

The Impact of a Career and Technology Education Program

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Abstract

There continues to be a shortage of qualified graduates for agriculture jobs within the United States. One reason for this shortage is the decline in student enrollment in colleges of agriculture. One tool that can increase college preparation for future graduates and help students succeed is the agriculture dual-enrollment program. Dual enrollment allows high-school students to take courses while dually enrolled in a corresponding college course. The program was found to have a positive impact on students taking more rigorous courses and gaining in-depth knowledge of agriculture. Teachers felt that this program helped in establishing higher standards in coursework and in feeling satisfied about their job. It enhanced prestige and program reputation. Dual enrollment was seen to have little to no impact on school counselors. Research focused on the pedagogical approaches of these course offerings will benefit the creation of future high-quality dual credit courses.

Keywords

dual enrollment, agriculture education, teachers, distance learning

Introduction

Today's global economy demands a more educated workforce. Communities need to work together to improve 21st-century learning and increase high-school graduation rates to prepare more students for college and successful careers (American Graduation Initiative, 2014). In 2009, President Obama made a call to increase college graduation rates by the year 2020. He laid out his desires for this initiative in the form of innovative strategies that promote college completion. Less than half of new college students earn an associate's degree within 3 years or a bachelor's degree within 6 years (National Center for Educational Statistics, 2011). This affects all industries, especially agriculture. This issue is compounded when we find that there continues to be a shortage of qualified graduates for agriculture jobs within the United States (Goecker, Smith, Smith, & Goetz, 2010). One reason for this shortage could be contributed to the decline in student enrollment in colleges of agriculture and agriculture majors (Baker, Settle, Chiarelli, & Irani, 2013).

The national high-school average freshmen graduation rate (AFGR) is 78.2%. In the state of New Mexico, of every 100 students who enter ninth grade, only 67 will graduate (Stillwell, Sable, & Plotts, 2011). This rate is even lower for Hispanic students with a national AFGR of 71% and a state of New Mexico Hispanic average of 63%. Only 32% of New Mexico high-school students were found to possess college-ready skills in math and science (Winograd & Saltee, 2011). Yasar (2002) found that innovative project-based learning

increases conceptual understanding of science and promotes positive attitudes toward learning science. The rate of student success drops further as they continue into higher education. Within the freshman class of 2010, only 39.4% of New Mexico students who entered a 4-year degree program graduated. It is secondary and post-secondary educators' job to reach these students through innovative programs that expose these students to the rigor of college courses and higher education expectations early. Such programs allow students to enter higher education better prepared and more likely to succeed in academics and their careers (Bailey, Hughes, & Karp, 2005).

An innovative program that can help students succeed and increase college preparation for future graduates is the agriculture dual-enrollment program. Although dual enrollment/concurrent enrollment options have been in use for many years, agriculture-based dual-enrollment programs are not as prevalent. Dual enrollment (sometimes referred to as concurrent enrollment) allows high-school students to enroll dually in their normal high-school class and a corresponding college course (Estación, Cotner, D'Souza, Smith, & Borman, 2011). These classes can be offered as a face-to-face/online

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hybrid where students participate in lab activities through their high-school courses but complete assessments (test and quizzes) online from the university instructor. This is also referred to as blended learning (Barnett & Stamm, 2010). This model has a high probability of success, because instructors deliver the same rigorous college content while considering the pedagogical strategies that may be better at engaging secondary students (Karp, Bailey, Hughes, & Fermin, 2005).

The original intent of the dual credit programs was to provide a challenging curriculum to academically prepared high-school students (Kim, Kirby, & Bragg, 2004). As it has evolved, this program has become a tool to help ease the transition from high school into college (Bailey & Karp, 2003), to develop vocational skill readiness, and to reduce time to a college degree (Burns & Lewis, 2000; Menzel, 2006). These programs have been shown to help alleviate student boredom and “senioritis” (Klein, 2007) by allowing for more independence in the learning process. Adelman (2006) found that rigorous and innovative course offerings have a significant impact on the transition from high school into college success. As these programs have become more common, they have become an option for both high- and low-achieving students (Le & Frankford, 2011).

