. The first area of management training involves the need for farmers to understand who they are and why they are in farming. Lash suggests farmers and their families focus on their values, principles, life's mission, and priorities that relate to overall successful living.

The educational role in farming must be life-long learning in the same manner professionals continue to learn. Farmers must study trends in farming as well as develop financial and business skills. Their acquired concepts and skills must be further developed and applied to their operations. Superfarmers are skilled salesman using their

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[3] Ibid.
[4] Ibid.

communication skills and contacts to grow their operations. As opportunities arise, the superfarmer will develop needed skills and use their intellectual capital to meet the requirements of the new ventures. Family farmers must learn to imitate the successful characteristics of their competitors. Other Lash suggestions include the need for farmers to learn to be leaders who define the agriculture business, communicate new ideas, and demonstrate successful activities. Farmers must learn to "think outside of the box;" move away from the agriculture-heritage base of being a price-taker and learn to become a price-maker.

Reinforcing Lash's comments on education, the Committee on Agricultural Education in Secondary Schools reports "Agriculture education is changing and should be moving in a new direction. The subject matter of instruction in and about agriculture must be broadened to give way to a much broader area, including the utilization of agricultural commodities, agribusiness marketing and management in a global economy."[5] Farmers must deal with behavior by not accepting things as they are; learn from experience and get beyond a mind set; define goals with written action plans; and adjust for the times.[6]

In the area of formal education, Lash suggests a farmer must have 9 to 12 hours of accounting that leads to a thorough understanding of cost accounting. Farmers currently manage around cost containment, but must begin to manage around revenues, equity, and debt as exemplified by superfarmers and mega-farmers. Family farmers often focus on their net worth without realizing the inflated value of their land does not increase the productivity of the land. Inflated land value may never be realized until it is sold,

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[5]Committee on Agricultural Education in secondary Schools, *Understanding Agriculture: New Directions for Education,* National Academy Press, Washington, D.C., 1988,p.6.
[6]Lash.

penalizing farm families with high inheritance taxes when the farm is transferred to the new generation.[7]

Many educators and students, as well as lending officers and agriculture-related government officials attending the workshop, were in agreement with the concepts presented by Lash. David Blecha, Department Head for Agriculture and Natural Resources Department at Hawkeye Community College (HCC), echoed Lash's thoughts. Mr. Blecha believes that efforts by educators and the presentation by Alan Lash may affect only a small number of agriculture-program graduates. The justification for this sentiment is that many of the agriculture-program students are from small farms without sufficient capital to allow the students to join the operation. Following graduation, students will generally work as employees in a farm-related industry and will not be in leadership or ownership roles. These students generally do not have role models who demonstrate the benefits of a formal education and demonstrate networking skills as key elements to success.[8]

Philip Hufferd, the Iowa State University Extension Office in Waterloo, Iowa, works with farmers and farm families in an advisory capacity. Mr. Hufferd is familiar with the Lash philosophy and recollected a Alan Lash statement that "Farmers sold the farm in the 70s but did not realize it until the 80s." He believes the primary purpose of education for farmers is to prevent them from making costly mistakes. Farmers do not get the management training until their financial situation forces them into federal government programs where training is required. Mr. Hufferd suggests that farmers are overly involved in production, preventing them from obtaining the necessary management skills to grow their operations profitably.[9] The President of the State Bank

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[7]Ibid.
[8]David Blecha, Instructor, Hawkeye Community College, December 1997, personal conversation, Waterloo, Iowa.
[9]Philip Hufferd, Extension Specialist, Iowa State University, January 1998, personal conversation, Waterloo, Iowa.

of Waverly, Jeff Plaggee, has attempted to discount loan rates to farmers who participate in management courses without success.[10] Mr. Plaggee's associate, Loan Officer Scott Wickham suggests that farmers believe they can only succeed with a low-cost producer strategy and will attend management training only when they are forced to turn to the Farm Service Agency as a lender of last resort.[11] Edward Swartzkoff, Adjunct Instructor at Milwaukee School of Engineering, relates this situation to any number of businessmen who spend their time working "in the business" and failing to work "on the business."[12]

Another educator, Terry Brase, Agriculture Instructor at Hawkeye Community College, cites the lack of accounting texts focusing on the special needs of the farm family. He believes the available accounting and bookkeeping texts do not meet the special educational needs of the adult learner. The available texts are steeped in accounting jargon; too broad in content; and not focused on examples used by the family farmer. He suggest a void exists for instructional material to cover the special learning needs of the target learners.[13]

Paula Volesky, Educational Coordinator for the United States Department of Agriculture (USDA), Farm Service Agency (FSA), is responsible for establishing the curriculum for farmers obtaining government financial assistance and agrees a curriculum review is needed She supported a survey of the 41 FSA Loan Officers in Iowa having direct contact with borrowers for the purpose of establishing an educational curriculum.[14]

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[10]Jeffery Plaggee, President, State Bank of Waverly, December 1998, personal conversation, Waverly, Iowa.
[11]Scott Wickham, Loan Officer, State Bank of Waverly, December 1998, personal conversation, Waverly, Iowa.
[12]Ed A. Swartzkoff, Lecturer, Milwaukee School of Engineering, Spring 1992, personal conversation, Milwaukee, Wisconsin.
[13]Terry Brase, Agriculture-Management Instructor, Hawkeye Community College, January 1998, personal conversation, Waterloo, Iowa.
[14]Paula Volesky, Coordinator for Farm Service Agency, July 1997, personal conversation, Des Moines, Iowa.

In summary, the dynamics of the current farm economy support the need for continued education for the full range of family farmers if they are to survive into the next century. The problem stems from the lack of formal management training; the need to focus training on management skills rather than production skills; and insufficient educational materials that relate management training to the special educational needs of the family farmer.

The focus of this thesis is to identify the educational needs of the Farm Service Agency borrowers and the survey of the FSA Loan Officers is the technique used to identify these needs. The FSA Loan Officers were selected for the survey because of the expertise and experience in dealing with the management capabilities of the family farm borrowers. The loan officers will be more objective in their evaluation, as well as being accessible and cooperative. The evaluation of this information will lead to the study of a curriculum design model and its application to curriculum development for these target students. The thesis includes the production of instructional materials featuring examples that specifically relate to family farm management situations.

The Survey

Basis for the Survey.

The survey of the loan officers from the Farm Service Agency of the United States Department of Agriculture was designed to identify the management training needs of an at-risk group of farmers. This at-risk group are farmers unable to obtain credit through commercial lenders and must rely on the United States Department of Agriculture through the Farm Service Agency for loans. It is believed that the loan officers, concerned with the management needs for the target learners, will provide an accurate and more objective result.

According to Dale Amunson, of Hawkeye Community College, this group of farmers represents family farmers with financial management problems of a more serious nature than the typical family farmer. However, many of their management characteristics are representative of the entire farm family population. For these reasons, Amunson suggests the curriculum produced as a result of the survey may be used for a broader range of agriculture-management.[15]

Production and Distribution of the Survey.

The survey was directed to the 41 FSA Loan Officers located in Iowa. The survey was approved and distributed by the State of Iowa FSA in Des Moines. The initial survey was submitted for approval in August of 1997. The survey was modified and reduced to 68 questions by the FSA to comply with mandatory regulations affecting the educational process and curriculum mandated by law. Modifications were completed and returned by early September of 1997 with distribution in November of 1997. The surveys were completed by early December of 1997 and the results tallied. A complete copy of survey design criteria is located in Appendix A; the survey is located in Appendix B; and the survey results are located in Appendix C.

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[15]Dale Amunson, Adult Education Coordinator, Hawkeye Community College, August 1997, personal conversation, Waterloo, Iowa.

Survey Summary.

The first section of the survey assesses the general knowledge of borrowers concerning accounting, bookkeeping, and related practices. The survey revealed that 25% of the borrowers own computers with approximately 20% of the borrowers being familiar with some form of accounting software or spreadsheet program. Because the loan officers indicated a need for a wide variety of subjects, a broad-based curriculum is required. The concern with a broad-based curriculum is that it will not allow the desired in-depth computer training or in-depth accounting software training. However, the educator should demonstrate the ease of use and financial management benefits of an agriculture-based accounting package. Borrowers are not self-directed learners and have a large range of skills that indicate a need for pretesting of students followed by a curriculum designed to accommodate specific needs of the borrowers.

The survey indicates the borrowers can account for their basic assets, liabilities, net worth, and profit or loss of their whole operation. However, they require training in financial management in general and financial ratios in particular. The loan officers indicate the need for keeping track of expenses and income for each operational enterprise component of the whole farm operation, as well as keeping accurate records on family living expenses. Accordingly, husbands and wives should attend the training as a family unit. Family members must evaluate their personal strength and weaknesses relative to record-keeping and determine which family member is best suited for record-keeping duties.

Then, loan officers agree a major component of the curriculum must focus on accounting and bookkeeping basics. Educators should include basic instruction in record-keeping basics that include development of personal habits of timeliness and accuracy, structure (organizing offices and filing cabinets), and work flow.

The survey asks the loan officers to rank the bookkeeping strengths of the

borrowers as a group. The ranking is as follows:

1) Whole farm income and expenditure records.

2) Farm debt and credit records.

3) Off farm income and debt records.

4) Depreciation schedules.

5) Enterprise accounting.

Borrowers require assistance in decision-making and goal-setting as well as assistance in communications with family members and lenders. The lenders suggest a need exists for farmers to understand the opportunity costs of their labor and capital. As one loan officer quipped "If farmers understood the concept of opportunity costs they would not be in farming." A thorough study of commodity markets was requested by the loan officers. It was suggested that 20 to 30 percent of the curriculum should be devoted to commodity markets, even though, from a practical aspect, the six to nine contact hours would not be a sufficient amount of time to fulfill this requirement.

The loan officers suggest environmental law should be considered as part of the curriculum, but contract law need not be included. Of significantly more importance is the use of training time for exploration of computer and related agriculture software training.

The survey concludes the primary areas of instruction for the farm management curriculum should include accounting and bookkeeping; a comparison of farm accounting software; financial ratio analysis; decision-making; and commodity markets. Figure 1 depicts the number contact hours that should be spent on each subject.

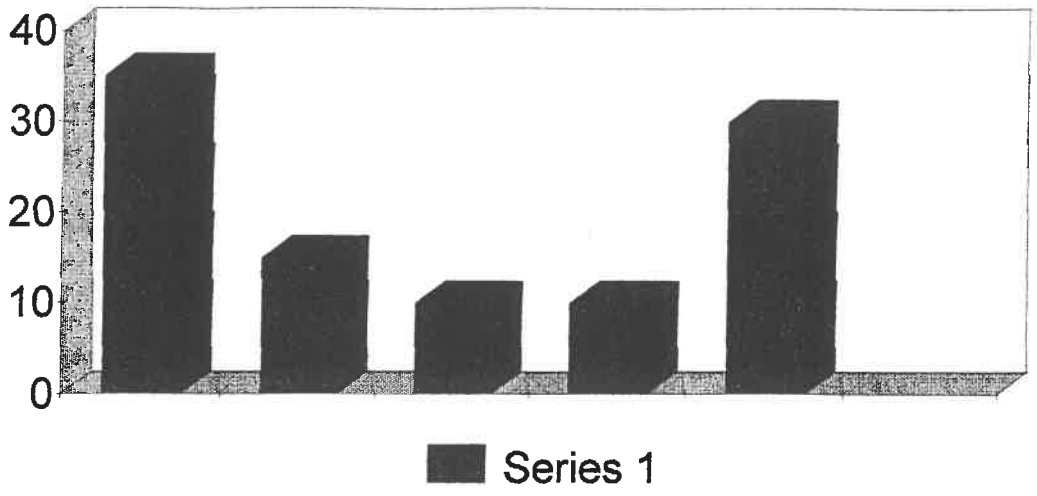

Figure 1

Percentage of Contact Hours to Major Curriculum Area

Curriculum Development

The survey of the loan officers from the Farm Service Agency established the major subject matter areas. The next activity involves establishing a paradigm for curriculum development. The Dick and Cary Systems Approach Model was selected as a basis for curriculum development. Figure 2 represents the approach that Dick and Cary Systems utilizes as the paradigm for the curriculum development.[16]

The Dick and Carey system can be viewed as an instructional process with the purpose of bringing about learning. The components of the system are the learners, the instructors, the instructional materials, and the learning environment. The components interact in order to achieve the goal. For example, the instructor reviews sample problems relating to farming experiences in a quiet classroom. To determine if learning is being achieved, a test is given. This is the instructional system thermostat. If the results are satisfactory, a new learning phase begins. If performance is not satisfactory, there must be changes enacted in the system to make it more effective in bring about the desired goals.

Components of the Systems Approach Model

Instruction is the solution to a problem. This approach focuses on "what is' and "what should be" in a particular situation. In the case of the family farmer, a need exists for management training for a significant number of family farmers. The solution to the problem is the goal to provide management training with a meaningful curriculum at every opportunity.

Identify an Instructional Goal

The first step in the systems approach is to identify an instructional goal. The instructional goal may come from a list of goals, from a needs assessment survey of

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[16]Lou Carey and Walter Dick, 1985, *The Systematic Design of Instruction* (Glenview, Illinois: Scott, Foresman and Company), p. 12.

