H.E.A.R.T

Universtity of Alaska Fairbanks
College of Rural & Community Development

Health Education And Rural Training

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An Evaluation of Allied Health Education Outcomes & Impacts

United States Department of Labor
Trade Adjustment Assistance Community College & Career Training Grant

Evaluation Research Associates, LLC

About the College of Rural & Community Development

The College of Rural and Community Development (CRCD) is primarily a teaching college focused on vocational training and job skill development. The College is housed at the University of Alaska Fairbanks (UAF), one of three major academic units of the University of Alaska (UA) system. The College has oversight of one urban campus, the Commuinity and Technical College located in Fairbanks and five rural Campuses located in the rural regional transportation hubs of Bethel, Dillingham, Kotzebue and Nome. These four campuses not connected to a road system and are accessible primarily by plane. The fifth Interior Alaska Campus serves the interior villages from administrative offices in Fairbanks. The five rural campuses under CRCD hold the Federal Designation of Alaska Native Serving Institutions. *Campus photos pictured on the cover,* from left to right, top down: Community and Technical College and Interior Alaska Campus in Fairbanks, Bristol Bay Campus in Dillingham, Chukchi Campus in Kotzebue, Kuskokwim Campus in Bethel, Northwest Campus in Nome.

About TAACCCT

The U.S. Department of Labor Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant program has invested $2 billion in federal funding to improve the capacity of our nation's community and technical colleges to offer workforce education and training that increases the skills and employment of adults. One of the goals of this investment has been to use the results and lessons from the grant projects to inform the Departments of Labor and Education's efforts to support innovative workforce education and training and to offer important lessons to policymakers and practitioners across the higher education and public workforce systems. This report adds lessons to the effort.

About This Publication

This publication is a product of the CRCD HEART initative. It was prepared by Evaluation Research Associates LLC of Fairbanks, Alaska associate Kas Aruskevich, PhD. The impact study was conducted by associate Barbara Adams, PhD of Adams Analytic Solutions. The authors thank the many rural providers and EMS staff and campus faculty and staff who were involved in this initiative over the past three and a half years. An extended thanks goes to those who assisted the evaluation work and provided valuable data and information for this report.

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Description & Activities

The College of Rural and Commuinity Development's Round 2 TAACCCT grant is entitled H.E.A.R.T. (Health Education And Rural Training). The *HEART* Project focuses on distance delivery and/or accelerated learning for four Allied Health programs: Medical Assistant, Paramedic Academy, Nurse Aide, and Dental Assistant. In addition, four courses and an Emergency Medical Management Concentration was developed specifically for Paramedics who have earned an Associate Degree. This 2+2 development leads to a Bachelor Degree in Emergency Management at UAF. The HEART Project provided personalized student support, expansion to rural areas, and partnership development with regional rural hospitals, dental clinics and long term care facilities. Partnership agreements resulted in student placement of students for the clinical portion of coursework. The partners are key to providing future jobs for student completers and to sustain the delivery of the HEART allied health programs.

Population Served

The HEART Project proposed to deliver higher education opportunities in Allied Health to rural Alaska students located in the CRCD region of 160 primarily roadless Alaska Native Villages. However, the project served a primarily urban-based population. Approximately 80% of the 345 participants were based in Fairbanks or on the connecting road system and enrolled in courses delivered by the urban Community and Technical College.

HEART Evaluation Design

The UAF College of Rural and Community Development contracted with Evaluation Research Associates to conduct the evaluation of the TAACCCT HEART Project. The evaluation focused on providing ongoing formative evaluation evidence to assist in continual improvement, investigated the gains in institutional capacity building and sustainability. In addition, a quasi experimental evaluation of the Nurse Assisting program provides evidence of the success of distance and accelerated coursework. The

evaluation operated undertook two process or implementation goals and two impact goals discussed in the following sections.

Theory of Change

Weiss (1995) defines a theory of change as a theory of how and why an initiative works. Building on her work, following is a list of the ongoing activities/ outcomes and projected impacts of the initiative.

