Occupational Safety and Health Curriculum Development and Training for Minnesota Agricultural Educators

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Pilot Project Outcomes:

Issue

With a national fatality rate of 20.2 deaths per 100,000 workers, agriculture is one of our nation's most hazardous industries.[2] Three hundred and seventy-two farmers nationwide died as a result of a farm accident in 2012.[3] The upper Midwest faces similar injury and fatality rates as the nation; however, there are important issues specific to the multi-state regional area, such as grain bin engulfment, swine and dairy worker safety, climatic exposure, and more. In addition to regional specific issues, there are also age related issues. For example, according to the Department of Health and Human Services, on average, 113 youth under the age of 20 die each year in farm accidents.[4] The majority of youth killed are aged 16–19.[5] In 2012, the Centers for Disease Control and the United States Department of Agriculture estimated about 14,000 injures in youth under the age of 20."[6]

Agricultural educators are in a position to help their students learn how to prevent risky behaviors when working in agricultural settings. Surprisingly, a well-coordinated OSH based training for agricultural educators does not yet exist in Minnesota. Agricultural educators at the secondary, post-secondary, and adult-farm management level are important stakeholders with a unique opportunity to disseminate safety best-practices directly to their students who are employed at area farms and agricultural businesses. Educators have pre-existing relationships of trust which will enable them to address agricultural safety and health topics in a non-threatening manner on the farm site and at agricultural businesses. They are invited to area farms and agricultural businesses on a regular basis to supervise, coordinate, and advise the experiential learning of their students. This provides an excellent way to address safety and health issues on a regular basis. However, most educators do not have the training to do so at this time. South Central College's pilot project has begun to change that fact.

Similar trainings for secondary and post-secondary career and technical education teachers have been developed in other states but there is not a formalized program for agricultural educators in Minnesota.[12] Secondary teachers are required to abide by OSHA regulations in most states (29 C.F.R. Part 1910)[13] and if a student is involved in an accident, must show there was a good faith effort for dissemination of safety training and information.[14,15]

Approach

In response to these extremely high rates of agricultural fatalities and injuries nationally and in our region, South Central College proposed to develop a pilot partnership program to use connections between secondary, post-secondary, and farm-business management instructors and their students to improve safety best practice awareness and implementation. South Central College developed two Occupational Safety and Health (OSH) trainings specifically designed for agricultural educators who are responsible for technical work-site supervision, such as supervised agricultural experiences at the secondary level, internships at the post-secondary level, and farm site analysis at the post-secondary farm business management level. Utilizing pre-existing OSH best-practices and an experienced OSH certified trainer, the trainings were for the agricultural educator audience.

This approach fit with the consensus ideas developed at the January 2014 UMASH *Finding Common Ground Forum* which stated, in part: "*there is an important need to open and maintain clear channels of communication between employers and other resource providers. Many interested parties would like to see resources compiled and made accessible, with built-in feedback mechanisms to improve quality and appropriateness of resources*."[8] Furthermore, research suggests that "incorporating occupational safety and health (OSH) information into the more than 20,000 vocational and other workforce preparation programs in the United States might provide a mechanism for reducing work-related injuries and illnesses among young and new workers."[10]

South Central College's trainings sought to create "stronger channels of communication"[9] by linking OSH trainers, agricultural educators, students, businesses and farm owners. Training directly targeted increased workplace safety amongst youth and new student workers and indirectly targeted safety amongst agricultural businesses and farm owners. The Bureau of Labor Statistics and OSHA estimate safety and health programs have reduced workplace injuries and fatalities by 35% across all industries.[11] Based on the above information, this pilot project's objectives were to:

1) develop OSH based curriculum to deliver to Minnesotan agricultural educators that have direct responsibility for technical workplace supervision of students and/or farm business management instruction;

2) deliver two four-hour OSH trainings, one in January 2015 at the Minnesota Association of Agricultural Educators' Annual Ag Tech Conference in St. Cloud, MN and one in July 2015 at the Minnesota Association of Agricultural Educator's Annual Summer Conference in Morton, MN, reaching at least 20 instructors per training from across the state of Minnesota that represent a cross-section of secondary, post-secondary, and farm business management backgrounds; and

3) create, distribute, collect, and analyze a survey-based instrument for agricultural educator training participants to evaluate the success of the pilot project and to develop potential improvements for delivering future trainings.