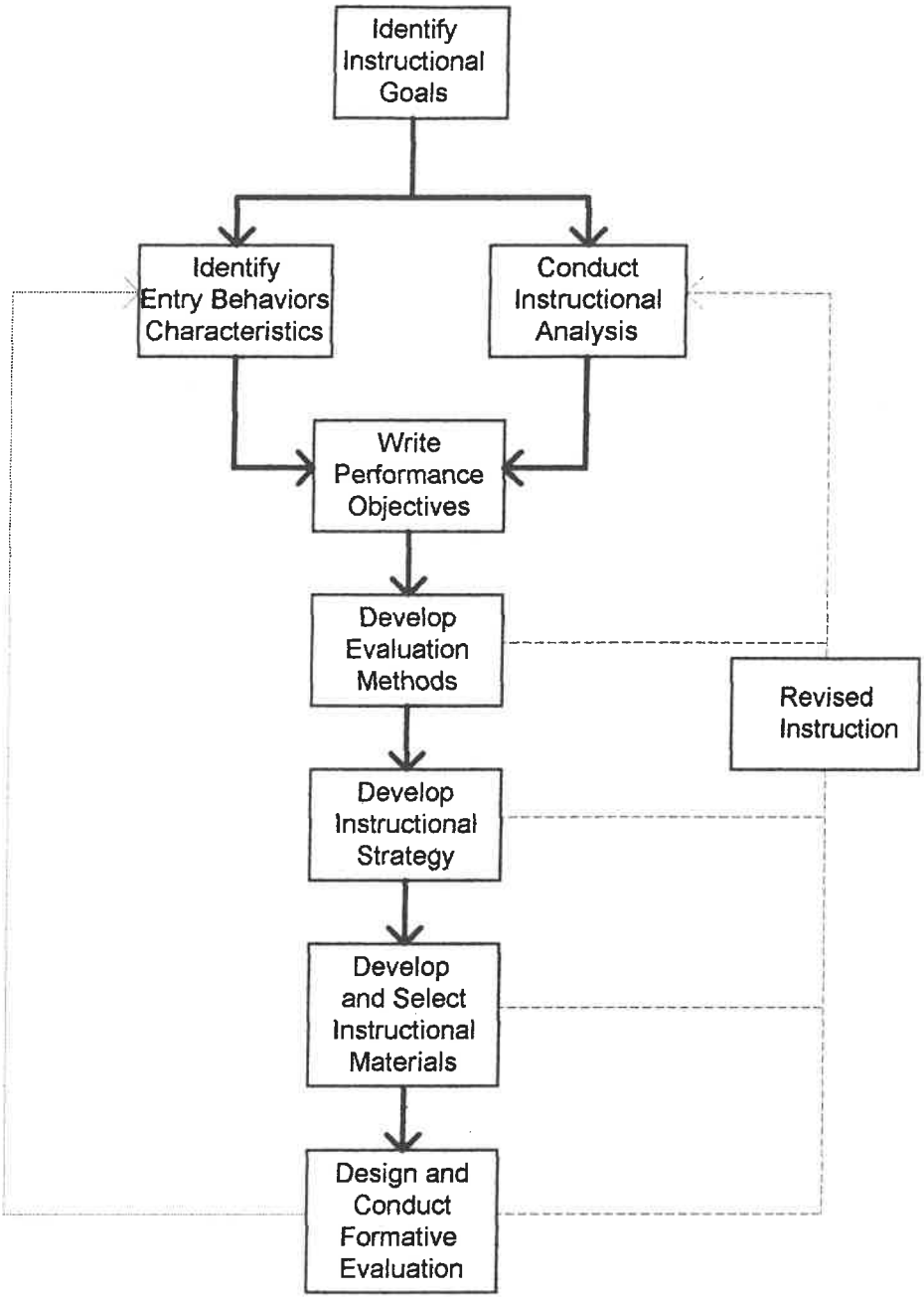

Figure 2

Dick and Cary Systems Approach Mode.[17]

[17]Carey and Dick. p.3.

individuals familiar with the situation, from the practical experience of individuals dealing with the problem, and from the observations of someone currently teaching the target group.[18] The use of the FSA Survey is the primary information source used in curriculum development with some input from educators and program administrators.

After identifying the instructional goal, the instructor must identify the type of learning required by the student. During this procedure, the subordinate skills are determined. Subordinate skills are those underlying skills necessary to provide a foundation for the higher or superordinate skills. The superordinate skills are necessary to facilitate the learning of a higher skill.[19] For example, a basic understanding of the use of a computer and its operating system is a subordinate skill needed for the superordinate skill of training with farm accounting software.

The overall goal for the design for a curriculum of instruction for the family farm population in general, and Farm Service Agency borrowers in particular, is difficult to define due to the broad range of needs and diversity of underlying educational training. Therefore, the goal must be referenced to the needs of the Farm Service Agency borrowers with the assumption their needs and training are characteristic of the entire population of family farmers. As Dale Amunson, Adult Education Coordinator, Hawkeye Community College, suggests, the problems the borrowers from the FSA have are symptomatic of the same problems facing many farm families. For this reason, the curriculum may be used for management training of a large group of family farmers.[20]

Establishing the educational goal follows the format of asking "what is" the problem to be solved?[21] The problem, as defined Alan Lash, relates to the challenges in agriculture posed by corporate interests to the family farmer and traditional agriculture.

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[18]Carey and Dick. p. 18.
[19]Carey and Dick. p. 16.
[20]Amunson.
[21]Carey and Dick, p. 16.

Corporate and large-scale operators' challenge stems from the corporation's financial strength, intellectual capital, contacts, access to markets, and marketing skills, as well as overall management skills.

Answering the "what should be" question is broad and can not be solved on one set of instructional components. Many agriculture leaders suggest family farmers need to band together in production groups and marketing groups to provide products demanded by consumers. Other varied and broad solutions have been suggested by farm organizations, politicians, and agriculture leaders.[22]

However, the goal of this instructional curriculum will focus on attaining a range of management skills to better equip the adult learner to compete in the dynamics of contemporary agriculture. The various instructional components of this curriculum require individual goals. The survey, as well as discussions with educators and advisors to this student population, will form the basis for establishing goals. The next phase of goal-setting is establishing instructional goals for each unit in the curriculum.

Accounting and Record Keeping Instructional Goals

The first component of the curriculum is basic accounting and record keeping. Respondents to the survey indicated that the borrowers' ability to produce a accurate Schedule F (Internal Revenue Service farm income form) varies. The survey shows that 2 out of 39 loan officer believe that from 0% - 20% of the borrowers are capable of completing a Schedule F; 4 loan officers believe that 21% to 40% are capable; 21 loan officers believe that 40% to 60% are capable; 4 loan officers believe that 60% to 80% are capable; and 4 believe that 80% to 100% are capable of completing a Schedule F. The primary goal of record keeping is to provide the student with basic bookkeeping

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[22]Lash.

instruction to produce the information necessary to complete the Internal Revenue Service requirements.

A second instructional goal involving the bookkeeping and accounting component is to create a desire within the student to convert from a manual system to an electronic bookkeeping system. Computerized bookkeeping systems and the required computers have become affordable, providing the user with an accurate, efficient, and convenient method of bookkeeping. A third goal is to provide the student with enough accounting knowledge to complete an income statement, balance sheet, and cash flow statement. This information will provide the subordinate elements used in financial analysis component of the instruction.

Further discussion with educators reinforces the need for basic accounting and record keeping. The educators expressed a concern that most accounting books are too complex and do not focus on the educational background and experiences of the target student. A component of the accounting and bookkeeping goal is to produce materials specifically targeted at the FSA borrower that will not only provide the learner with a broad based understanding of bookkeeping and accounting, but will provide a basis to begin using accounting as a management tool.

Financial Ratios Instructional Goals

Financial ratios are management tools available to family farmers, bankers, and financial advisors. When the loan officers involved in the survey were asked if borrowers understood the concept of debt to asset ratio, 36 of the loan officers suggested borrowers do not understand these concepts. Paula Volesky of the FSA believes financial ratios may be too complex to be included in the instruction.[23] Alan Lash and agriculture-banker Thomas Volding emphasize the need for a basic understanding of

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[23]Volesky.

equity, solvency, profitability, and liquidity ratios.[24] Most agriculture educators consider the most easily understood and needed financial ratio is the equity ratio. According to Lash, the agriculture-lending industry in the ill-fated 1970s and 1980s was characterized by the overemphasis on equity ratios and the lack of financial ratio understanding by the farm borrowers. This resulted in Alan Lash's comment that "Farmers sold their farms in the 1970s but did not realize it until the 1980s."[25] The overall goal for financial ratios or financial analysis should be to familiarize the student with the management implications of financial ratios. A secondary goal is to provide the student with the fluency and understanding to converse with bankers and advisors when the student's ratios are being reviewed to secure favorable banking terms.

Decision-Making Instructional Goals

According to the survey, all lending officers either agreed or strongly agreed their clients must be trained in decision-making in that few are currently using decision-making techniques. The goal implication is to familiarize the borrowers with basic decision-making techniques. Closely related to decision-making is goal-setting. Loan officers advise most borrowers need assistance in goal-setting. Furthermore, they suggest an instructional goal would be to demonstrate the need and facilitate the activity of communicating goals to the lender as well as family members.

Commodity Marketing Instructional Goals

Thirty-one of the loan officers agree that the borrowers do not understand commodity markets. Therefore, the final instructional goal is to familiarize the student with commodity markets. Any instructional goal will be governed by the borrower's familiarity with commodity markets. Due to the limited number of contact hours available, the instructional goal is limited to familiarizing the student with the concept of

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[24]Thomas Volding, Loan Officer, Magna Bank, January 1997, personal conversation, Waterloo, Iowa.
[25]Lash.

commodity futures and options. A secondary goal is to inform the students of various risk management strategies available through the commodity market and to remove the common perception of the commodity market as a forum for gambling in commodity futures. Phil Hufferd, with the Iowa State Extension Agency, suggests broadening the instructional goal to include various risk management tools available to the family farmer.[26]

Accomplishing the Instructional Goals

The Farm Service Agency statutorily requires its borrower to attend 33 contact hours of management training to accomplish the goals identified by the survey. Based on the FSA Survey, Table 1 was constructed to allocate the contact hours in accordance with the instructional goals.

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[26]Hufferd.

Subject	Instructional Goal	Dedicated Hours
Accounting and Bookkeeping	Computer Operation and PC Mars Program	5 hours
	Basic Bookkeeping Concepts	4 hours
	Income, cash flow, and balance sheet	4 hours
Financial Ratio Instruction	Management uses	3 hours
	Communication	2 hours
Decision Making and Goal Setting	Decision-making techniques	2 hours
	Demonstrate need	2 hours
	Communicate decisions	2 hours
	Goal-setting	3 hours
Commodity Marketing	Basic terms, tools, and concepts	3 hours
	Risk Management Strategies	3 hours

Table 1

Allocation of Instructional Contact Hours

Identifying Entry Behaviors and Characteristics

Identifying entry behaviors and characteristics focuses on the skills students must have before they begin instruction. In order to have effective instruction experience, or any type of instructional experience, there must be a match between students and materials. One of the most costly mismatches between students and materials occurred in the late 1950s and 1960s in the United States when a large number of curriculum projects were funded to update the content of the instructional materials being used in high schools. The textbooks that resulted from those projects were extremely effective for only the top high school students. Most students found them difficult.[27] This situation exists in obtaining management training material suitable for educating the family farmer.

Identifying characteristics begins with defining the target audience. This target audience is the broadest range of students, such as college students, fifth graders, or adults. A subgroup of the target audience, known as *tryout* students, become the group available to the instructor while the instruction is being developed. The instructional designer must determine the skills that must be mastered by learners from the target population before beginning instruction. Entry behavior focuses on skills required of the learner before instruction may begin. As in the analysis stage of the instructional model, the instructional designer must ask the question, "What does the student need to know in order to learn the skill?" The answer rests in the one or more subordinate skills required to move to the next instructional level. Without establishing subordinate skills and evaluating the students, students will have a difficult, if not impossible, time trying to learn from the instruction. For example, students entering a computer-based agriculture accounting course would find the course difficult without the subordinate skills of basic computer operation.

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[27]Carey and Dick, p. 79.

If testing for subordinate skills is not feasible, the instructional designer may only define the subordinate skills as desired characteristics of the target audience. The loan officers involved in the survey point out a broad range of borrower skills. For this reason, the curriculum designers may only suggest desirable subordinate skills. Where instructional materials about topics of general interest emphasize information objectives, no entry skills, other than simply the ability to read the materials and use appropriate reasoning skills to reach the instructional goal, are required. In this situation, it is legitimate to indicate that, while materials are intended for a certain target population, no specific entry behaviors or skills are required to begin the instruction.[28]

One of the primary goals of the survey was to identify the characteristics of the FSA borrowers. The first section of the survey concludes that roughly 25% of the target group own computers with slightly more borrowers being familiar with the use of computers. Twenty-four of the loan officers estimate that 0 - 20% of the borrowers are not familiar with the use of any form of accounting software, while ten loan officers believe 21 - 40% are familiar with these systems, and the remaining five loan officers say 40 - 60% of the borrowers are familiar with these accounting systems. The educational implication is that few in the instructional group possess the computer and accounting software subordinate skills needed for computerized software training.

The loan officers have widely diverse thoughts on educating the farm borrowers as a homogenous group. Pretesting should be done to exempt borrowers from certain sections of the course content and should also be conducted to customize the educational program to the needs of the borrower.