Studies by Adelman (2006) and Swanson (2008) revealed that momentum to completion is an important factor in a student’s quest to obtain a college degree. When students do not obtain at least 20 credits by the end of their freshmen year or choose not to enroll in postsecondary education right after high school, they do not generate sufficient academic momentum. This may eventually lead to failure to obtain a college degree. Barnett and Hughes (2010) also found that students who participate in dual enrollment enhance their chances of college admission. Participating in dual enrollment has the chance to create circumstances by which students are reluctant to give up the credits earned. These students are perhaps more likely to experience a sense of achievement in their initial college credit classes and, therefore, enter post-secondary education without delay after high school to a greater degree than non-participants.

Student participation in a dual-enrollment program has also showed to have an impact on students’ decision of a college major (Morrison, 2008), college persistence (Andrews, 2001), enhancing self-confidence, and helping students see a connection between academic work and career success (Medvide & Blustein, 2010). Dual enrollment has been shown to benefit underrepresented and underachieving students (Bailey et al., 2005), students who are enrolled in career and technology education programs, first-generation students (Farrell & Siefert, 2007), and both boys and girls (Karp, Calcagno, Hughes, Jeong, & Bailey, 2007).

Although the benefits of dual enrollment have been addressed, this research study will also help with any perceived barriers to program success. Critics of dual enrollment have also warned about students not participating in

these courses until they are ready. Mead (2009) cited students who take courses too young or before they are ready may end up becoming discouraged against any college in the future. The study’s review of literature has shown that other concerns exist that must be addressed for a program to be successful. These include providing strong support systems from both secondary and university students, especially for minority and low-income students (Barnett & Stamm, 2010); engaging a broad student population (Edwards, Hughes, & Weisberg, 2011); providing appropriate dual course sequencing; and modeling hybrid Career and TEchnology Education (CTE)/academic courses that prepare students for career success, all while maintaining high academic standards (Adelman, 2006).

Agriculture Dual-Enrollment Program Model

The State of New Mexico School Grading Accountability system requires that all students have taken at least one dual credit/dual enrollment course or Advanced Placement (AP) class to fulfill the requirements for graduation (New Mexico Public Education Department, 2013). Those classes that were dual-credit must have been completed successfully with a grade of “C” or better. In the 2012-2013 school year, 79% of the students met this criterion. It was also found that 41% of the students limited themselves to only taking one college course during their high-school career. Established relationships with school leaders, teachers, and students can lead to increased enrollment and success of students in dual-enrollment programs. Offering more diversity in course selections in the area of agriculture sciences will also help to recruit and retain students in this high-need area.

The strategic plan of this program relies on four specific goals for the overall program: access, accountability, affordability, and student success. These courses are offered at no cost to the school or student and are paid for by the state. School administrators, secondary teachers, and university faculty must be in agreement on the courses offered and in what format they will be taught. A memo of understanding (MOU) is kept on file with the high school, college, and the state public education department. Teachers must be deemed qualified by the university faculty and most often require a minimum of a master’s degree. Students must be at least a junior in classification and in good academic standing (minimum 2.5 grade point average [GPA]).

Currently, Eastern New Mexico University offers six different agriculture dual enrollment courses. These courses include introduction to animal science, dairy science, introduction to horticulture, introduction to metal fabrication, rural buildings construction, and principles of engines and power units. The 18 hr of dual-enrollment courses offered all apply directly to majors in agricultural science. These courses are offered in three different formats: fully online through the university instructor, as a hybrid online/face-to-face model with the university faculty offering online content and the

secondary teacher leading lab activities; and solely by the high-school teacher serving as a university adjunct instructor. It has been found that programs with the hybrid course model have a high probability of success, because instructors deliver the same rigorous college content while considering the pedagogical strategies that may be better at engaging secondary students.