Due to the confines of the schedule of the MAAE conferences, our training approach had to be modified. The training in January could only be a maximum of two hours in length as the first available workshop time slot did not start until 7 pm. Additionally, the training in July was modified to three and a half hours in length with thirty minutes of informal questions and answers. This was again due to the schedule limitations, as the workshops started at 8 am and needed to break for lunch by 11:30 am.

Furthermore, the topics addressed in the trainings were modified slightly from the original grant proposal. In January, due to the two hour time limitation, the training focused on a broad overview of OSH regulations, ag safety statistics, ag hazard prevention, and ag health concerns. Particular attention was also given to pre-existing resources educators could use in their classrooms.

In July, the training focused on three of the greatest hazards for youth and beginning workers in agriculture: grain bins, tractors/atvs/machinery, and livestock. Based on survey results from the January

session, which are discussed in greater detail in the next section, emphasis was also given to the specific safety and health regulations that affect young agricultural employees. Furthermore, based on the suggestions from participants, the July training incorporated South Central College's grain bin simulator. Participants at the July session were also given a jump drive loaded with the PowerPoints created through the curriculum development portion of this grant, along with a variety of pre-existing materials, from sources such as UMASH, Extensions' SAY Clearinghouse, OSHA, NAGCAT, CareerSafe, and other health and safety organizations.

Key Findings

As this was not a quantitative based experimental project, the curriculum development (i.e. output) is a more important part of the project than any quantitative findings. However, there are two sources of qualitative findings for this project. One source of findings is the results of the surveys administered after each of the trainings. A second source of findings is the lessons learned by the grantees from developing the trainings and recruiting participants for the workshops.

The survey responses from January training (n=13) were favorable. 100% of participants were satisfied with the learning experience. 69% strongly agreed and 31% agreed that there understanding of the topic increased due to the workshop. 69% strongly agreed, 23% agreed and 8% were neutral that the topics included were important to understanding agricultural health and safety issue that affect [their] students and/or future students. 100% would recommend a similar course to others and/or register for a more in-depth agricultural safety and health training designed for ag educators. The short answer responses were also helpful in creating the July training. Teachers indicated that they would be interested in more clips, statistics, handouts, and activities. All of these items were taken into consideration for the development of the July Training. See Appendix A for the Survey Responses.

The survey responses from the July training (n=10) were also generally favorable. 60% strongly agreed, 30% agreed, and 10% were neutral that there understanding of the topic increased due to the workshop. 60% strongly agreed, and 40% agreed that the instruction materials were relevant to the course work. There were also a lot of very good short answer responses, prompted by open ended questions. See Appendix B for the Survey Responses.

One issue that we faced in July was that as we got more in depth into agricultural specific topics, not just more general OSHA related materials, it was evident that our OSHA trainer lacked some expertise in agricultural settings. For example, much of his curriculum development time was devoted to increasing basic knowledge of the grain bin rescue training trailer and learning basic ag specific regulations and statistics. This was evident in some of the survey responses and oral feedback from participants. For future trainings, it is likely that we would rely on agricultural instructors and fire/rescue trainers that have more agricultural specific knowledge. One positive was that this OSHA trainer does have more agricultural safety and health knowledge at the conclusion of his work on this project, which likely would not have happened if not for this grant opportunity.

One of the biggest takeaways from this pilot project was the difficulty in recruiting participants for the trainings. In January, there were 15 participants (note: two participants did not complete the survey). In July, there were ten participants. This was lower than the goal number of 20 instructors, even though these trainings were held in conjunction with a major ag educator's conference. One challenge was that at the same time the ag safety trainings were offered, required trainings for FBM and new ag instructors were occurring. Due to the MAAE conference schedule, this ended up being unavoidable and certainly affected attendance. However, even though there were fewer participants than desired, at least 20 unique instructors attended either one or both of the trainings.

Outputs and Translation of Findings

There are several major outputs from this project. First, there are the tangible outputs: materials created for dissemination to ag educators and other stakeholders. Second, there is evidence of capacity building by the principle investigator. Finally, there was, based on the above key findings, a modified approach developed for future trainings.

Tangible Outputs:

1. To advertise the January training, postcards were developed and personally delivered to high school ag instructors from southcentral Minnesota. Twenty-five cards were printed and delivered. The description of the training was also included in all MAAE registration materials which were sent to over 200 current MAAE members.