In the general area of accounting and bookkeeping, the survey's findings conclude a broad range of skills exist in a number of accounting subordinate skills. Most borrowers can account for their assets and liabilities and are familiar with the basic

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[28]Carey and Dick, p. 80-85.

components of the balance sheet. Borrowers need assistance in understanding financial ratios, but loan officers vary widely on the need to compare the borrower's financial ratios with industry standards.

The borrower group needs training on evaluating the record-keeping temperament and ability. The loan officers strongly agree husbands and wives should attend the instruction as a unit. Basic record-keeping habits are also lacking. The survey shows the training priority is as follows: 1) farm enterprise income and expense records, 2) non-farm income and expense records, 3.) whole farm income and expenditure records, 4) debt and credit records, and 5) depreciation records.

Sixty to eighty percent of the borrowers require training in setting financial goals, with fewer borrowers needing training in setting personal goals. Borrowers generally need training in communicating financial and personal goals to their families and lenders. Borrowers require a general understanding of management concepts of opportunity costs, use of cash flow statements, and financial ratio management tools. Decision-making activities should be included in the instruction due to the lack of ability in decision making perceived by the loan officers.

The final assessment of the borrowers' skills is in the area of commodity marketing. The loan officers believe nearly 30% of the allotted training should be used to supplement the marketing skills of the borrowers. However, most loan officers agree that borrowers do not understand commodity markets and many of the borrowers may find the study of commodity markets too overwhelming to be included as part if this limited curriculum.

Conducting the Instructional Analysis

A major component of conducting the instructional analysis is to categorize the goal into the type of skill that must be taught to achieve the goal. According to Carey and Dick, the first skill, psychomotor skill, requires mental and physical activity. Coordination in the operation of the keyboard of a computer falls in this category.

Secondly, intellectual skills that include discrimination, concepts, rules, and problem solving must be determined if the superordinate (desired) learning is to be achieved. With these skills, the learner can determine whether two things are alike or different, can classify according to types and labels, can apply a rule, and can select and apply rules in order to solve problems. Any goal that requires a learner to manipulate symbolic information in some way will be an intellectual skill. Differentiating between the features of a variety of agriculture accounting programs require these skills.

Third, verbal information skills require relatively specific answers to specific questions--no problem solving or rule applying. In other words, the student stores information during instruction and retrieves it for a test. Learning specific jargon in accounting sections or commodity marketing represents these skills.

Fourth, if the goal is to have the learner choose to do something, then that goal should be classified as a attitudinal goal. Attitudes are usually described as the tendency to make particular choices in a particular fashion under a given set of circumstances. An example of attitudinal goals is acceptance by the family farmer to use decision-making techniques before beginning a new venture. One characteristic of attitudinal change is that it will probably not be achieved at the end of the instruction. They likely are long-term changes that are important, but will be difficult to evaluate in the short term.[29]

The survey indicates approximately 25% of the borrowers are familiar with the use of a computer. Basic training in the use of a mouse and keyboard are necessary skills

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[29]Carey and Dick, p. 33-34.

required in the use of a computer. This psychomotor subordinate skill, although desirable, may only slow the limited training available in the curriculum for computerized accounting.

Intellectual skills will have the greatest impact on the instructional training. The ability to cognitively respond to accounting theory, analyze actual farming transactions, and apply the theory to the transactions requires intellectual skills. Students find accounting formulas intellectually challenging in respect to their mutual relationships and their relationship to the financial forms. The subtle difference between accrual accounting and cash accounting may be difficult to comprehend along with the concept of double-entry accounting.

The greatest application of intellectual skills will be in financial analysis. Students are required to analyze relationships between variables on a variety of financial forms and cultivate an understanding as to the significance in the relationship. Ratio analysis is further used to establish comparisons within the industry, comparisons over time, and trend analysis.[30]

The intellectual challenging portions of the curriculum require instructors to have a thorough understanding of androgyny (adult learning) and farming experience in order to relate the difficult components to the scripts commonly held by the target student.[31] Alan Lash concludes that many family farmers do not have the intellectual capital to compete with the intellectual capital available to corporate entities. The educational implications focus on the need to enhance the intellectual skills of the target student.[32]

Alan Lash reports that superfarmers and mega-farmers rely on verbal skills to cultivate relationships in the manner of a professional salesman.[33] Salesmanship is not a

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[30]Hufferd.
[31]Volesky.
[32]Lash.
[33]Ibid.

component of the curriculum; however, the sections on goal-setting and decision-making rely on verbal skills as subordinate skills to reach the learning goals. The ability to effectively recall and utilize techniques in decision-making and goal-setting are related to verbal skills.[34]

As an anonymous author once said, "Education is what is left over after the facts are forgotten." Accepting this as being true, then the most important goal of the instructional curriculum is the expected change in attitude. The traditional attitudes toward farming causing failure must be changed, according to Alan Lash. For example, farmers must develop attitudinal skills toward becoming equity-based decision makers rather than asset and low-cost producer based. Farmers must change attitudes toward computers, allowing conversion to the use of computerized bookkeeping and accounting. The ability to change attitudes may be the key component in the curriculum. Attitudinal changes may not be evident by the conclusion of the training in that attitudinal changes are long-term in nature.[35]

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[34]Hufferd.
[35]Lash.

Performance Objectives

According to Dick and Carey, the best-known component of the instructional design model is the writing of performance objectives, or, as they are commonly called, behavioral objectives. The term, behavioral objectives, became familiar to many educators in the 1960s. Behavioral objectives are precise statements of what students should be able to do when they complete their instruction. Behavioral objectives provide a complete set of instructional materials that are useful, not only to designers, but also to students, instructors, curriculum supervisors, and administrators. If objectives are available for students, they have clear-cut guidelines for what is to be learned and tested during the course. Few students will be lost and more will master the course when they know what they are to be learning.

As previously stated, instructional goals describe what learners will be able to do when they complete the instructional materials. Skills derived through an instructional analysis of the instructional goal are called subordinate skills. When instructional goals are converted to objectives they are called terminal objectives. Performance objectives are derived from the instructional analysis. At least one objective can be written for each skill identified in the instructional analysis. These concepts are beneficial when utilizing the instructional design model.

Caution should be given to attempting to become deeply involved with the semantics of the objective writing. Exact wording should give way to making certain the objectives are found to be useful statements of instructional intent. This objective should be written in a meaningful way and then move on the next step in the instructional process.[36] Performance objectives are summarized in Table 2.

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[36]Carey and Dick, p.97.

Subject	Performance Objective	
Financial Ratio Analysis	Determine needed information	Complete cash flow, net worth, and income statements
	Calculate analysis measures	Interpret the measures
	Record the results	
Decision-Making	Identify the decision making process	Determine detractors to decision making
	Incorporate decision making tools into the process	Access the members reaction to decision making
	Determine methods to strengthen decision making	
Goal-Setting	Access value system	Emphasis the importance
	Identify individual and family goals	Communication and negotiation of goals
	Implement goal plan	
Marketing	Understanding importance	Use marketing as a risk management tool
	Understand technical v. fundamentals	Understand marketing tools
Computer Training	Familiarize students with the operating system	Familiarize students with PC Mars accounting
Bookkeeping	Make student proud of the system	Determine the structural environment
	Determine bookkeeper suitability	

Table 2

Performance Objectives by Subject

Each segment of the instructional training will require individual sets of performance or behavioral objectives. These objectives are subject to the limitations of students and time constraints. For example, the performance objective for computer training will be limited to familiarizing the student with the use of the operating system and allowing each student access to a computer pre-loaded with PCMars accounting software. The objective is not solely to teach the software program, but begin to change the commonly held attitude that computers and computer programs are difficult to master.

The accounting segment goals to differentiate between cash and accrual accounting, and differentiate between single-entry and double-entry accounting, build a foundation for the understanding of balance sheets, income statements, and cash flow statements. Students should able to identify sections of the financial statements, which, in turn, become subordinate skills utilized in the financial ratio segment.

One bookkeeping training objective is to give the student instruction to allow them to determine which family member is best suited to perform the bookkeeping function. Other objectives are to develop a paradigm demonstrating a structural environment conducive to creating a functional set of books and instilling good bookkeeping habits. The overall objective is to change or improve the attitude of the farmer to the point he or she is as proud of a set of books as they would be of any valued asset.

The performance of objective financial ratio analysis section will be to: 1) identify the information required for year-end records; 2) complete the family's cash flow, net worth statement, and income statement; 3) calculate analysis measures from the net worth statement and income statement; 4) interpret these measures with regard to family and farm financial position; and 5) record results for future decision making.

In the decision-making section, the performance objectives are 1) identify the decision-making process; 2) recognize various detractors to decision-making;

3) incorporate a variety of tools and models to facilitate decision-making; 4) access the family farm members reaction to personal involvement in decision-making situations; and 5) become familiar with ways to strengthen individual and group decision-making.

The goal-setting section affects attitudinal changes involving the farm family members. The performance objective is to 1) assess the value systems as they relate to the farm and family; 2) become aware of the importance of goal identification as an essential step of the management process; 3) identify individual and family goals; 4) emphasis the importance of communication skills as a requirement to discuss and negotiate family and farm goals; and 5) develop a plan to implement goals.

The performance objectives in the marketing section are limited by the time constraints of the instruction. The farm family should understand the importance of marketing to the farm operation and become cognizant of the difference between using commodity markets as a risk-management tool, rather than a tool to maximize profits. The farmer will become familiar with the jargon of the commodity industry. The differences between market fundamentals and technical factors that affect commodity prices will be established to allow the farmer to improve their ability to forecast the price of commodities based on market information. Another performance objective is to create a better understanding of the uses of cash sales, forward contracting, hedging, and options. The farmer will learn to compare the marketing tools for price and risk management and will be able to select and use appropriate marketing tools for their own livestock or grain marketing situations.

Develop Evaluation Methods or Criterion-Reference Tests

The next phase of the instructional model is the development of evaluation methods or criterion-reference tests. This type of test is important to test and evaluate students' progress and provide information about the effectiveness of the instruction. The criterion-reference tests indicate to the instructor how well students are able to achieve the instructional objective, which ones worked well, and which need revision. The purpose of placing test development ahead of instructional development is to make certain test items correspond one-on-one with the objectives that have been developed.

Cary and Dick point out that four basic types of tests may be used by the instructor. The entry behavior test is designed to measure skills that have been identified as being critical to beginning instruction. For example, entry behavior tests may include typing skill or computer operation skills, where these skills are prerequisite for more advanced skills The second is a pretest. The pretest is criterion-referenced to the objectives the designer intends to teach and measures the skills needed to achieve success in meeting course objectives. The third and most common test is the posttest. This criterion-referenced test is parallel to, and sometimes identical to, the pretest. Both tests measure the objectives taught in the instructional program. Pretests and posttests often cover the same material; material designed to measure the learning goals of the subject covered. Embedded tests may test a single item that tests a single objective or a number of objectives. These items are included as part of the instructional strategy, and may appear every few pages or at the end of a major section. Embedded tests are given to students following instruction, but before posttesting. They provide a benchmark to determine the effectiveness of the instructional segment and may lead to modification in the instruction according to Carey and Dick. An example of a embedded test is to ask the

student near the close of the class period to write down the most important concept achieved during the session.[37]

Pretests are suggested by the loan officer for screening the borrowers into homogenous groups and placing the students in the learning activities that best fit their needs. Paula Volesky, Training Coordinator for the FSA, suggested segmenting the learners would not be feasible, but agrees that pretest would be a valuable tool to direct the instruction. Each instructional component should have a pretest to access the subordinate skills of each instructional group.[38]

Some of the same questions used in the pretest should be incorporated in the posttest. Posttest must be used for student evaluation, but also as a tool for measuring the effectiveness of the instruction. Philip Hufferd, with the Iowa State University Extension Service, cautions against creating test anxiety for adult learners who may not have been in a classroom environment for twenty to thirty years. The instructional components best suited for pretesting and posttesting include the bookkeeping and accounting section, computer skills, financial management, and the commodity market section.[39]

Embedded tests will be incorporated throughout the instruction. This becomes the primary method for evaluating the comprehension of material by the learners and to determine the effectiveness of the instruction. Class sizes will be kept small to compensate for the range of student skills as revealed by the survey according to Dale Amunson. The small class size will allow for the effective use of embedded questions in that the instructor will have the ability to provide individual instruction when needed by the student.[40]

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[37]Carey and Dick, p. 97-99.
[38]Volesky.
[39]Hufferd.
[40]Amunson.

Instructional Strategy

The instructional strategy describes the general components of a set of instructional materials and procedures that will be used with those materials to obtain particular learning outcomes. Carey and Dick suggest the four major components to an instructional strategy are:

1. Preinstructional activities
2. Information presentation
3. Student participation
4. Testing

Preinstructional activities begin with determining the motivational level of the learners. If the students are highly motivated adults, there may not be a need to address this issue. When motivation is a problem, the instructor may use some special technique such as a cartoon, a human interest story, or some other approach to "hook" them into instruction. Another technique is to show the learner what they will be able to do when they finish the instruction. A third component of preinstructional activity is to inform the student of the preinstructional skill required to complete the instruction.

Information presentation begins by addressing lower-level skills and then advancing to teaching new skills. Instructional strategy next deals with the size of the section of material to be taught. A continuous linear programming-instruction approach breaks information down into small units and requires constant responding by the student. In contrast, the conventional textbook is the other end of the spectrum in which a chapter is usually the unit of information. Instructors may decide whether to present the information on an objective-by-objective basis with intervening activities, or present the information on several objectives prior to any kind of student activity.