To ensure program rigor, university instructors and high-school teachers work together to make sure students are performing their own work and put forth the required effort. Student assessments are developed by the university instructor and are completed online through the university blackboard system. This increases student accountability and upholds the high standards and rigor of the university. Although strengths and benefits of the program have been identified, areas that merit program improvement exist as well. The dual-enrollment program, agriculture course offerings, and how those courses are offered are continually changing and adapting to best serve the needs of the students, secondary schools, and the university. This research will assist program leaders in addressing all of these needs and making the necessary pedagogical, program, and course-content changes.

Conceptual Framework

This research was guided by the Concern-Based Adoption Model (CBAM; Hall & Hord, 2006), a conceptual framework that describes, explains, and predicts probable teacher concerns and behaviors throughout a change process. In this case, the CBAM is applied to the change process of teachers implementing and enrolling in the agriculture dual-enrollment program. It was originally based on research that showed that beginning teachers went through developmental stages and expressed predictable concerns at each stage as they learned to teach (Hall & Hord, 2001). The model was later adapted to measure concerns teachers expressed as they learned to use new practices and the extent to which they actually implemented the innovations.

Today's educational systems involve numerous individuals responsible for facilitating change. These facilitators need a means of assessing the needs of the individuals with whom they work so that the most appropriate and timely assistance can be given. Two important kinds of assessment information CBAM provides are as follows: Concerns of the individual about whatever new programs, products, or ideas (innovations) are being offered, delivered, or implemented, and individuals' knowledge of and how they use these innovations. The particular focus of this study is on teachers' stages of concern and levels of use components of this model.

Stages of Concern is a framework that describes the feelings and motivations a teacher might have about a change in curriculum and/or instructional practices at different points in its implementation (Sweeny, 2003). At Stage 0, Awareness, the teacher has little knowledge about or interest in the

change. At Stage 1, Informational, the teacher is interested in learning more about the innovation. Teacher concerns at Stage 2, Personal, involves concerns about how the innovation relates to the individual. Stage 3, Management, is reached when the teacher begins to experiment with implementation; at this point, teacher concerns intensify around the logistics and new behaviors associated with putting the change into practice. At Stage 4, Consequence, looks at concerns about the effect of the innovation on the students. Stage 5, Collaboration, reflects teacher interest in coordinating with other in using the innovation. Stage 6, Refocusing, involves thinking about making major modifications in the use of the innovation, or perhaps replacing it with something else.

The CBAM Levels of Use focuses on general patterns of teacher behavior as they prepare to use, begin to use, and gain experience implementing a classroom change (Hall & Hord, 1987, 2006). Level 0, Nonuse, reflects a state in which the teacher has little knowledge of the change and no plans for its implementation. Level I, Orientation, is when she or he decides to seek more information about the change, but has not made a decision to implement it. Level II, Preparation, is when a teacher is actively preparing to put the change into practice but has not actually begun to implement it in the classroom. Level III, Mechanical, is when the teacher begins change implementation. Level IVA, Routine, has been reached when the teacher is comfortable with the change and not planning to amend how it is used. Most teachers settle in at a Routine level of use. Some, however, may actively assess the impact of the innovation on their students and initiate changes in the innovation or their use of it on this basis.

The CBAM is helpful not only in understanding the change process, but also in designing change strategies. An effective change strategy is one that helps teachers through the stages, addressing the seven concerns more or less in sequence (Anderson, 1997). For example, skipping the stage of personal concern, or not giving teachers enough time to work through it, makes successful change more difficult. Different concerns always interact and are operationalized by users at various development points throughout the process. For example, the teachers' knowledge of the innovation grows through the process of implementing the innovation and may affect the raising or lowering of personal concerns.