2. A pull-up banner was created to advertise the overall project and the workshops. This banner was displayed along with other materials at three FFA Invitational Contests (over a dozen high school ag teachers were in attendance at each, as well as hundreds of high school students) held at South Central College, at both the January and July MAAE Conferences held in St. Cloud and Morton, at the New Tools for New Rules Ag Symposium (with over 400 farmers, agribusiness professionals, post-secondary ag students, post-secondary instructors, and farm business management instructors in attendance) held at South Central College, the MN Ag Expo (an industry tradeshow attended by agribusiness professionals and farmers) held in Mankato, and at the UMASH Annual Forum held at University of Wisconsin-Eau Claire.

3. Two ag safety 11x17 posters were created to use as handouts at the January and July workshop and at various South Central College events throughout the year. In late 2014, 100 of each poster were printed, for 200 total. All of these posters have been given out to Minnesotan ag educators over the duration of the grant project. In summer 2015, another printing of 100 each, 200 total was made; some modifications were made to the design of each poster.

4. A PowerPoint was developed for the January training, and is available for any educator to use in their classrooms. A one sheet handout with suggested resources was also given to each instructor in attendance.

5. A survey instrument was developed and administered at the January workshop.

6. A half sheet advertisement for the July workshop was designed and placed in the MAAE's quarterly magazine, *Ag in Action*. This magazine is distributed to the over 200 members of MAAE and other affiliated stakeholders.

7. An academic poster was developed to share mid-year findings from the Pilot Project. The PI presented this poster at a poster session at the 2015 National Occupational Research Agenda (NORA) Symposium held Wednesday, May 6 at Mayo Memorial Auditorium at the University of Minnesota School of Public Health. The symposium was co-sponsored by the Midwest Center for Occupational Health and Safety (MCOHS) and UMASH.

8. A PowerPoint, consisting of three parts—grain bin safety and regulations, tractor safety and regulations, and livestock safety and regulations—was developed for the July training. This PowerPoint was developed specifically for this training and is available for any educator to use in their classrooms. Educators in attendance at the training received this presentation electronically (see below), and other educators not in attendance can access this educational resource by contacting the PI.

9. Twenty "goodie bags" were distributed at the July training. Most importantly, each of these bags included a jump drive with the PowerPoint from the presentation, along with a plethora of other ag and health safety resources that could be incorporated into their own classroom trainings. Bags also included a copy of each of the previously mentioned ag safety posters, a lanyard, a bag of Lifesavers, and a pencil.

Image 1: Picture of Ag Educator "Goodie Bag"

10. A survey instrument was developed and administered at the July training.

11. After the workshops were completed, a 1/3 sheet handout, appropriate for use with both youth and adult students, was created. One thousand were printed. This will enable continued dialogue about this

grant project to continue into the upcoming year. Educators that attended the workshops will be able to get these handouts in quantity if they would like to share them with their students by requesting them from the PI. The PI will also distribute them to relevant stakeholders.

12. An academic poster is in draft stage, which will reflect the final results of the grant project. The intent is to display this at a minimum of one, to-be-determined, relevant poster session.

Capacity Building of New Investigator:

This pilot project marked the first time Megan Roberts served as a Principle Investigator on a grant project.

1. PI participated in the two day MAAE Ag Tech Conference and co-presented the two hour training. While, the PI had attended the conference before, she had never presented at a session.

2. PI participated in the 2015 National Occupational Research Agenda (NORA) Symposium's Poster Session. This was the PI's first time attending a NORA symposium.

3. PI participated as a facilitator in the 2015 UMASH Annual Forum. This was the PI's first time attending a UMASH forum.

4. PI's successfully completed an OSHA 10 Hour Certification. As one of the suggested resources was to have students complete the CareerSafe OSHA 10 online module sequence, the PI, who had never undertaken any prior OSHA training, successfully completed all of the online modules and tests needed to receive an OSHA 10 card.

5. PI participated in the four day MAAE Summer Conference and co-presented the three and a half hour summer training.

Translation of Outputs by Participants

Participants, according to survey results and informal feedback, plan to directly utilize parts of the training, such as the materials distributed on the zip drives, in their own classrooms. Due to the variety of backgrounds of participants, different aspects of the curriculum were relevant to different educators. It is anticipated that each educator that took the training(s) will incorporate at least one concept into at least one course (s)he teaches over the upcoming year.