Three factors that should be considered when determining the amount of information to be presented are the age level of the learners, the type of learning taking place, and whether the activity can be varied. Adult learners can handle larger sections

of instructions. Regardless of age, the learners tend to remain alert when information is varied with performance and feedback activities.

The next presentation step is to determine what information, concepts, rules, and principles need to be presented to the students. The curriculum designer should avoid presenting too much information that is not directly related to the instructional objective. When defining new relationships, it is important to identify any interrelationships with other concepts. Types and the number of examples must be determined, as well as the types and number of non-examples. A non-example is a deliberate attempt by the instructor to point out why a particular example is wrong.

The feedback function of student participation is the most powerful component in the learning process. Instruction is enhanced by providing the student with activities directly relevant to the objective. Student participation provides the opportunity to practice the instructional objectives. Feedback allows the student to know immediately if his or her response is correct. This technique may also provide reinforcement, which is greatly appreciated by adult learners.[41]

Four types of basic criterion-referenced tests have been described: entry behavior tests, pretests, embedded tests, and posttests. At this point, the testing strategy may be determined, but testing strategies may be better determined by the course instructor. As previously discussed, tests must be developed at an early stage of the instructional development to be certain the testing material coincides with instructional objectives.

Preinstructional Activities

The preinstructional activities involved in the development of the FSA curriculum center on the motivation level of the students. In that the course is mandated by the FSA, the learners are generally apprehensive concerning the rigor and content of the course. A compete syllabus should be prepared to include the instructional objectives, evaluation

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[41]Carey and Dick, p. 135-138.

methods and criteria, and attendance policy. The instructor should be concerned with setting the new students at ease and creating a friendly learning environment. The adult learners will generally be motivated. The survey identifies the instructional needs of the learners and turning those unfulfilled educational needs into educational objectives will serve as motivators for the FSA student.

Information presentation for the FSA borrowers will be done in instructional units. The class periods will be three hours in length, which should be acceptable to the adult learners. From time to time, the instructor may alter the instruction when the student's attention wanes. When motivation is lowered, the instructor should relate a human interest story to focus attention back to the instruction.

When intellectual material is being presented, the instructor begins with low-level skill development and proceeds to the instructional objective. For example, when cash flow is presented, the instructor should produce a simplistic cash flow example. The instructor should begin with a simple cash flow example and then provide guidance through a more difficult cash flow analysis. Because this group of adult learners have farm management experience, it would be difficult for them to accept a lengthy set of instructions without sharing their own experience. To allow for mutual sharing of experience, the continuous linear programming-instruction method should be used. Small instructional units should be used to allow the students to share their experiences. Examples shared by the students and the instructor should be used to illustrate theory and apply it to common experiences. Non-examples should be used to create interest and challenge the listening skills of the learners.

Responses to the examples provide a feedback loop to allow the instructor to know if the students are following the instruction. Instructional activities, such as role playing, will allow the student to practice the instructional objectives. This provides the instructor with the opportunity to keep the activity focused on the instructional objectives

by giving immediate feedback as to whether students' responses are correct. Instructors should sincerely praise the adult learner through feedback.

The Farm Service Agency does not require students to pass a standardize test to demonstrate proficiency in the instructional material. It is the option of the instructor to utilize any form of testing.[42] When testing is a component of the instruction, the syllabus informs the students as to the timing and relationship to the evaluation.

Testing should not be the primary determinant in evaluating student performance. Each instructional segment will have a set of worksheets and problems to be completed in a laboratory setting. The instructor will evaluate students' progress and comprehension and allow students to progress to a new set of instructional objectives.

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[42]Amunson.

Develop and Select Instructional Materials

In a typical classroom, the instructor performs many functions of the instructional strategy. The instructor is the motivator, the information presenter, the leader of practice activities, and the tester. The instructor must move the whole class forward or retain the whole class at a particular point until sufficient understanding has been accomplished by all members of the group.

To assist the instructor in maintaining an even flow of information on an individualized instructional basis, the curriculum designer must rely on instructional materials. This does not remove the instructor from the instructional setting in that the instructor is still counselor, motivator, evaluator, and decision maker.

Authors Carey and Dick recommend the first instructional material package should be totally self-instructional. The material should allow the student to meet the instructional objectives without intervention by the instructor or fellow students. When instructors design and develop individualized materials used independently by students, the role of the instructor is passive. The duty of the instructor is to monitor and guide the progress of students through the material, with the student proceeding at their own pace and the instructor providing additional help for students.[43]

Twelve of the 39 survey respondents agreed that the course should be a home study course, while 27 of the 39 disagreed, or strongly disagreed, with using a home study course as the instructional method. In view of these findings, the instructional designer for the curriculum developed for the Farm Service Agency may consider three combinations of instruction involving the instructor and instructional material. First, the instructor designs instructional materials with the materials presenting the preinstructional activities and information. Student participation utilizes only instructional material, with the instructor performing the testing with prepared tests. In

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[43]Carey and Dick, p. 165.

this situation, the instruction may be from only video tapes. The second mode involves the instructor in conjunction with the material performing the same instructional activities. This method is commonly found in most instruction. Finally, the instructor uses no material, but delivers instruction to suit the instructional strategy by conducting the preinstructional activities, information presentation, student participation, pretests/posttests, and motivation.

The next step in the development of the instructional strategy is to determine if instructional materials exist that fit the instructional objectives. In some instances, materials will directly relate to the instructional objectives or a portion of the objectives. Producing instructional material is costly and every attempt should be made to examine available materials to fulfill the instructional objectives.[44]

Materials can be evaluated to determine whether 1) adequate motivational materials exist, 2) the appropriate content is included, 3) the sequence is acceptable, 4) the required information is available, 5) practice exercises exist, 6) appropriate tests are available, and 7) adequate learner guidance is provided to move students from one event or activity to the next. The instructional strategy should be used to evaluate each instructional segment contained in the materials. When instructional materials lack one or more of the instructional activities, such as motivation, they can be adapted so the missing component can be made available to the student[45].

Appendix D contains the tables designed to fulfill the instructional goals of the FSA borrower. Educators involved with training the FSA students have identified a need for materials focusing on the educational needs of this group. The materials present the information in language familiar to family farmers and use examples and illustrations typically found in agriculture. The materials provide the student and instructor with

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[44]Carey and Dick, p. 167.
[45]Carey and Dick, Table 9.1, p. 167.

appropriate content and with the required information presented in an acceptable sequence.

Designing and Conducting Formative Evaluations

Traditionally educators and students suffered from the lack of quality instructional materials, often the initial draft of all types of instructional materials produced twenty years ago would have been put in production and distributed to the target population without revision. Because of this, instructors have been blamed on poor teaching and the student for poor learning when the materials were not sufficient to support the instructional effort. The problem with untested materials dates to the 1960s when large curriculum projects were undertaken. New materials were satisfactory if they showed an improvement over the old. When new studies were conducted, they revealed a relatively low level of student achievement with the new curriculum materials. Because the new instructional materials were not improving test scores, researchers concluded new evaluations methods needed to be developed.

Formative evaluation became the new method for evaluating curriculum materials. The process of formative evaluation consists of collecting data and information during the development of instructional products that can be used to improve the effectiveness and efficiency of the instruction. In the formative evaluation process, the instructor will learn to design materials, select and adapt materials, and evaluate instructor-delivered instruction.[46]

Instructors seldom have the time or resources to effectively evaluate instructional material. Because of these limitations, the instructor should evaluate the materials through a field trial. The primary purpose of the formative evaluation is to determine whether they are effective with a target group of learners, and identify ways in which additions to and or deletions from the materials or changes in instructional procedures might be made to improve the effectiveness of the materials.

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[46]Carey and Dick, p.197.

During the field trial, an analysis should be made of existing documentation on the development of the materials, the effectiveness of the materials, and any description of how the materials are to be used during the field evaluations. Any pretests or posttests should be examined to determine the relationship to the performance objectives and whether any additional evaluations or attitude questionnaires are needed.

As with the evaluation of instructional material, if the instructor plans to deliver the instruction in accordance with an instructional strategy and a set of lecture notes, a similar evaluation needs to be conducted That is, determining whether the instruction is effective and how to improve it further. In preparing to evaluate instructor-presented instruction, the instructor should be concerned with the entry behaviors, the pretest knowledge, the posttest knowledge, and the attitudes of learners. In addition, the instructor is in the position to provide interactive practice and feedback. Interactive feedback will provide the student with the opportunity to demonstrate acquired skills and skills they have not acquired. The form of the feedback may be delivered orally, with the instructor keeping notes on the student's demonstrated skills, or by periodic printed practice and feedback exercises during the lesson. Observations of the instructional process should indicate the effectiveness of the grouping patterns, time allocations, and learner interest in various class activities. These techniques should be used to collect and analyze data in order to find weak points in the lesson plan, and to find clues to their correction; in-progress data can be compared to results obtained with the pretest and students' comments during debriefing sessions.[47]

The type of data needed to make a proper evaluation include:

1.) Test data collected on entry behaviors, pretests, posttests, and embedded tests.

2.) Comments or notes made by learners to the instructor.

3.) Data collected on formal student evaluations.

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[47]Carey and Dick, p. 204.

4.) The time required for learners to complete various components of the instruction.[48]

The instructional development designer has many areas of concern when evaluating instructional material. One concern is to ensure that any technical equipment is working properly. Making sure the setting is quiet and the instructor has students' full attention are other concerns, even though it is likely that the material may actually be presented in a noisy environment.

The evaluation must be conducted with students that are representative of the target audience. Pretesting and behavioral testing should be conducted to determine the entry-level skills of the test group. Students that may have mastered the material prior to the instructions should be considered "sophisticates," who can infer how other students, who do not know the content, will respond to the instruction.

Students who do not meet the entry-level behavior or skill should be included in the evaluation. If the low-level students struggle through the instruction with little success, while those with entry level are successful, it suggests that the prerequisite skills have been identified. However, if the students without the prerequisite skills succeed in the instruction, the instructional designer must reconsider the identified entry behavior and skills.

The designer should be aware that other student characteristics, such as attitude and previous experience, may affect the instructional material evaluation. In selecting students for the formative evaluation, the instructional designer may want to choose students with positive, negative, and neutral attitudes. If job experience is critical, the designer should pick students with various experience levels. The point is that ability may not be the critical factor in selecting learners for formative evaluation. The instructor will have to make the decision for each instructional design situation.[49]

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[48]Carey and Dick, p.205.
[49]Carey and Dick, p. 206-207.

The agriculture-based instructional materials currently available should be subject to a formative evaluation. Because it is not economically feasible to do a formative evaluation with a specially selected representative group, the formative evaluation will be done with actual students.

Documentation on the instructional material prepared by the author is to be completed and substantiated by the author. Documentation on outside material will be done on an individual basis by the instructor. The formative evaluation process will identify ways in which the material may be modified for improved effectiveness.

Critical to the evaluation process is the behavioral tests and pretesting segments. Material that is not delivered by the student must be formally evaluated through a series of behavioral tests, pretests, posttests, and embedded tests to determine the effectiveness of the instructional materials. The instructional designer or instructor should request study notes or informal comments from the students, as well as collect formal student evaluations. Care should be given to determine the amount of time the students require to complete the instruction.

When the material is presented by the instructor or instructional designer, the formative evaluation will include interactive practice and feedback. The FSA instruction may be conducted, in part, in a laboratory environment with the students completing worksheets, experience-related problem solving, role playing, and completion of record-keeping books, and computer programs. By limiting the number of members in the class, the instructor will be able to make observations and notations to assist in modifying the instructional material. This interactive feedback will allow the students to demonstrate which skills they have acquired or not acquired. The instructor can evaluate time requirements, optimum sequence of material presentation, and the interest level in the subject matter. The resulting data collection will allow the instructional designer to identify weak points in the material and follow up with improvements and further evaluation.

Revising Instructional Materials

Any instructional design model will place the major emphasis on the concept of formative evaluation; that is, on collecting data to identify problems and to revise instructional materials according to Carey and Dick. Two basic types of revisions for correcting instructional materials are used The first is to change the content or substance of the materials to make them more accurate or more effective as a learning tool. The second involves changing the procedures used in using the materials. Before revisions are possible, the various formative evaluation sources must be summarized and used to identify the portions of the material needing revision. Statistical evaluation are seldom used because simple descriptive summaries of data are sufficient. Generally, data is interpreted in the most reasonable way possible and then changes are made as indicated by the data and the instructional designers or instructor's knowledge of the learning process.[50]

One method of data collection is one-on-one trials. With one-on-one trials, the designer has little data because information is available from three to five students. Because the students were selected for their diversity by the designer, the information they provide will be distinct, rather than be blended in some type of group average. The designer must look at the similarities and differences among the responses of the students and determine the best changes to be made in the instruction.[51]

The first step is to identify the types of students who participated in the one-on-one evaluation. The next step is to gather various test information related to each student. The information available includes: student characteristics and entry behaviors, direct response to instruction and embedded tests, posttest and pretest results, and possibly an attitude questionnaire. The data collection process can be accomplished by integrating the comments and suggestions concerning the instruction on a master copy of

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[50]Carey and Dick, p. 223.
[51]Carey and Dick, p. 224

the instruction and using a color code to indicate which students had which problems and indicate student performance on embedded test items. In the same manner, material gathered from the posttest should be color coded, based on which students had particular problems, along with any comment for each learning objective. With this information, the designer is ready to revise the instruction. Often, obvious revisions have been made prior to the one-on-one evaluation.