Purpose/Objectives

Information from this study can contribute to a better understanding of the agriculture dual-enrollment program participants, their opinions of course offerings, and the overall agriculture dual-enrollment program. The purpose of this study was to understand teacher's perceptions of the New Mexico agriculture dual-enrollment program impact on secondary school and students. Objectives that guided the research for this study include the following:

1. Determining teachers' perceptions of the impact of the agriculture dual-enrollment program to areas of student success.
2. Evaluating teachers' perceptions of the impact of the agriculture dual-enrollment program to secondary teachers.
3. Evaluating teachers' perceptions of how the agriculture dual-enrollment program's presence on a campus influences counselors.
4. Evaluating teachers' perceptions of the overall benefit of the agriculture dual-enrollment program to the secondary campus.

Method

This research used a descriptive study with open-ended questions. These research methods sought to overcome weaknesses of a single method (Johnson & Onwuegbuzie, 2004). After institutional review board (IRB) approval and individual participant agreement to participate, collection of data began. The sample population for this study was all New Mexico teachers ($N = 34$) who were currently offering the agriculture dual-enrollment courses on their high-school campus out of the 90 teachers in the state. We received a response rate of 84% ($n = 28$). Comparison of early and late responders revealed no significant ($p < .05$) difference. Based on this information, the researcher felt the findings could be generalized to the population.

Quantitative data were collected in relation to teacher's perceptions on the cost and benefits of the dual-enrollment program. Teachers were asked to rank the impact of the dual-enrollment course offerings on a 1 to 5 scale (1 = *strongly disagree* to 5 = *strongly agree*). The rating was on the dual credit course offering in relation to areas of student success, impacts on the high-school teacher, guidance counselor, campus principal, and secondary school campus as a whole. Teachers were asked open-ended questions relating to the impacts on students, themselves as a teacher, and the school as a whole, and their overall opinion of the agriculture dual-enrollment program. The instrument used for this study was the Teacher Dual Enrollment Impact Survey, developed by the National Association for Concurrent Enrollment Partnerships (NACEP)).

The NACEP is a professional organization with more than 200 postsecondary members across the United States. Per NACEP guidelines, none of the "essential questions" was deleted or modified beyond specifying course focus (in this case, agriculture science). The validity of this instrument has been established through testing and usage across the country within the NACEP (2011). Chief academic officers at the institution were also given a chance to review drafts of the survey to ensure validity from their perspective. The reliability of the instrument resulted in a Cronbach's alpha score of .957 post hoc evaluation.

Open-ended responses were solicited to investigate program participants' experiences because this method allowed researchers to understand how people "make sense of their world" (VanMaanen, 1979). The researcher felt this was appropriate with the CBAM as change within this model is viewed as "a highly personal experience and involves developmental growth in feelings and skills" (Hall & Hord, 2001). Open-ended questions were asked at the end of each Likert-type scale. These were reviewed by the researcher and the data analyzed using the constant comparative method (Glaser & Strauss, 1967). This used unitizing and categorizing of the data. The constant comparative method allowed the researchers to repeatedly compare the responses with previous responses in an attempt to discover new relationships (Dye, Schatz, Rosenberg, & Coleman, 2000). Following the unitizing of the data, the data were coded as part of an audit trail to ensure confirmability (Erlandson, Harris, Skipper, & Allen, 1993). The units of data were sorted into emergent categories of ideas.

The researcher used measures of credibility to ensure validation of the study. Credibility relates to the level of confidence in the researcher, study design, and findings to accurately represent the data (Ary, Jacobs, Razavieh, & Sorensen, 2010). Credibility was established through member checks and peer debriefing. Participants were purposely selected for this study based upon their experience teaching and participating in the agriculture dual-enrollment program. Although there is potential to transfer this to other settings, the findings of this study are limited to the participants of this study in the state of New Mexico.

Findings

Objective 1 sought to measure the impact of the agriculture dual-enrollment program on student success. Table 1 illustrates the perceived impact dual enrollment has on student success.

Overall teachers agreed that the program had a positive impact on student success. Teachers felt the largest impact of the agriculture dual-enrollment program on students' success was the learning of in-depth agriculture knowledge, staying on campus to get college credit, and gaining an appreciation for the challenge of college courses.