Project Outcomes

Changing the existing culture and providing a formal safety and health training and proper delivery starting at the secondary level and continuing at the post-secondary level is imperative to improving agricultural health and safety practices amongst new and existing workers. This innovative collaborative partnership approach was a first step to improving the safety and health of agricultural student workers and their employers.

Intermediate Outcomes As aforementioned, one of the major obstacles was the low attendance at the trainings and the difficulty in recruiting participants. To overcome this low attendance hurdle, in the future, if we present this training at an MAAE conference, it would likely only be done if it was part of one of the "mandatory" sessions aimed at new secondary instructors or possibly farm business management instructors. Participants, mostly through oral feedback, also felt that new instructors in particular would benefit from training similar to the July session. One of our intermediate goals would be to offer a version of the currently developed presentation(s), but do it at one of the new instructor workshops, specifically targeting instructors with less than three years of experience.

What's Ahead

South Central College anticipates continuing to offer ag safety and health training in association with MAAE; however, we would look to do it in conjunction with one of the mandatory sessions—such as the Teacher Induction Program workshops (see http://tip.cfans.umn.edu/ for more information). This would insure there was a guaranteed audience, and it would also help to target young instructors who have less familiarity with ag safety and health curriculum. Communication with the Minnesota Department of Education's Career and Technical Education Unit regarding this proposed project has already resulted in brainstormed ideas on how the partnership between educators, students, and workplaces will help strengthen the dissemination of safety training.

We plan to continue to distribute resources to ag educators. To aid in the process, we purchased 150 flash drives to load with ag safety resources to hand out to ag educators throughout the state. These would primarily be distributed at the next MAAE conference. We also prepared a short handout that could be used as a lesson in a classroom or simply handed out to educators or farmers. Finally, an academic-style poster is in the process of being prepared to be used at a to-be-determined poster session in the future.

External Factors

One of the most difficult parts of the grant, as aforementioned, was getting participants for each session. Although the PI personally recruited participants, it was still difficult to fill the workshops with participants. In the future, we would try to have an external incentive to attend the workshop before offering a session.

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Occupational Safety and Health Curriculum Development and Training for Minnesota Agricultural Educators, Principal Investigator: Megan L Roberts, Agribusiness Instructor, South Central College

ISSUE/PURPOSE

With a fatality rate of 26.1 deaths per 100,000 workers according to 2013 data from the Centers for Disease Control and Prevention, agriculture is one of the most dangerous industries. Youth and new-workers are particularly vulnerable. Agricultural educators have a unique opportunity to provide youth and new-workers with resources to increase agricultural safety and health awareness. However, many agricultural educators do not get regular agricultural safety training.

APPROACH OR PROJECT MILESTONES

With this pilot project grant, South Central College developed an occupational safety and health (OSH) based curriculum to deliver to Minnesota agricultural educators that work with farm business management instruction, supervise high school students in agricultural workplaces, and/or coordinate college level agribusiness internships. This tailored OSH curriculum was delivered at a two hour training in January 2015 to 15 ag educators and a three and a half hour training in July 2015 to 10 ag educators.

During the pilot project, South Central College gathered feedback from participants with formal surveys and informal conversations. This project intended to create increased partnerships between trusted agricultural educators, career and technical education students, and agricultural businesses, including farm owners.

KEY FINDINGS/RESULTS

100% of survey respondents were overall satisfied with the learning experience provided by the training. 52% of participants strongly agreed and 43% agreed that their understanding of the topic was increased through the training. Written survey feedback was generally very favorable. One participants suggested, “All ag teachers should take this.” Another highlighted, that ag safety is “often overlooked,” making this a “very useful session.” Another participant called the training, “fun and interactive.” Although feedback was positive, the biggest hurdle was recruiting ag educators to participate in the trainings.

THE BOTTOMLINE

After the one-year pilot project, South Central College plans to build upon the results of the project by incorporating feedback and offering additional OSH training to agricultural educators, students, and farm owners, which will further strengthen interdisciplinary partnerships between these groups. In particular, we plan to target training to specific populations of ag educators, such as beginning instructors.

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