The next revisions to be made relate directly to poor performance and those with the most comments. The instructional designer should determine if, based on performance of the test items, the test items are faulty. When changes are made, they should be consistent with the instructional objectives and the intent of the instruction. Three sources of suggestion for change exist: learner suggestions, learner performance, and the designer's intuition. Learners can make suggestions for change, but the instructor should examine the mistakes made by the learner in order to identify any misunderstanding.[52]

If systematic design procedures are used, instructional objectives relayed to the students, examples given, and skills practiced with feedback then the major components of instruction have been achieved. The usual revisions at this stage are clarification of ideas and the addition or deletion of practice activities. There will be some times when improvement is not obvious. In this situation, it is best to leave the instruction component intact and review the material in small group field trials.

Small group evaluation involves data from 8 - 20 students in a summary form. This data is of greater collective interest than individual data and can show what problems and reactions this representative group has. This data includes entry-behavior test, pretest, embedded items, and posttest, as well as responses from attitude questionnaire, learning time, and comments made directly in the materials.

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[52]Carey and Dick, p. 225.

After the tests have been collected, the tests must be corrected and each individual item recorded separately. Individual items must be recorded for three reasons:

1) To determine if problems exist with the test item or whether it is effectively measuring the performance.

2) To determine the nature of the difficulties students are having with the instruction.

3) Individual item data can be collected to indicate learner performance on an objective and the entire test.

Before making an analysis of the data, the instructional designers must determine if the test items are accurately measuring student performance. An analysis of the test items is required to show the percentage of learners who got test items right. The function of this data is to determine if the test items provide a consistent and accurate portrayal of student performance. Consistent performance in test items allows the instructional designer to make valid decisions about what changes should be made in the instruction. Inconsistencies in these results may indicate failure in the test items resulting in limited generalizations about the instruction.

Analysis of the small group data begins with producing a table that clusters test results by the objectives they measure and the difficulty learners had with them. The basic purpose for this analysis is to determine whether learners' performance on each item within an objective is related either to their knowledge and skill of the objective or to problems that occurred in the question construction, student interpretation, or item scoring.

A more detailed analysis can be obtained by displaying the performance of each individual learner for each objective. A chart is devised for the pretest and another for the posttest. Typically, a dot in the box for a particular objective and a particular learner indicates that the learner was successful in meeting the instructional objective. Such a

chart indicates the pattern of responses and can be summarized to show the total score for each learner and the percentage of learners achieving each objective.

Embedded tests items are helpful for pinpointing areas in which learners have problems with instructional materials. Another source of data is from comments from learners and instructors involved in the formative evaluation and subject-matter experts who react to the material. It is best to relate to each of the objectives in the material to which they refer. These comments can be written directly on the copy of the materials. As material is gathered, the designer will develop an overall picture of the effectiveness of the material.[53]

When newly developed instructional material is used in instruction, the first step in revision involves obtaining any recommendations from instructors and subject-matter experts prior to production of the materials. Obvious corrections should be made by the instructional designer prior to expert review.

Following this review, the material would be presented to a small group of diverse students. The group would include experienced farmers and less-experienced farmers, as well as farmers with varying management educational experience. As part of the instructional process, the instructional designer would assemble their comments and various test scores on a master copy of the instruction and color code the master copy to indicate which students had problems with the embedded tests. Posttest results should be included in the same manner. This information will provide the instructional designer with enough information to begin revising the material.

Examining areas of consistently poor performance on tests may reveal poor question construction requiring correction. Instructional designer or instructor intuition is also of value in making revisions.

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[53]Carey and Dick, p. 225-226.

The revision process continues with data obtained from a actual class consisting of 12-16 students. This data is collective in nature and will reveal the comments from group members and scores from pretests, posttests, and attitude questionnaires. The time required to effectively cover the material will also be included. The designer has the option to assemble the data in chart form as a display of performance. The analysis of the data will allow the instructional designer the opportunity to complete the revision.[54]

Examples of the Use of Instructional Strategies and Instructional Materials

Accounting and Bookkeeping Instructional Segment

The author's preinstructional strategy involves discussing the current bookkeeping activities of the students. This discussion often leads to students expressing frustration and dissatisfaction with current systems. The instructor, equipped with a computer and farm accounting software, demonstrates on the computer farm transactions solicited from the students. The ease with which the software completes the transactions will stimulate the interest of the students. The instructor now makes the transition to the accounting segment by advising the students of the need to understand fundamental accounting procedure as a subordinate skill to operating a computerized software program. The instructor is now ready to present the instructional segment and accounting instructional materials.

The following is an excerpt of the instructional material prepared by the author for the target students:

Income Statement

In addition to the balance sheet with its balance sheet formula "assets = liability + equity" accounting deals with the income statement and the income statement formula

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[54]Carey and Dick, p. 225.

that reads "income - minus expenses = equals profit or (loss)." Resulting profit or loss results from the income statement enter the balance sheet accounting formula through the equity section. The net-income or the net-loss over a period as revealed by the income statement results in an increase or decrease in the equity section of the balance sheet. In order to collect data that is needed to prepare the income statement, accounts are maintained in T accounts for each type of income or expense.

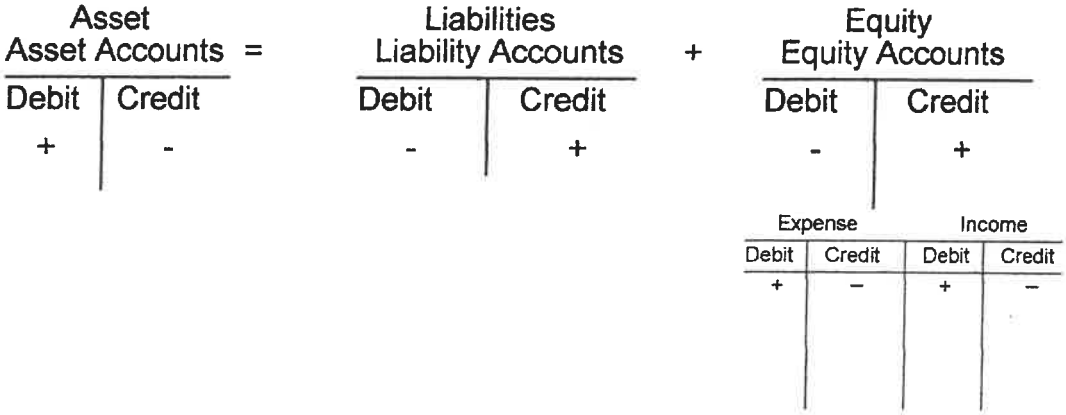
Income increases equity; therefore, increases in income are recorded as credits. The titles used for income accounts vary according to the source of the income. Income from the sale of a crop or business service is usually recorded under "sales"; income from services are recorded as "professional fees" or "commissions earned." From sales or service income, all expenses must be subtracted. Expenses decrease equity and are recorded as debits to such accounts as rent expense and fertilizer expense.

In double-entry accounting the income and expense are subject to setting up T accounts for each. These T accounts are directly related to the equity section of the balance sheet. An increase in income results in a credit, or increase, in equity and similarly an increase in expense results in a debit, or decrease, to equity.

The following model illustrates the relationship of expense and income to double-entry accounting:

Expense		Income	
Debit	Credit	Debit	Credit
+	–	+	–

The following model illustrates the incorporation of the income statement into the balance sheet model:



This model demonstrates the relationship of the income statement formula "Income - Expenses = Profit (or Loss)" with the balance sheet formula "Assets = Liabilities + Net Worth" by directly crediting or debiting the appropriate expense or income T account and carrying that amount forward to the debit side (for expenses) or the credit side (for income) to appropriately affect the net worth.

Illustration: A farmer selling a load of corn for $3,000.00 and depositing the check in his cash checking account would increase his income on his income statement and simultaneously increase his net worth. To reflect this transaction through a double-entry cash bookkeeping system, the appropriate T accounts must be identified with consideration given to identifying the debit portion and the credit portion. The cash asset T account is used to reflect the increase of $3,000.00 in the checking account. By reviewing the balance sheet/income statement model, an increase in an asset is shown as a debit to assets. Once the debit (to cash) has been identified, consideration is given to identifying the offsetting credit. In this case the credit goes to income and is simultaneously carried into the credit side of the net worth (equity) T account to raise the farmer's net worth (equity) by $3,000.00.

The T account activity is shown below:

Asset Asset Accounts	
Debit	Credit
+ $3000	-

=

Liabilities Liability Accounts	
Debit	Credit
-	+

+

Equity Equity Accounts	
Debit	Credit
-	+ $3000

Expense		Income	
Debit	Credit	Debit	Credit
+	–	-	+ $3000

Following the presentation material, the instructor should use embedded questions to evaluate the progress of the students prior to posttesting. One embedded testing technique is to assign typical farm accounting transactions to small groups of students and asking the students to demonstrate the transaction in front of the class. The instructor acts as a facilitator, allowing the class members to critique the presenting group. Upon demonstrating satisfactory proficiency as a group, the posttesting of individual students may begin.

The first posttesting should be conducted early in the accounting instructional phase to assure that all students are competent in accounting fundamentals before proceeding. If the posttesting is satisfactory, the instructor may continue with the presentation of additional material. If the students do not demonstrate proficiency, the instructor may revise the instructional strategy or instructional materials. Individual students may require additional instruction if the student fails the posttests.

Instructors involved in producing instructional materials should make notations on the instructional materials where the changes are apparent. Small group evaluation

should be used to supplement the instructor's critique of the instructional materials. Revisions in other segments of the FSA curriculum may be made in a like fashion.

Commodity Marketing

The author believes commodity marketing is as frustrating as accounting to the FSA borrowers. For this reason, it is necessary that preinstructional activity involve the students in a discussion about the commodity market. The instructor may offer an interesting history of the origin and growth of the commodity market to begin the information presentation. Presenting case histories involving typical commodity marketing situations is an effective technique available to demonstrate the use of various commodity tools. The following excerpt from the Commodity Marketing instructional materials was prepared by the author for the FSA students:

Futures market participants fall into two general categories: hedgers and speculators. Futures markets exists primarily for hedging, defined as the management of price risk inherent in the ownership of commodities. The word hedge means protection by taking a counter-balancing investment. In futures trading, a hedge is a counter-balancing investment involving a position in the futures market that is opposite one's position in the cash market. If a price change results in a gain on an open position, the amount of gain will be deposited in the customer's margin account. A customer may make withdrawals from his margin account at any time, provided the withdrawals do not reduce the account balance below the required minimum. Once an open position has been closed by an offsetting trade, any money in the margin account not needed to cover losses or provide margin for other open positions may be withdrawn by the customer.

Hedgers include: farmers who need protection against declining prices for crops still in the field or in storage, or against rising prices of purchased inputs such as feed; country elevator operators who need protection against lower prices between the time they purchase or contract to purchase grain from farmers and the time it is sold;

processors who need protection against increasing raw material costs or against decreasing inventory values; exporters who need protection against higher prices involving contracts for future delivery, but not yet purchased; and importers who want to take advantage of lower prices for grain contracted for future delivery, but not yet received.

Since the number of individuals and firms seeking protection against declining prices at a given time is rarely the same as the number seeking protection against rising prices, other market participants are needed. These participants are known as speculators. Speculators provide cash or commodity liquidity by their willingness to enter or exit the market quickly and easily. These highly leveraged speculators gain a profit if they correctly anticipate the direction and timing of price changes. These speculators are willing to buy or sell on even the smallest price changes. Because of this, a seller can, at almost any time, find a buyer at or near the most recently quoted price. Similarly, buyers can find willing sellers without having to significantly bid up the price.

Hedging and Basis

Hedging is based on the principle that cash market prices and futures market prices tend to move up and down together. Hedging gives the farmer the ability to take a position in the futures market that will reduce the risk in the cash market.

For example, suppose it is May and a soybean farmer in Iowa has a crop in the field; in market terminology, the farmer has *a long cash market position.* If the cash market price goes up in November, the farmer will gain; if the cash market price goes down, the farmer will lose. Assume the current May cash price for soybeans is $7.00 and the November futures price is $7.00. To protect against lower prices, the farmer will establish a hedge by selling the corresponding number of bushels he expects to produce in the futures market for $7.00 and buy them back in the market when it is time to sell his crop in the cash market. Because the cash and futures market follow each other, if the

cash price declines by harvest, any loss incurred will be offset by a gain from the hedge in the futures market.

Selling now in the futures market with the intention of buying back at a later date gives the farmer *a short futures market position.* The farmer is now *long in the cash market* and has taken an opposing *short in the futures market position.* If the cash grain market in November remains at $7.00 and the November futures market follows and remains at $7.00, the farmer simply buys $7.00 beans in the futures market in November to cancel his position without a gain or loss. At the same time, the farmer sells his harvested crop in the cash market for $7.00, achieving his pricing objective of $7.00 per bushel.

Now suppose the November futures and cash market price follow each other to $6.00. In this case the farmer sells his harvested crop in the cash market for $6.00 missing his target price by $1.00. However, the November futures market is now $6.00 allowing the farmer to fill the sales agreement he made in May to "sell X number of bushels of beans to the futures market for $7.00 in November" by buying $6.00 beans from the futures market to fill the sales agreement providing a $1.00 gain in this market. This gain in the futures market offsets the $1.00 loss in the cash market allowing the farmer to reach his target price of $7.00. If the futures market and cash market both increase by $1.00 the farmer will sell his soybeans for $1.00 per bushel more in the cash market, but will be required to purchase soybeans costing $1.00 more in the futures market to fill his sales agreement thereby canceling his *short futures market position.* In a situation of rising prices, his target price of $7.00 is also achieved. This soybean farmer executed a short market hedge.