Shorterm Activites/Outcomes

- Four Allied Health programs and four 2+2 EMS courses developed for distance delivery and piloted

Medium Term Activities/Outcomes

- Expand CTC delivery of allied health programs to rural Alaska
- Faculty build and strengthen relationships with regional rural hospital providers, regional EMS teams, and rural campus staff
- Rural campuses recruit students to *grow your own* allied health workers in each region

Long Term Impacts

- Rural students trained and skilled to take positions at rural locations
- Regional health care facilities are more stable due to increased number of local hires

Implementation Study

Evaluation Design

In Project Years 2 and 3, the four Work Plan Strategies were used as the framework to monitor, measure and document the Project's implementation progress, challenges and successes. Data was collected through interviews with faculty and staff, focus groups awtih students and observations of course delivery to provide data used for discussion in monthly meetings. This ongoing formative evaluation and reporting ensured a continuous cycle of improvement.

Research Questions

In Project Year 3 two applied research/evaluation questions were developed to measure capacity building and sustainability:

Question 1: How has TAACCCT built the capacity of CTC and CRCD to deliver allied health programs to rural Alaska?

Question 2: How can the Allied Health programs offered under TAACCCT be sustained?

Data Collection & Indicators

To measure these questions, qualitative data was collected from a variety of sources including project participants, faculty, interviews with health and dental providers, Indian Health Service Corporation Executive Directors, fire chiefs, rural Campus directors, student surveys, and report reviews.

Quantitative data was provided by UAF Institutional Research (UAF IR). The assistance of this UAF department was instrumental after the USDOL clarified grant participants to anyone receiving grant-funded services. UAF IR was also responsible for employment data collection from the State of Alaska Department of Labor.

The following indicators were used to measure the two process research questions:

Question 1 - to measure capacity building:

- the number of courses delivered to rural Alaska
- student enrollment in distance delivery courses
- documented distance courses and course supports
- supplies and equipment
- partnerships gained

Question 2 – to measure sustainability:

- continued and planned delivery of Allied Health programs by rural Campuses
- partnerships to provide support for students

HEART Implementation Outcomes

Many of the implemention outcomes meet logic model outcomes and the measures for the research questions.

- The HEART grant was used to build institutional capacity through increasing the knowledge and skills of faculty to delivery courses at a distance.

- The purchase of equipment and supplies will enable students to engage in courses at rural and satellite locations.
- The partnerships with Alaska Native regional corporation hospitals and long-term care facilities were key to the success of the student and ability to distance deliver courses.
- UAF CRCD met and went beyond the original design of the program with USDOL approval to expand the Medical Assisting program into a region served by another UA Campus – the University of Alaska Southeast Sitka and Ketchikan Campuses. Juneau is interested in paramedicine.
- Strengths of the program was the willingness of CTC faculty to teach rural and Alaska Native students at a distance with support on cross cultural communication and course delivery techniques.
- The primary weakness was the lack of CTC leadership involvement and the abrupt ending of the project in mid-semester, 2016.

Impact Study

Evaluation Design

In Project Year 4, a quasi-experimental evaluation was conducted on the Nurse Aide program. The impact evaluation compared a total of 47 Health F107 courses offered at six different UAF campuses over nine semesters (starting in summer semester 2013 through spring semester 2016) taught by six different instructors. The particular outcome variable (dependent variable) of interest was student success as measured by letter grade. The treatment group included student/participants in the accelerated and distance delivered courses and the comparison group of student/participants in traditional delivered courses.

Research Questions

Question 1: Are students in the treatment more successful than those in comparison courses?

Question 2: Is there a difference in success between the intervention delivery types: accelerated vs. distance delivered course?

Methodolgy Analysis & Validity

SPSS 24.0 was used to run an Independent Samples T-Test (p-value = 0.016) using course level data. In both cases the treatment group outperformed the comparison group and thus can be considered as improving student success.

Internal validity on the quasi-experimental evaluaiton was low as participants were not randomly assigned to groups, there was no pretest or attmept to make groups similar. The population external validity was high as students were representative of the general Nurse Aide course population and sampling included all students in the course from spring semesters 2013-2016.

Impacts

A primary key impact of the HEART project is the success of students in distance delivery courses, setting the foundation for course and program delivery expansion into rural Alaskan regions, and the partnerships gained through program sustainability.

Long-term care facility in Bethel, Alaska.