Teachers were also asked the open-ended question, "What is the single greatest impact agriculture dual enrollment courses have had on your students?" They responded that involvement in the program led to more students getting involved in more rigorous courses and different types of students getting involved, encouraged them to stay in school, and gave them the opportunity to start college early. Examples of teacher comments include,

Many of these students are the first in their family to take college course or even consider going to college. They never thought about it until taking these courses.

Table 1. Perceived Benefits of the Agriculture Dual-Enrollment Program to Student Success.

Prompt	M	Mode	SD
Gained an in-depth knowledge of agriculture	3.93	4	0.98
Chose to take enrollment courses on campus	3.86	5	1.46
Gained an appreciation for the challenge of college	3.79	4	1.26
Have enrolled in academically challenging courses	3.75	4	0.93
Developed effective time management skills	3.75	4	1.00
Continued learning into their senior year	3.68	4	0.90
Developed effective study habits	3.68	4	1.01
Developed an understanding of their academic skill	3.64	4	0.95
Developed realistic college expectations	3.57	4	1.03
Considered, for the first time, going to college	3.57	4	1.13

*(1 = *strongly disagree* to 5 = *strongly agree*).

This program encourages students to stay in school and take a serious look at post-secondary education.

Several teachers saw the program as a benefit to students' understanding of college rigor, gaining confidence in their academic skills, allowing them more elective options, positively affecting their work ethic, helping them tie material to real-world skills, and helping them to meet state standards for graduation.

The **second objective** was to determine the perceived benefit of the agriculture dual enrollment to secondary-school teachers. Table 2 provides more detail on these findings.

It was found that high-school teachers perceived the agriculture dual-enrollment program as a benefit to them personally. They felt that this program had the greatest impact on their ability to establish higher standards for student work, making their job more satisfying, and helping them to feel more connected to their discipline. It was found that teachers felt supported by the university liaisons for the program. Overall, they did not feel that their participation in the agriculture dual-enrollment program took away from other duties, nor did it result in them being released from other school duties.

When asked, "What is the single greatest impact the agriculture dual-enrollment program has had on you as the teacher?" teachers reported a variety of impacts this program has on them as a teacher. These included more students getting involved and increased motivation as a teacher. Multiple participants noted that it increased the rigor in their teaching and their knowledge of new agriculture technologies. Several

Table 2. Perceived Benefits of the Agriculture Dual-Enrollment Program to Secondary Teachers.

Prompt	M	Mode	SD
Felt supported by the dual university liaison	3.96	4	1.17
Established higher standards for student work	3.89	4	1.03
Found the job more satisfying	3.71	4	1.08
Felt more connected with my discipline	3.64	3	1.03
Found dual content useful in non-dual courses	3.61	4	0.99
Learned about new ideas in my discipline	3.61	4	1.07
Increased critical thinking skills taught in my courses	3.61	4	1.26
Learned new instructional strategies	3.57	4	1.07
Been energized as a teacher	3.46	3	1.17
Taken leadership positions within the school	3.43	3	1.17
Developed better understanding of college expectations	3.32	3	0.95
Found it more difficult to fulfill other responsibilities	2.61	2	1.17
Been released from other school duties	2.50	2	1.26

*(1 = *strongly disagree* to 5 = *strongly agree*).

teachers felt that it opened up more teaching options for them. Two of the more experienced teachers wrote,

It has allowed me to view myself in a different way and evaluate myself as an educator in order to improve my craft.

It has inspired me the continue learning and stay up with current information and trends.

Objective 3 was evaluating teacher's perceptions of how dual enrollment's presence on a campus influenced counselors. Table 3 details how teachers felt this program affects counselor decisions.

The dual-enrollment programs' impact on school counselors was found to have the lowest average of all of the areas of impact. They "disagreed" that the agriculture dual-enrollment program had an impact on the way counselors enrolled students in their classes or the way they presented college options to students over other areas. These were also the areas found to have the most variability in their responses.

The **fourth objective** was to assess teacher's perceptions of the benefits of the agriculture dual-enrollment program to the overall secondary campus. These findings are presented in Table 4.