Through the information presentation phase, the instructor may use embedded questions to evaluate the progress of the class. The question are in the form of worksheets with commodity problems to be completed individually or in small groups. The instructor should move among the groups to assist in the learning activity. The use of a crossword puzzle provides the students with a learning tool for the students to become familiar with commodity marketing terms. A posttest covering the concepts should be administrated to evaluate the progress of the students.

The posttest results may be used to create a graphical cluster of the students' scores in relationship to the posttest areas. The author acknowledges that some FSA students, those with extensive commodity marketing experience, may be classified as "sophisticates" who may share commodity marketing experiences with the class members. These "sophisticates" are a source of feedback on the instructional strategy and the instructional materials. This feedback, in conjunction with the graphical cluster and notations made by the instructor, will provide sources for revisions in the instructional materials.

Conclusion

The findings of this author lead to the conclusion that the traditional family farm is being replaced with corporate and corporate-style farming. The trend toward corporate farming will not be reversed; the solution will be found in management training for family farmers. These findings are supported by author's the survey of the loan officers from the USDA's Farm Service Agency who are responsible for the Department of Agriculture loans to at-risk farmers.

The focus of the survey identified the educational needs of the borrowers and the results were used to develop a quality curriculum for learners targeted for training. The author's survey concluded the FSA borrowers required broad agriculture-based management training. The training should include basic accounting and bookkeeping, exposure to farm accounting software, plus decision-making techniques, goal setting, and commodity marketing segments. Once the subject areas were identified, a curriculum model was selected as a guide for building the curriculum.

The author selected the textbook *The Systematic Design of Instruction* by Walter Dick and Lou Carey as the education model and used the survey and expert opinion to provide guidance for the content. The author's conversations with bankers and educators concluded the overall educational goal was to provide the students with management training to prevent them from making management mistakes which would put them out of business. Educators believed a curriculum developed specifically for the FSA borrowers could also be used for the educational needs of the general farm-family population of learners.

The author determined through the use of the Dick and Carey test that each subject area required individual instructional goals. The survey was used to identify the entry behavior of the students. The varied levels of management ability among the borrowers revealed that a broad-based curriculum was needed because pretesting and modifying the curriculum to individual borrower needs would be impractical. The author

found that performance objectives should be written for each educational segment. In the Farm Service Agency curriculum, performance-objectives were centered on management techniques which incorporated farm applications. It was concluded that student evaluation and test material should be produced at the outset of curriculum development and should follow requirements of the survey. The survey and educational experts advised instructional materials available commercially did not fit the needs of the target students and the ideal educational curriculum will require the production of educational materials. The instructional materials should be created with reduced management and accounting jargon, but with examples suited to farmers with little management training. Such material would be a valuable asset to the traditional family farmer.

Glossary

Accrual Accounting - A method of accounting in which income and expenses are recognized for the time period in which they are earned and incurred rather than when cash is received or paid out.

Androgyny - The study of adult learning.

Asset- What you own.

Attitudinal Goals - When the learning goal is to have the learner choose to do something specific.

Behavioral Objectives - Precise statements of what students should be able to do when they complete their instruction.

Cash Accounting - A method of accounting in which income and expenses are recognized in the period in which cash is received or paid out.

Cash Flow Statements - A financial document which relates expected income to expected expenses.

Credit - A value entered on the right side of the ledger; entered as a negative number. A credit decreases an asset or expense account and increases a liability, capital, or income account.

Curriculum - All the courses of study offered by a educational institution.

Debit - A value entered on the left side of the ledger; entered as a positive number. A debit increases an asset or expense account and decreases a liability, capital, or income account.

Double-entry Accounting - An accounting system in which financial information is entered twice, once as a credit and once as a debit. When debits and credits are equal, the accounts are balanced and assumed accurate.

Embedded Tests - Questions ask throughout the instruction to determine the comprehension of the material. Mega-**farm** - Agricultural farms with a annual gross revenue of $5,000,000.00.

Financial Ratios - The comparison of two known values from a financial document with the purpose of making standardized comparisons.

Futures Contract - A contract traded on a futures exchange for delivery of a specified commodity at a future time.

Hedgers - The buying or selling of offsetting positions in order to provide protection against an adverse change in price.

Income Statement - A financial statement that reports the relationship between revenue and expenditures.

Intellectual Capital - Knowledge gained through education, training or work experience which translates into productivity.

Intellectual Skills - Learning skills that require discrimination, concepts, rules and problem solving.

Margin - In commodities, an amount of money deposited to ensure performance of an obligation at a future date.

Opportunity Costs - An alternative use of capital or assets.

Postest - Tests given following instruction.

Pretest - Tests given prior to instruction.

Psychomotor Skills - Learning skills that require a combination of mental and physical activity.

Single-entry Accounting - A method of bookkeeping in which financial transactions are recorded only once.

Subordinate Skills - Underlying skills necessary to facilitate the learning of a higher skill. Sophisticates - Students who may have mastered the material prior to the instruction.

Sundowners - Farmers who are retired or recreational farmers not dependent on farming as for their primary income.

Superfarmer - Agricultural farms with a annual gross revenue of between $3,000.000 and $5,000,000; traditional farmers who are rapidly expanding.

Tryout Students - A subgroup of students from the target audience used to evaluate instruction.

Verbal Skills - Learning skills that require specific answers to specific questions without problem solving of rule application.

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APPENDIX A

Survey Design Criteria

The survey was designed in accordance with *Survey questions: Handcrafting the Standardized Questionnaire* by Jean Converse and Stanley Presser. According to Converse and Presser, attention should be given to specific areas of the questionnaire in the form of a pretest. The criteria used for the pretest is as follows:

1.) Meaning: Care should be made to insure that the meaning intended by the interviewer is shared by the respondent. This is the most important pretest area.

2.) Task Difficulty: A question can be hard to answer even though the meaning is entirely clear if the respondent has not previously packaged the information in the way the question demands. Example: "How many pounds of coffee have you consumed this past year?" may be an answerable question for some methodical shoppers, but most shoppers do not total up their consumption of coffee by the year, or even by the pound, and their estimate in these terms would probably be quite unreliable.

3.) Respondent interest and attention: Investigators are prone to forgetting that not everyone shares the same fervent interest in the subject. Research into fatigue or boredom effect in surveys is rare and it is a more complicated matter than sheer length of time required by the questionnaire. Care should be given to assure investigators avoid wearing repetition, one kind of question and then another, a bit of one kind of questioning and then another. The "art" involves writing and especially arranging survey questions to keep respondents' attention and interest.

4.) "Flow" and naturalness of the sections: Testing the "flow" of the questionnaire is such a matter of intuitive judgment that it is hard to describe. One must listen to the questionnaire, over and over, hearing it as respondents actually read it. The interest and clarity of the questions and a "sensible" arrangement probably contribute more to a coherent flow than any elaborate transitions from section to section. Transitions can be

simple and brief, such as "Now I have some questions on a different topic...." Experienced interviewers feel few transitions are needed, but one wants a few (redundant) words that slow down the respondent to turn a corner to another subject.

5.) The order of questions. The interviewer should open the questionnaire with interesting questions. Few positive guides are available regarding the order of questions; the only requirement is they follow a common sense format. Open-ended questions should be avoided at the beginning due to their demanding nature. A common practice is to put "background" questions at the end in the event their sensitive nature causes a premature completion of the questionnaire.

6.) Timing. It is useful to time each section of the questionnaire. It is accepted that a scant hour is an expectable maximum length of an interview as established by the tradition of typical college classroom instruction. Beyond that time, one begins to worry about respondent fatigue, break off, and initial refusal if respondents know the expected length.

7.) Respondent interest and attention, overall. The investigator should take note of the respondents' overall interest in the study. The problem may be that the whole questionnaire is simply too long, and there is probably no better solution than going back and shortening the questionnaire. The questionnaire should be developed from the respondents' perspective. Ask where is it lively or responsive? Where is it slow going? Can anything be added that serves the designer's analytic direction and also brightens the way for respondents? Some questions may have to be placed to perk up lagging interests.

Quality questionnaires move the respondents from one activity to another, as they proceed through the questionnaire. Respondents are asked a set of Yes/No questions; then a group of questions involving one choice from a list of five options; then are asked several questions in which they rate their own feelings on a scale; then they choose between one idea or the other. Questionnaire bearing on people's own experiences, life histories, and health are predictably more interesting to most people than an exclusive

focus on attitudes or information. When investigators want to explore topics that are not likely to be on widespread appeal, task variety may well be of special importance.

8.) Skip patterns: Questionnaires must be pretested for logic and format in skip patterns. If skip patterns are incorrect or ambiguous, respondents may miss various questions or complete sections and leave the data incomplete. The best way to proofread skip patterns is to turn the task over to several individuals, each of whom follows the route for a certain "scenario." The questionnaire should be considered as a road map, and consider the graphics accordingly. If the skip pattern is at all ambiguous visually, a respondent may take the wrong route without reason to revisit the proper direction confident they are completing the questionnaire correctly. The clearest instructions are strong arrows, lines, outlines, and very boxy boxes, with no fine print and no extraneous instructions.[55]

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[55]Jean M. Converse and Stanley Presser, 1986, *Survey Questions*: *Handcrafting the Standardized Questionnaire* (Beverly Hill: Sage Publications), p. 80

APPENDIX B

Farm Management Curriculum Survey

Note: Survey results are listed below the category

The purpose of this questionnaire is to assess the educational needs of the FSA Borrowers and establish a curriculum to best fit those identified needs. This questionnaire is directed to the Loan Officers in the 41 Field Offices where loans are originated.

Directions. Use a number 2 lead pencil to mark the letter on the enclosed answer sheet that best suits your opinion for each item 1 through 68. Item 69 offers the opportunity to make additional comments an a separate sheet of paper.

This first section deals with the general knowledge of bookkeeping and accounting related subjects.

1.) Estimate the percentage of borrowers that own computers.

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
9	27	3		

2.) Estimate the percentage of borrowers familiar with the use of computers.

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
14	16	9		

3.) Estimate the percentage of borrowers familiar with the use of accounting software (spreadsheets, Quicken, farm accounting systems).

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
24	10	5		

5.) What percentage of borrowers keep a set of books capable of producing an accurate Schedule "F" or income statement?

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
2	4	21	4	8

6.) Due to the skill and knowledge variability of the borrowers, it is impossible to educate borrowers as a homogenous group.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
2	19	5	4	9

7.) Pretesting should be conducted to determine the skill/knowledge level of borrowers for the purpose of exempting students from all or part of the educational requirement.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
3	33		3	

8.) Pretesting should be conducted to determine the skill/knowledge level of borrowers for the purpose of determining a curriculum (course study) to best suit the borrowers' needs.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
2	37			

9.) Educational curriculum should be developed in relationship to demonstrated skills and knowledge of the borrower.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
11	28			

10.) The required course work should be offered as a home study course.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	12		21	6

The following items deal with current course content.

11.) Most borrowers understand and can account for their assets and liabilities.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	34	2	3	

12.) Most borrowers understand the difference between current, intermediate and long-term assets and liabilities.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	30	2	7	

13.) Most borrowers understand the concept of financial ratios.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
			38	1

14.) It would be valuable for borrowers to compare their financial position with similar farm operations at a local or state level.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
12	13	2	12	

15. Because the cash accounting method is used by farmers, it is not necessary to study accrual accounting.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	9	6	25	

16.) Detailed records on farm income and expenses are essential.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
37	2			

17.) Detailed records on family expenses are essential.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
21	18			

18.) Enterprise accounting should be emphasized in the course over whole-farm accounting.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
10	16	10	3	

19.) Emphasis should be given to bookkeeping basics.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
9	19	8	3	

20.) Most farm borrowers are disciplined bookkeepers and require little training concerning bookkeeping habits.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
			20	19

The following five types of records are part of a farm/family record system: A.) Depreciation schedule. B.) Non-farm income and expenditure records. C.) Whole farm income and expenditure records. D.) Farm enterprise income and expense records. E.) Debt and credit records.

Rank the areas where the borrowers as a group are doing the best job of keeping records by assigning that letter to number 21; assign the second best to 22 ; 23 third best; 24 fourth; and 25 fifth.

21.)	A.) 6	B.)	C.) 25	D.)2	E.) 6
22.)	A.)	B.)	C.) 22	D.) 9	E.)18
23.)	A.) 3	B.) 24	C.) 3	D.) 3	E.) 6
24.)	A.) 15	B.) 12	C.)	D.) 7	E.) 5
25.)	A.) 15	B.) 3	C.)	D.) 15	E.) 6

26.) Labor records are of little concern to Farm Service Agency borrowers.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	13		26	

27.) It is difficult for borrowers to keep track of family expenses.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
12	10	10	12	

28.) Equal attention should be given to management of family expenses as is given to farm expense management.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
10	29			

29.) The subject of record keeping "temperament" and ability should be covered.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
4	35			

30.) The subject of family expenditures must be covered by both spouses.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
19	20			

31.) Couples should be required to attend the course together.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
19	20			

32.) Estimate what percentage of borrowers have an organized record system with adequate office facilities.

