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Farm Work Planning Simulation in Multi-Media: A Comparative Evaluation

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BACKGROUND

The University of Kentucky in cooperation with the National Institute for Occupational Safety and Health has developed an educational intervention device to directly address the perspectives and motivations of farmers and aspiring farmers regarding farm safety and its economic impact on the farm. The Kayle's Difficult Decision (KDD) is a simulation exercise intended to train individuals to recognize the economic benefits associated with the prevention of costly injury.

Developed from information received during focus group discussions with Kentucky farm families, KDD tells the story of a central Kentucky farm family (father, mother, and son) which owns a 125 acre tobacco and beef cattle farm. During a three year period, the family faces a number of difficult decisions. The first of these is whether or not they should purchase an adjoining farm. They decide to purchase the additional land and are confronted with a heavier financial burden, increased workload, fatigue, and increased risk of injury. Participants make choices related to farm planning, investment in farm safety equipment, and safe work practices.

As the story opens, a neighbor, Ben Dillon decides to retire and offers to sell his 125 acre farm to the Kayles for a price of $100,000. The simulation picks up with the Kayles family that night at the dinner table, discussing whether to buy the farm. The question is, ''If they buy the farm, what are some things that might happen?'' The participants are asked to respond that they agree or disagree to the following statements:

1. Their net farm income may increase.
2. They may have too little cash to maintain and replace structures and equipment.
3. They may have to take a second mortgage on their first farm.
4. Eugene may have to take an off-farm job to earn extra money.
5. They may acquire enough land to bring Billy into farming when he is an adult.
6. Net farm income may decrease.
7. Profitability and cash flow will double or nearly double.
8. They may not have enough hours in the day to get the work done.

The intervention's purpose was to increase safety-related attitudes and behaviors which in turn will contribute to the long-term economic viability of a farm family. In doing this, KDD will take the information that farmers have regarding hazards and the economic impact they might have on their farms and change what they do with that information.

METHODS

In its original form, KDD was presented only in a print version. The University of Kentucky used this form of KDD as a means of increasing the usage of rollover protection structures (ROPS) among farmers in their project, Community Partners for Health Farming (CPHF). KDD has also been used by the UK College of Agriculture, in county extension training sessions, and elsewhere [Cole et al., 1997].

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The CPHF project found that the print version was most effective when there was a leader to facilitate the discussion. Small sub-groups consisting of 2–4 individuals could then work together to make decisions and discuss options for the problems in each issue area.

Recently, a multi-media, CD-ROM version has been created. This version provides participants with graphic images of the scenery and characters and gives immediate feedback to the user's responses. The investigators anticipate that the multi-media version will be most useful when there is no facilitator available, with small or very large groups, or when the discussion leader lacks sufficient experience in farming to organize the discussion. Another assumption is that the multi-media version will provide easier and more direct access to backup discussion material than is possible in print.

Although originally developed for administration to adult farmers, it appears that the KDD exercise might also be used to teach farm youths and future farmers about farm safety. This paper will describe a comparative evaluation study between the KDD print version, the KDD multi-media version, and a no-treatment control group when administered to youths enrolled in rural secondary school programs. The project will evaluate long-term outcomes of exposure to both versions of the KDD exercise with respect to potential changes in attitudes, beliefs, behaviors, and intentions regarding safe work practices on the farm. These outcomes will be evaluated against Prochaska and DiClemente's [1985] theory of the stages of change.

The Stages of Change model examines the voluntary movement of individuals through their attitudinal and behavior change process. Prochaska and DiClemente postulate for behavioral change to occur (e.g., for an individual to move from unsafe to safe work practices) the individual must move through a series of cognitive stages [Marcus et al., 1992]. The stages include moving from a position of precontemplation in which the individual had never even considered the advocated behavior, through contemplation, to action, and finally maintenance.

The theory also indicates that in order for behavior changes to occur, movement through the various stages must take place. Investigators hope to measure these events by examining the intervention's ability to help participants understand why the adoption of safety practices is necessary and how these changes will impact their lives. Further, KDD will be assessed for its effectiveness in providing the participants with enough information to change their unsafe environment and reevaluate their old behaviors. Most importantly, investigators believe that KDD will provide participants with options for unsafe farm practices. All of these processes should promote the prevention of injury and related costs to the farm.

The current evaluation of KDD is being conducted in high schools in rural Kentucky. Only junior and senior-level students will be included in the study. Many youth who live and work on Kentucky farms are no longer enrolled in vocational agriculture classes at these grade levels. In an effort to increase the number of participants, students enrolled in mandatory courses such as health and social studies classes will be asked to participate. These students live in rural areas and are involved in farming activities. A secondary study population is adult farmers, the parents of these farm youth. The intervention will not only expose farm youth to the KDD exercise but also intends for the youth to engage in dialogue with their parents regarding the lessons learned in the exercises.

A list of 60 schools in central Kentucky will be randomly assigned to one of two treatments: print instruction or multi-media instruction and discussion. A control group of n schools will undergo status-quo instruction and will be asked to complete a safety knowledge post-test evaluation only. Although the control groups will not be given the KDD exercise in either version, at the conclusion of the evaluation study, they will be given access to KDD. All students will complete demographic questionnaires before beginning the Kayles exercise.

The treatment groups will receive a retrospective pretest [Sprangers, 1989] and two post-tests. A retrospective pretest asks participants to evaluate their pre-treatment knowledge and awareness, but using the perspective of the new information and experiences gained as a consequence of the treatment. The retrospective pretest is also a part of the post-test evaluation.

Investigators are aware that adolescents living on the farm are cognizant that farming can be dangerous. Therefore, the intervention's purpose is to connect the understanding they already have with new information concerning the serious consequences of an injury. Another goal of the project is to stimulate discussion about KDD between parents (farm owners) and their adolescent children. The researchers hope that both the parents and children will apply lessons from KDD to their own farm operations and that they will weigh the costs of safer equipment and safe work practices against the long-term consequences of injury and its impact on the family.

In evaluating the different versions of KDD, investigators hope to evaluate the stages of change processes and determine which best illustrates the participants movement through the stages. As stated earlier, the multi-media version with its interactive technology should be the most effective means of addressing safety issues and relaying them to the participants.

DISCUSSION

As an interactive learning tool, KDD has the potential to be an effective mechanism promoting changes in attitude, beliefs and behaviors among farmers. KDD keeps the

participant interested and excited and allows them to make decisions that are based on fact and could possibly arise on their own farms. Because of its interactive nature, KDD's impact should be substantial among its adolescent participants and the computer literate generation because they will be able to see how their decisions impact the farm.

Unlike most interventions, KDD is useful for individuals at any stage of the behavior change process. KDD has something for everyone; from the individual who has not realized the impact that severe injury could have on the economic success of their farm to those who understand the risks but need more information to promote a change. Many interventions are not successful in using stages of change to move individuals because they assume that everyone starts and stops at the same point. Fortunately, KDD takes this into account and provides even a novice farmer with adequate information to assist them in beginning to consider safety issues in regard to their farm.

Finally, while KDD will motivate many to consider the use of safety practices on their farm, KDD could be used in other arenas to promote behavior change. Currently, KDD is only available in the two versions. An Internet version would reach far more individuals. Its availability to organizations such as farm extension agencies and universities that house agricultural science divisions would also be greater. KDD has the capacity to become a world wide tool promoting farm safety. Further development of the multimedia version appears to be the most likely means of taking us into the new millennium and facilitating the learning process of many farmers around the world.

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