When determining teachers' perceptions of the dual-enrollment program's impact on the overall secondary campus, teachers "agreed" that it had a positive impact. They felt the strongest impacts of the program were in the areas of enhanced prestige and reputation of the high-school campus. The program was shown to have a positive impact on courses

Table 3. Perceived Impact of the Agriculture Dual-Enrollment Program in Relation to School Counselors.

Prompt	<i>M</i>	<i>Mode</i>	<i>SD</i>
Perceived more students as capable of higher levels of academic achievement	2.79	4	1.62
Increased their knowledge of current college requirements	2.79	4	1.66
Developed a better understanding of skills students need to succeed in college	2.71	4	1.58
Changed the way they present college options to students	2.61	4	1.85
Enrolled more students in my agriculture science class	2.39	4	1.77

*(1 = strongly disagree to 5 = strongly agree).

Table 4. Perceived Benefit of the Agriculture Dual-Enrollment Program to the Overall Secondary Campus.

Prompt	<i>M</i>	<i>Mode</i>	<i>SD</i>
Enhanced its prestige and academic reputation	3.61	4	1.32
Progressed in meeting its goal of offering rigorous courses	3.57	4	1.23
Demonstrated to parents that their students are doing challenging work	3.57	4	1.29
Offers perquisite courses for agriculture dual enrollment that are appropriate	3.50	4	1.20
Raised expectations for student performance	3.39	4	1.17

*(1 = strongly disagree to 5 = strongly agree).

being more rigorous and demonstrated to parents that their students were taking part in challenging schoolwork.

Participants were then asked the open-ended question, “What is the single greatest impact the agriculture dual-enrollment program has had on your school?” A majority of teachers felt that it increased the school and program prestige as well as increased their school score with the state-grading system. They felt this program established a positive relationship between the high school, the agriculture program, and the university. Teachers noted that it has led to increased parent and community support. Two of our teachers who have worked with this program for the last 2 to 3 years replied,

It gives the community a different view of our school. It gives parents and the community ideas about what our school has to offer our students.

This has been a selling point for many of the electives and it also has made an impact on the student work in all classes.

The final question of the survey was an open response asking, “What are some challenges that you have seen from

your involvement with the agriculture dual enrollment program?” Teachers expressed that some possible challenges they faced included getting all students interested in the courses, aligning lab activities to match the college course material, and finding time to develop lab activities that fit with dual-enrollment agriculture courses, and that they would like to have more resources from the university with regard to technology.

Discussion

The researchers found that overall, teachers felt the agriculture dual-enrollment program had a positive impact on students, teachers, and the secondary campus as a whole. There was found to be an affirmative effect on the community’s perception of the agriculture program and high-school course rigor, similar to findings by Hughes (2010). These findings are comparable with previous research on the benefits of dual-enrollment courses (Bailey & Karp, 2003; Barnett & Hughes, 2010). The agriculture dual-enrollment program leaders were validated in their goals from the findings on their relationships with teachers and the constructive comments made within open-ended questions. The positive impact on the campus as a whole is a major part of change adoption within the CBAM. One of the primary principles of this model is that the context of the school influences the process of change. The teachers’ comments backed up these findings as well as provided some more detail in how exactly they were affected in these areas.

Based upon the comments, with regard to stages of concern, teachers were found to be in Stage 4, Consequence. This is when the teacher concerns focus predominantly on the impact of the change on students in their classrooms and on the possibilities for modifying the innovation or their use of it to improve its effects. With regard to the framework levels of use, teachers were found to be at Level IVA, Routine. This involves teachers establishing a pattern of regular use and making few changes and adaptations in use of the innovation.

Teachers did not feel that the program had a highly positive impact on the way counselors perceived their programs or worked with their students. These findings were counter to the findings of Medvide and Blustein (2010). The findings of this study suggest that counselors are at the lowest levels of concern and levels of use, *awareness* and *nonuse*, respectively. These findings may be due to counselors having limited contact with agriculture dual-enrollment liaisons. By addressing the early stages of concern related to *awareness* and *informational*, the researcher can successfully reach the later stages of *collaboration*. As the school counselors advance through the stages of CBAM, it is the researchers’ hope that this will lead to them becoming advocates of the agriculture dual-enrollment program.