USDOL Outcome Measures

USDOL identified nine indicators for project participant outcomes. These indicators were tracked annually comparing projected outcomes to actual outcomes as reported in the Performance Reports Following is the project summary of these indicators:

#	Outcome
1	345 participants served - 114% of target
2	166 participants completed a grant funded program of study – 83% of target
3	132 participants retained in program of study – 161% of target
4	292 participants completing credit hours – 123% of target
5	49 participants earning credentials – 21% of target
6	52 participants pursuing further education – 173% of target
7-9	Employment data not available from the State

Conclusions

The HEART Program did well in developing and delivering the four allied health programs. Enrollment in the Dental Assistant program was very low, however, the distance courses have promise of future use in rural dental clinics. The number of participants served was above the proposed number and all other indicators were met or exceeded except the number of participants earning credentials.

The quasi-experimental study on the Nurse Aide course found the treatment group taking accelerated or distance delivery courses outperformed the comparison group taking traditional courses and can be considered as improving student success.

Challenges & Solutions

Each allied health program has unique challenges and solutions:

Nurse Aide – challenge: to know at a distance which students understand the hands on nature of the Aide; solution: hold pre-course teleconference to talk with potential students before they enroll.

Paramediciene – challenges - establishing a satellite site that has the required videoconferencing capabilities, developing MOA's with local hospitals for clinicals and with a Lower 48 EMS for externships, local skills instructor identified; solutions: site visits to satellite sites.

Dental Assisting – challenges: understanding needs for dental assistants, identify provider for clinical training to accompany coursework; solutions: site visits, involve providers

Leadership involvement- the importance campus leadership involved in the project is paramount to project implementation and sustainability.

Future Workforce & Education Research

The next steps to rigorously studying the types of approaches and strategies tested for distance delivery under the HEART TAACCCT project are dependent on department, faculty and graduate student interest in the subject. Dr. Adams states:

To rigorously study the alternative types of course delivery in the future a research design implementing and assessing randomization of groups, equivalent starting points, and controlled variables and settings is needed.

A number of graduate students at UAF are working on dissertation research. The Director of UAF eLearning is close to completing a PhD investigating personal, circumstantial and institutional variables to see which were more dominant for students who successfully completed online courses compared to those who were unsuccessful.

The Alaska Statewide Mentor Project is designing a study to research distance delivery of their mentoring model.

Introduction

The College of Rural and Commuinity Development's Round 2 TAACCCT grant is entitled H.E.A.R.T. (Health Education And Rural Training). The HEART Project focuses on distance delivery and/or accelerated learning for four Allied Health programs: Medical Assistant, Paramedic Academy, Nurse Aide, and Dental Assistant. Each of these programs have an occupational projection over the next five years. The State of Alaska Department of Labor projects a 19% increase in the need for Nurse Aides, a 27% increase for Dental Assistants, an 18% increase for paramedics, and a 26% increase for Medical Assistants.

The purpose of the HEART Project was to reach out and respond to the demand for Allied Health programs from rural students and rural health care providers in rural Alaska through CRCD's Community and Technical College (CTC). In addition, four courses and an Emergency Medical Management Concentration was developed specifically for Paramedics who earned an Associate Degree, this 2+2 development leads to a Bachelor of Emergency Management at UAF. The State of Alaska occupational projection for EMS Directors with a 5% increase, however staff at the State Department of Health & Social Services EMS project a much higer need for leadership positions as the number of EMS calls are 90% of a fire station's work and the call volume continues to rise.

The College of Rural and Community Development is primarily a teaching college focused on vocational training and job skill development. CRDC recognizes the limited post-secondary opportunities for residents in rural Alaska. Further, there is an identified need for allied health professionals in each region where the College has rural campus. These campuses are the best opportunity for face to face education preferred by rural and Alaska Native residents of these regions. In addition, a few of the campuses work hand in hand with regional Career and Technical Centers that often provide housing for students traveling in from a village to take a class or training. While the Center may house students and class, lab or shop space, the campus provides instructor approval and opportunity for students to earn univeristy credit.

The HEART Project also provided personalized student support, expansion to rural areas, and partnership development with regional rural hospitals and long term care facilities for student clinicals, future placement of student completers, and for allied health program sustainability.