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
15	21	3		

33.) Estimate what percentage borrowers understand the importance of different types of records; record them in a timely fashion; and store them appropriately.

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
28	8	3		

The following five types of records are part of a farm/family record system: A.) Depreciation schedule. B.) Non-farm income and expenditure records. C.) Whole farm income and expenditure records. D.) Farm enterprise income and expense records. E.) Debt and credit records.

Rank the types where the borrowers as a group require the most training by assigning that letter to number 34; assign 35 second most needed study area; 36 most needed study area; 37 fourth most needed; and 38 fifth most needed.

34.)	A.)	B.)	C.) 8	D.) 31	E.)
35.)	A.)	B.) 16	C.) 12	D.) 8	E.) 3
36.)	A.)	B.) 10	C.) 9	D.) 3	E.) 8
37.)	A.) 21	B.) 9	C.) 3	D.)	E.) 6
38.)	A.) 18	B.) 4	C.) 6	D.)	E.) 12

39.) Estimate the percentage of borrowers requiring assistance in farm goals.

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
	2	2	29	6

40.) Estimate percentage of borrowers requiring assistance in setting personal goals.

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
2	4	6	19	8

41.) What percentage of borrowers require training in communication with a spouse or family members on the subject of goals?

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
	6	19	12	

58.) Borrowers track their pricing decisions and use them as a tool to judge their pricing performance.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
			26	13

The following questions pertain to areas not covered in the current curriculum.

59.) Contract law should be studied by the borrowers.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	5	21	13	

60.) Environmental law should be studied by the borrowers.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	24	3	12	

61.) Training for the basic use of a computer should be included in the curriculum.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	31		8	

62.) Training for the use of farm accounting software should be included in the curriculum.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	34		5	

63.) Training for the FSA farm accounting software should be included in the curriculum.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	17	12	7	3

64.) Training for completion of specific FSA forms should be included in the curriculum.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	27	5	7	

65.) Advanced courses in commodity marketing should be developed and included in the curriculum.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	31	5	3	

66.) If courses in commodity marketing were developed, estimate what percentage of borrowers would voluntarily attend?

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
12	16	6	5	

67.) Advanced courses in the use of the new FSA software should be developed.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	16	11	8	4

68.) If courses in the use of the new FSA software were developed, estimate what percentage of borrowers would voluntarily attend.

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
31	5	3		

69.) Use a separate sheet of paper to add your comments for changes to this curriculum.

42.) What percentage of borrowers effectively communicate goals to their lending official(s)?

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
20	16	3		

43.) What percentage of borrowers effectively communicate their farm/family business affairs with their lending official or officials?

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
5	10	15	9	

44.) What percentage of borrowers understand the concept of opportunity costs involved with capital?

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
21	12	6		

45.) What percentage of borrowers understand the concept of opportunity costs of personal and family labor?

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
22	11	6		

46.) What percentage of borrowers understand the advantages of using a cash flow statement in the farming operation?

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
5	22	12		

47.) What percentage of borrowers use a cash flow statement (budget) in managing their family expenses?

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
21	13	5		

48.) Most borrowers inform their lending official(s) before cash flow needs become critical.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	2	4	33	

49.) Most farm borrowers are familiar with the concept farm debt to asset ratio.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
		3	29	7

50.) Decision making is a needed area of study for farm management.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
7	32			

51.) What percentage of borrowers are capable of decision making and do not require additional decision making training?

A.) 0-20%	B.)21-40%	C.) 40-60%	D.) 60-80%	E.) 80-100%
16	9	14		

52.) Borrowers are familiar with the use of the commodities market to control market risk.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	2	6	27	4

53.) Borrowers generally understand the commodity market.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	3	5	31	

54.) Borrowers generally believe the commodity market is too complex to be useful as a marketing tool.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
7	24	8		

55.) Borrowers understand the technical and fundamental factors that affect the market.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	11		28	

56.) What percentage of the 33 hour curriculum should be spent teaching agriculture commodity marketing to borrowers.

A.) 0-5%	B.)5-10%	C.) 10-20%	D.) 20-30%	E.) 30-50%
		9	17	13

57.) Financing margin calls or purchasing options should be included as part of the borrowers' loans.

A.) Strongly Agree	B.) Agree	C.) No-opinion	D.) Disagree	E.) Strongly Disagree
	6	2	31	

Appendix C
Survey Result and Educational Implications

The first section of the survey was designed to determine the general knowledge of bookkeeping and accounting of the farm borrowers as accessed by the Farm Service Agency loan officers. The bulk of farm borrowers, roughly 75%, do not own computers. The survey also indicates that many of the farmers owing computers are not fully familiar with their use. Over 80% of borrowers are not familiar with the use of accounting spread sheets or specialized farm accounting software. The educational implications are that, with the limited amount of required training and the low entry-level of computer knowledge and accounting software, only a generalized exposure to the benefits could be made to encourage the purchase of computers, appropriate software, and training packages. The educators should be skilled in these areas and a portion of the training time should be provided to demonstrate the ease of use and the financial management benefits of computerized accounting. It was generally agreed to not offer the management course as a home study for self-directed learner.

As to the borrower's ability to produce an income statement, the respondents reported a large variation in the skill level, affirming the survey's response that educating them as a homogeneous group is considered challenging. It follows that loan officers agree that pre-testing should be done to determine the borrower's skill level to better direct their education to a curriculum that best suits the borrower's needs. Ray Ledgerwood, Leadership Trainer with the United States Department of Agriculture, concurs that incorporating a pretest to determine the educational needs of each group prior to instruction as a means of dealing with the various backgrounds.[56] The

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[56]Raymond Ledgerwood, Trainer, United States Department Of Agriculture, Workshop *Strengthening Yourself and Your District*, Feb 23, 1998. Amana, Iowa.

educational conclusion is to evaluate the individual needs of the borrowers, segment the curriculum, and direct the borrower to the educational program that fit their needs.

The next section of the survey deals with the content of the current curriculum. The loan officers advise that borrowers generally can account for their assets and liabilities while understanding the basic concept of current, intermediate, and long-term assets and their related liabilities. Educators need to spend little time on these subjects.

However, in the area of financial ratios, the officers concurred that borrowers do not understand the general concept of financial ratios; with mixed opinions as to the value of producing individual financial ratios for the borrower's operation and comparing them to other farming operations. Because of the importance of financial ratios in general, and equity ratios in particular, the educators need to cover the subject and direct borrowers in developing their own basic financial ratios. The loan officers concur that accrual accounting should be included in the curriculum. In reviewing the survey, Paula Volesky with the USDA disagrees with the loan officers and suggests the concept of financial ratios is too complex for the borrowers to comprehend.

They also strongly agree that detailed records of income and expenses are important for not only the farming operation, but should be kept with nearly equal detail for family expenses and income. The loan officers had a greater diversity of opinion as to the relevance of emphasizing enterprise accounting over whole farm accounting. It was clear the concept of enterprise accounting should be included. In the area of bookkeeping basics, it is clear the loan officers would like to see the program include a general understanding of accounting basics that would serve as a basis for detailed, complete, and accurate financial records for both farm and family. Beyond basics, the loan officers suggest training the borrowers in good bookkeeping habits.

The educational implications are to show the value of keeping detailed records, not only on the farming operation, but also the family records. Once the value of keeping accurate records has been made, this may become a "teachable moment" to demonstrate

the utilization of computers and simple software that will ease the often tedious chore of keeping detailed records. Accounting basics, with the emphasis on the universal nature of accepted accounting principles, need to be included in a fashion that incorporates farm transactions as examples. The educators should include basic instruction bookkeeping habits to include timeliness, structure (organizing offices and filing cabinets), and identifying the personal characteristics required for successful bookkeeping.

In the ranking of types of farm and family records, the loan officers felt the borrowers were doing the best job in the areas of keeping track of their whole farm income and expenditures. Their second best area of competence is in accountability of debt and credit records. Third is off-farm income and expenditures. Fourth is depreciation schedules (comments annotated by the loan officers suggest depreciation schedules were kept for farmers by professional accountants), and the last area is enterprise accounting. These findings were confirmed later in the survey when the loan officers were asked to determine the educational needs of the borrowers with the same factors and the order was effectively reversed. The conclusion for educators may be to build on the fact that borrowers give their strongest effort to keeping track of the whole farming operation, but need further training on enterprise accounting. The trainer needs to develop the concept of enterprise accounting and the relevance of building a profitable whole farm operation from profitable farm enterprise operations. This, again, is an opportunity to demonstrate the value of a computerized bookkeeping system that includes enterprise accounting.

The loan officers were split on the need to keep labor records and were diverse with their opinions as to the difficulty of tracking family expenses but all agreed or strongly agreed that family expenses must be recorded. It follows that both husband and wife must be aware of family expenditures and that loan officers concur that couples should attend the study course together. Compliance of attendance by both the husband and wife is beyond the authority of the educator, but should be addressed by the Farm

Service Agency regulators. The educator should encourage both spouses to attend and provide the borrowers with a clear understanding of the need to keep detailed records for both the family and farm.

In the area of goal setting, the loan officers believe borrowers need equal assistance in setting farm and personal goals because nearly all borrowers are ineffective in setting these goals. The farm borrowers need assistance with communicating their goals to family members. However, they are more affective in communicating goals than they are in setting goals. A general failure as a group involves not communicating their goals to their lenders. Even though the borrower's goals may not be communicated to the their lenders, they are more effective in communicating their business affairs. Part of the curriculum must address goal setting and effective communication of goals to constituents. Particular attention should be in written goals.

Utilizing farm and family records as management tools is familiar to borrowers, according to the perception of their lenders. Management decision making is an additional area requiring study. Opportunity cost concepts are known by some borrowers, but not generally appreciated by all. One loan officer quipped "If farmers understood the concept of opportunity costs they would not be in farming." Cash flow statements are not fully understood by the borrowers in both their farm operation and in the family financial needs. More importantly, most of the lenders do not believe their borrowers inform them of their cash flow needs before it becomes critical. The educational implications is to provide a generalized knowledge of the various opportunity costs involved in farming, as well as familiarity with various decision making techniques. Borrowers require management training in cash flow projections and, more importantly, communicating cash flow needs before they become critical.

The use of the commodity markets as a financial management tool is used little by farm borrowers. Most loan officers advise commodity markets are used by few and believe farm borrowers do not understand commodity markets. Without education, the

lenders feel the commodity markets are too complex to be understood by their clients. The suggestion from the survey is to spend 20 to 30 percent of the program in commodity marketing. The implication for the educator is overwhelming, in that, the loan officers' desire is to familiarize the unknowledgable borrowers with commodity marketing in approximately nine classroom hours. Phil Hufferd, Iowa State University Extension Specialist agrees with the loan officers that a basic summary of the concepts of commodity markets could be included in the curriculum. However, Mr. Huffed suggests the commodity section should be taught as a risk management tool. He would emphasis risk management as a separate course which includes risk transfer, casualty insurance, crop insurance, crop revenue insurance, as well as commodity markets.[57] The educator must emphasis the need for farmers to become familiar with commodity options and futures and how they may be beneficial to the farm operation. Loan officers were asked the expected participation by borrowers for an advanced voluntary course on commodity marketing. They report that 20% to 40% would attend.

Further questions concerning changes in the program suggested only moderate interest in courses on contract law. The loan officers suggest it may be valuable to add a section to the current curriculum in environmental law.

Loan officers suggest basic computer training and the use of farm accounting software be included in the curriculum. When asked if training for accounting software produced by the Farm Service Agency should be included, the lenders responded with varying degrees of agreement. The officers showed a mixed response concerning the development of an advanced course in the FSA record keeping software. If the course were produced, the borrowers did not believe their clients would voluntarily attend. However, there was general agreement for training in the use of current FSA forms.

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[57]Hufferd.

The survey suggests family farmers require a custom-made curriculum to achieve their educational management needs. The remaining sections of this thesis are devoted to developing instructional material for the curriculum. Ray Ledgerwood, Paula Volesky, and Phil Hufferd all concur the development of educational materials is an essential component of the education process for the Farm Service Agency borrowers, as well as the general family farm population.

Appendix D
Instructional Materials

The survey of the FSA loan officers provided a insight into the management and accounting training needs of their borrowers. Although books and publications in management and accounting are available, the survey reveals a need to simplify and communicate often complex management and accounting concepts to their borrowers. The following sections reduce the complexity and relate the concepts and principles in "farmer friendly" terms. Examples are provided that relate to actual farm "every day" situations. Complex material is related by avoiding jargon unfamiliar to the farm borrowers.