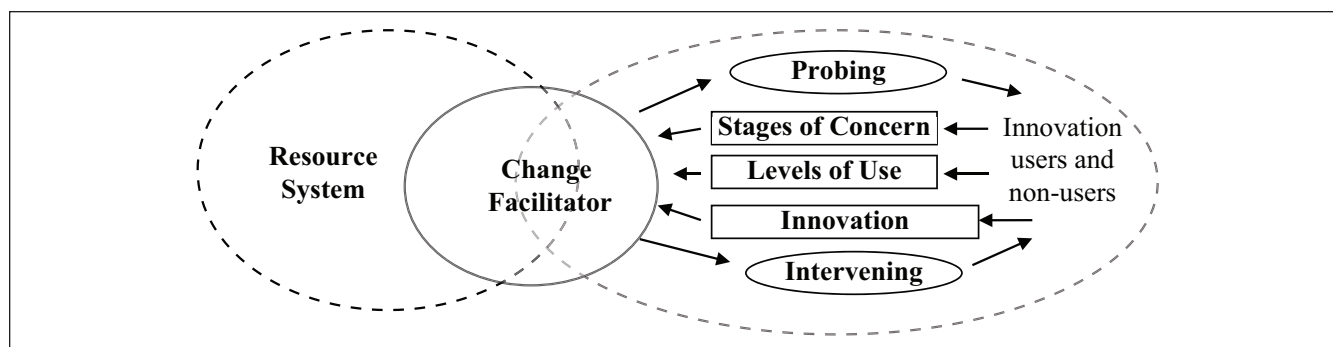


Figure 1. Concerns-based adoption model by Hall and Hord (2006).

Recommendations for Educational Practice

Dual-enrollment program directors are encouraged to develop and present a professional development workshop for school counselors to increase their level of understanding and adoption of the agriculture dual-enrollment program. We thought this was important as the level of counselors' support was the construct that had the lowest average scores from teachers. Using the CBAM, counselors need to be better informed through appropriate professional development before they can advance further along the spectrums for levels of concern and levels of use. As noted within CBAM, an organization does not change until the individuals within it change (Hall & Hord, 2006).

It is suggested that continued professional development should be offered focused on the training of new teachers and experienced teachers as they possibly enter the higher stages of concern, which involve refocusing and the consideration of making major modifications in the use of the innovation. This is suggested because, even with high overall opinion scores from teachers, there is a little more than one third of the programs in the state that actually are taking advantage of this unique program offering. This should include the development of suggested lab activities to address some of the comments made by participants. These trainings can help the high-school instructors create the necessary college-like atmosphere and assist in pedagogical strategies necessary for student success.

The best way to offer this professional development that will reach the largest audience is by offering it at the annual New Mexico agricultural science teachers' conference. It is also suggested that professional development be offered for campus administrators. In Chapter 1 of their book, Hall and Hord (2001) list 12 principles of change within an educational CBAM, one of which is that administrator support is vital to long-term program change and adoption.

Recommendations for Further Research

Research focused on the pedagogical approaches of these course offerings, both from the university instructor and the secondary agriculture science teacher's teaching methods,

will benefit the creation of high-quality dual-credit courses. It is suggested that researchers continue studying the benefit of students' participation in the dual-enrollment program on college entrance and success in higher education. Research should also be done in relation to the reasons students take dual-enrollment courses and the ultimate career paths of these program participants. To develop a program that is available to a wide range of learners, while maintaining high standards for course accountability, more research should be done to find how well these programs address student variances (attitude, learning style, autonomy, etc.). It is also suggested that a similar study be conducted with school administrators and school counselors to gauge their level of use and stages of concern with the agriculture dual-enrollment program.

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