Accounting and Bookkeeping

James D. Libyan and Lowell Catlett, in their book *Farm and Ranch Financial Records*, state "we must, however, to avoid under emphasizing the importance of crop and livestock production practices without adequate production, the best set of financial records and the best laid financial management plans will leave a producer in a disastrous situation. On the other hand, while financial management (including record-keeping) will not ensure financial success, the typical problem of American farmers and ranchers is not the lack of technical production skills or the ability to produce."[58]

Example

Consider the following example of double-entry bookkeeping that uses a situation farmers are familiar with:

"Consider the purchase of a $20,000 pickup with $5,000 cash and a auto loan for $15,000. As above, the pickup asset account is increased by $20,000. However, the cash

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[58]James D. Lidden and Lowell B. Catlett, 1987, *Farm and Ranch Financial Records* (New York: Macmillan Publishing Company), p. 127.

asset account is now reduced by $5,000 and the auto loan liability account is now $15,000. The net worth section is not affected because an expense has not occurred nor has income been received. The balance sheet formula is in balance by considering the pickup assets is increased by $20,0000; the cash asset is reduced by $5,000 resulting in an increase in total assets of $15,000, which is equal to the increase in liabilities of $15,000 with no change in net worth. As in all double entry accounting transactions, the offsetting debit and credit entries keep the accounting equation in balance. The model for this example is as follows:

Pickup Asset Accounts		=	Auto Loan Liability Accounts		+	Equity Equity Accounts	
Debit	Credit		Debit	Credit		Debit	Credit
+ $20,000	-		-	+ $15,000		-	+

Cash Asset Account	
Debit	Credit
+	- $5,000

The purchase of a pickup for $20,000 in cash would affect only asset T accounts, thereby only affecting the left side (asset side) of the balance sheet accounting formula. This is accomplished by debiting the pickup asset account for $20,000 and crediting the cash asset account for $20,000. Note that only the asset T accounts on the left side of the equation are utilized with the equation remaining in balance."

Table 3 depicts the accounting and bookkeeping instructional material suggested by the FSA Survey.[59]

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[59]James A. Cashin and Joel Lerner, 1987, *Accounting I.* New York. McGraw-Hill.

Main Topics	Sub-topics
Chart of Accounts 3 Hours	Accounting Equations Asset Accounts Liability Accounts Capital Accounts Income Statement and Balance Sheet Income Accounts Expense Accounts
Double Entry Accounting 3 Hours	Debits and Credits Theory of Debit and Credit Illustrations of Debit and Credit Transactions
Financial Summaries 3 Hours	Income Statement Net Worth Statement Cash Flow Statement
Accounting Decisions 3 Hours	Whole Farm with Detailed Enterprise Analysis General vs. Detailed Records Manual-Record Keeping vs Computerized Debit and Credit Illustrations

Topic for Accounting and Bookkeeping

Table 3

Comparison of Farm Accounting Software

The survey suggested a comparison of farm accounting software be included. Three popular farm accounting programs were obtained: AgChek Accounting by Red Wing Business Systems;[60] AgMaster Computerized Farm Accounting, AgMaster 500 Simplified Accounting Program;[61] and PCMars Accounting Program Iowa Farm Business Accounting, Inc..[62]

Table 4 depicts the features of the three accounting systems requiring comparison.

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[60]Ibid.

[61]AgMaster Computerized Farm Accounting, 1996, *AgMaster 500 Simplified Accounting Program Use.* (West Des Moines, IA: Iowa Farm Bureau).

[62]Iowa Farm Business Accounting, Inc., 1989, *PCMars Accounting Program: Demo Version*, (Ames, Iowa).

Transaction Entry	Format used in Day-to-Day transaction
	Single-entry or double-entry
	Ability to add accounts, customers, & payees
	Automatic, continuous posting
	Real time entry, eliminating year end closing
	View and correct transactions for any period
	Multiple checking accounts
	Automatic split to business units/profit centers
	Automatic account distribution
Reporting	Produces income, balance sheet, & cash flow statements
	Produces enterprise reports
	Prints or displays reports
	Fiscal report by business unit or profit center
	Produce production reports by production year
	Produce cash or accrual reports
	Tracks income accounts by quantity
Budgets	Multiple budgets over multiple year by profit center
Check Reconciliation	Allows reconciliation with constant balance displays
Check Writing	Check writing is built in
Family Living	Keeps business and personal finances separate
Cost	Price comparison
Ease of Use	Use comparison

Software Feature Comparison

Table 4

Financial Ratios

Table 5 depicts the information required by the survey to satisfy the financial ratio needs of the target audience.

Profitability 1.5 Hours	Opportunity costs of long-term assets Opportunity costs of farm assets Opportunity costs of unpaid labor
Efficiency 1.5 Hours	Turnover ratios Value of farm production to dollar of
Solvency 1.5 Hours	Debt to asset ratio Fixed asset ratio
Liquidity 1.5 Hours	Current liquidity ratio

Financial Ratios

Table 5

Goal-Setting and Decision-Making

Table 6 sets out the areas of study for goal setting and decision making.[63]

Goal-Setting	**Study elements**
3 Hours	Basics of goal setting
	Communication of goals
	When goals are agreed upon
	When goals are conflicting
	Interpersonal relationships
Decision-Making	Steps in decision making
3 Hours	Factors that influence decision making
	Personal values
	External influences
	Tools for Economic and Technical Decision
	Pro's and con's
	Rating scales
	Decision trees
	Budgets
	Ten ways to become a better decision maker

Decision-Making & Goal-Setting

Table 6

[63]Iowa State University, Agricultural Studies, 1994, *Decision Making,* Ames, IA. University Publication.

Commodity Marketing

Table 7 sets out the instructional material required by the survey for commodity marketing.[64]

History .5 Hours	History of the Chicago Board of Trade
Hedging 2 Hours	Use of hedges Hedgers defined Short positions Long Positions
Basis .5 Hours	Concept of basis
Commodity Options 2 Hours	Concept of options Use of options
Commodity Futures 2 Hours	Concept of futures Use of futures
Marketing Strategies 2 Hours	When to use various marketing strategies

Commodity Marketing

Table 7

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[64]Chicago Board of Trade, January 1995, *Options on Agricultural Futures*: EM11-3. Chicago, IL. Chicago Board of Trade.

USDA

Farm Service Agency Approval
2002 State Street, Guthrie Center, IA 50115

FAX

Date: September 3, 1997

Number of pages including cover sheet: 4

To:

JIM MENDORF

CEDAR FALLS, IA

Phone: 319-987-2702

Fax phone: SAME

CC:

From:

PAULA J. VOLESKY

AG CREDIT SPECIALIST

GUTHRIE CENTER, IA 50115

Phone: 515-747-8397

Fax phone: 515-747-3378

REMARKS: ☐ Urgent ☒ For your review ☐ Reply ASAP ☐ Please comment

JOHN -

I'LL BE IN THE OFFICE MOST OF THE DAY TODAY IF YOU WISH TO DISCUSS ANY OF THIS.

THANKS

PAULA

The purpose of this questionnaire is to assess the educational needs of the FSA Borrowers and establish a curriculum to best fit those identified needs. This questionnaire is directed to the Loan Officers in the 41 Field Offices where loans are originated.

This first section deals with the general knowledge a

1.) Estimate the number of borrowers that own computers.
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

2.) Estimate the number of borrowers familiar with the use of computers.
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

3.) Estimate the number of borrowers familiar with the use of accounting software (spreadsheets, Quicken, farm accounting systems)?
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

John - only ← are required to have a balance sheet ✓ up books

4.) How many borrowers keep a set of books capable of producing an accurate balance sheet?
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

5.) How many borrowers keep a set of books capable of producing an accurate Schedule "F" or income statement?
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

Procedure ← requires this

6.) In general, do you believe it is necessary for borrowers to receive 33 classroom hours of study before receiving loans or maintaining loans.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

" " ←

7.) As a group, do you believe the borrowers believe it is necessary to receive 33 classroom hours of study before receiving or maintaining loans?
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

We can already do this ←

8.) Tuition payment for the class should paid by the FSA and absorbed in the loan payments.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

Statutory requirement ← to use outside vendors

9.) Fulfillment of the educational requirement should be the complete responsibility of the Farm Service Agency Lending Office and should be conducted by the lending office.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

10.) Due to the skill and knowledge variability of the borrowers it is impossible to education borrowers as a homogenous group.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

11.) Pretesting should be conducted to determine the skill/knowledge level of borrowers for the purpose of exempting students from all or part of the educational requirement.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

12.) Pretesting should be conducted to determine the skill/knowledge level of borrowers for the purpose of determining a curriculum (course study) to best suit the borrowers needs.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

13.) Educational curriculum should be developed in relationship to demonstrated skills and knowledge of the borrower.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

14.) The required study should be offered as [illegible] course.

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

The following section of the questionnaire deals with current course content.

15.) Most borrowers understand and can account for their assets and liabilities
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

16.) Most students understand the difference between current, intermediate and long-term assets and liabilities.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

17.) Most students understand the concept of financial ratios.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

18.) It would be valuable for students to compare their financial position with similar operations at a local or state level.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

19. Because the cash accounting method is favored by farmers it is not necessary to study accrual accounting.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

20.) Detailed records on farm income and expenses are essential.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

21.) Detailed records on family expenses are essential.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

22.) Enterprise accounting should be emphasized over whole-farm accounting.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

23.) Most farm borrowers are not experienced in bookkeeping and emphasis should be given to bookkeeping basics.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

24.) Most farm borrowers are disciplined bookkeepers and require little training concerning bookkeeping habits.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

25 through 29.) The following five types of records are part of a farm/family record system: A.) Depreciation schedule. B.) Non-farm income and expenditure records. C.) Whole farm income and expenditure records. D.) Farm enterprise income and expense records. E.) Debt and credit records.

Rank the areas where the borrowers as a group are doing the best job of keeping records by assigning that letter to number 25; assign the second best to 26.; 27 third best; 28 fourth; and 29 fifth.

30.) Labor records are of little concern to Farm Service Agency borrowers.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

31.) Borrowers believe family records are private: therefore, it is of little value to study family record keeping.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

32.) It is impossible for borrowers to keep track of family expenses.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

33.) Equal attention should be given to management of family expenses as is given to farm expense management.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

34.) The subject of record keeping "temperament" and ability should be covered.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

these are required of our borrows (statutory) ←

35.) Family expenditures are a sensitive area and should not be addresses in a classroom environment.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

36.) The subject of family expenditures must be assigned to both spouses.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

37.) Couples should be required to attend the course together.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

38.) What percentage of borrowers have an organized record system with adequate office facilities.
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

39.) Most borrowers understand the importance of different types of records; record them in a timely fashion; and store them appropriately.
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

40 through 44.) The following five types of records are part of a farm/family record system. A.) Depreciation schedule. B.) Non-farm income and expenditure records. C.) Whole farm income and expenditure records. D.) Farm enterprise income and expense records. E.) Debt and credit records.

Rank the types where the borrowers as a group require the most training by assigning that letter to number 25; assign 26 second most needed study area; 27 most needed study area; 28 fourth most needed; and 29 fifth most needed.

45.) What percentage of borrowers require assistance in farm goals.
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

46.) What percentage of borrowers require assistance in setting personal goals.
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

47.) What percentage of borrowers require training in communication with a spouse or family members on the subject of goals.?
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

48.) What percentage of borrowers effectively communicate goals to their lending official or officials?
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

49.) What percentage of borrowers effectively communicate their farm/family business affairs with their lending official or officials?
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

50.) What percentage of borrowers understand the concept of opportunity costs involved with capital?
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

51.) What percentage of borrowers understand the concept of opportunity costs of personal and family labor?
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

52.) What percentage of borrowers understand the advantages of using a cash flow statement in the farming operation?

A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

53.) What percentage of borrowers use a cash flow statement (budget) in managing their family expenses?

A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

we already require this ← 54.) What percentage of borrowers effectively match farm expenditures with income, including all forms of income?

A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

55.) What percentage of borrowers effectively match family expenditures with income, including all forms of income?

A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

required ← 56.) Most borrowers monitor their budgeted cash flow with their actual cash flow.

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

57.) Most borrowers inform their lending official or officials before cash flow needs become critical.

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

58.) Most farm borrowers are familiar with the concept of a current ratio (current farm assets divided by current farm liabilities).

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

59.) Few farm borrowers calculate their current ratio.

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

60.) Most farm borrowers are familiar with the concept the farm debt of asset ratio?

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

61.) Most farm borrowers calculate their farm debt of asset ratio.

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

62.) It is important for farm borrowers to understand profitability ratios that calculate their return on labor, return on management, and return on equity.

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

63.) It is important for farm borrowers to understand efficiency ratios that calculate the amount of farm product produced per unit of resource.

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

64.) Decision making is a needed area of study for farm management.

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

65.) What percentage of borrowers are capable of decision making and do not require additional decision making training.

A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

66.) Borrowers are familiar with the use of the commodities market to control market risk.

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

67.) Borrowers generally understand the commodity market.

A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

68.) Borrowers generally believe the commodity market is ~~so~~ too complex to be useful as a marketing tool.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

69.) Borrowers understand the technical and fundamental factors that affect the market.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

70.) What percentage of the 33 hours should be spent teaching agriculture commodity marketing to borrowers.
A.) 0-5% B.)5-10% C.) 10-20% D.) 20-30% E.) 30-50%

71.) Financing margin calls or purchasing options should be included as part of the borrowers loans.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

72.) Borrowers track their pricing decisions and use them as a tool to judge their pricing performance.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

The following questions pertain to areas not covered in the current curriculum.

73.) Contract law should be studied.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

74.) Environmental law should be studied.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

75.) Training for the basic use of a computer should be included in the training.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

76.) Training for the use of farm accounting software should be included.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

77.) Training for the FSA farm accounting software should be included.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

78.) Training for completion of specific FSA forms should be included.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

79.) Advanced courses in commodity marketing should be developed.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

80.) If courses in commodity marketing were developed what percentage of borrowers would voluntarily attend.
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%

81.) Advanced courses in the use of the new FSA software should be developed.
A.) Strongly Agree B.) Agree C.) No-opinion D.) Disagree E.) Strongly Disagree

82.) If courses in the use of the new FSA software were developed what percentage of borrowers would voluntarily attend.
A.) 0-20% B.)21-40% C.) 40-60% D.) 60-80% E.) 80-100%