HEART Theory of Change

Background

CRCD's urban-based campus, the Community and Technical Center, houses UAF's allied health programs. As such, the Center was in an advantageous situation to meet changing conditions in rural Alaska allied health. In the past, facilities in rural Alaska were not adequate for clinical rotation sites. However, as new Indian Health Service hospitals were built with the capacity to serve a growing population, the hospitals were amiable to open their doors to clinicals for local distance students. Dental clinics expanded to meet the regional needs and some look to distant delivered courses to augment on the job training. Further, some communities added long-term care facilities which enabled nurse aide students to complete didactic and clinical work without leaving the rural community. The idea to *grow our own* health professionals is strong, given the high turnover rate when professionals are hired from outside the region or state.

With these conditions in mind, the timing was advantageous for CRCD to receive TAACCCT funding to develop allied health programs for distance and accelerated delivery. As one faculty commented:

I would like to see more grants with initial seed funding for the public safety career realm, so we can develop programs in education. Often universities won't go forward with development because they are nervous about fronting money then trying to attract students…it is not considered an investment. So the USDOL TAACCCT as an initial seed investment goes a long way to get things off the ground so that we can start to meet the needs of EMS and students.

Weiss (1972) defines a theory of change as a theory of how and why an initiative works. Building on her work, following is a description of the ongoing activities/outcomes and projected short, medium, and long term impacts of the initiative.

Short term outcomes provided support to CTC faculty to develop four allied health programs for distance delivery and/or accelerated learning. These courses were piloted primarily to urban-based students.

Medium term outcomes saw program delivery begin to expand to rural regions and relationships with rural regional providers/hospitals and rural campus staff established and strengthened. 345 participants were trained in allied health professions, 49 of these students earning an award and 132 continued on to further education. While only a small percentage of rural students were served, the distance programs are now poised to continue expansion to rural Alaska. There is a continued effort to recruit students – *grow your own* allied health workers at regional facilities.

Long term outcomes project that rural regional health care facilities become more stable as turn over declines with the increase of local hires. Regional residents find gainful employment in allied health professions.

Report Organization

This report provides details and insights on the outcomes and impacts of delivering four allied health programs in Alaska. This report is organized to address the USDOL request for descriptions of TAACCCT innovations, implementation and impact study findings.

The first section presents the HEART Project implementation study and outcomes, discussing the the two evaluation questions on builing institutional capacity and sustainability. The next section details project participant demographics and progress. The third section details allied health impact study and outcomes. This is followed by evaluation methodologies. The report concludes with an assessment of the extend to which the allied health programs have expanded into rural Alaska regions and the projected sustainability of the programs.

Maniiliaq Health Center, Kotzebue, Alaska

Weiss, C. H. (1972). *Evaluation research: Methods of assessing program effectiveness*. Englewood Cliffs, NJ: Prentice-Hall.

HEART Implementation Study & Outcomes

HEART Implementation Study

In Project Years 2 and 3 the four Work Plan Strategies were used the as a framework to monitor, measure and document the Project's implementation progress, challenges and successes. Data was collected through a mixed methods approach to provide information used for discussion in monthly meetings and in formative evaluation reports to ensure a continuous cycle of project improvement.

In Project Year 3, data collection expanded to measure capacity building and sustainability. Two research questions were developed and discussed later in this section.

Allied Health Program Implementation

The most important implementation outcomes were the development and delivery of distance courses. The table in Appendix A compares the traditional and HEART delivery methods by occupation and career pathway. Implementation details on each HEART program follow and include points on program sustainability.

Paramedic Academy

- The Paramedic Academy is a accelerated 1-year program and a pioneer nationwide in the use of videoconference to teach students at satellite learning sites
- Three Paramedic Academy have been delivered with integrated video conference to 65 students; 32 skills training videos have been produced to assist with distance learning
- Distance learning remote polling tools help make distant lectures interactive
- Five internet-based video systems that work with simulation mannequins and interactive video are mobile and the instructor can control simulations from a distance
- New satellite sites added include Nome, Bethel, Dillingham, Delta and Ketchikan. Paramedics trained in these communities can work in the future to sign off on skills testing for new distant students add sustainability to program delivery.
- Numerous partnerships were created with regional hospitals for paramedic clinicals, with fire stations as satellite sites and for testing, and with Lower 48 States EMS for externships; these are listed in the Quarterly Performance Reports

Medical Assistant

- The Medical Assistant program is a pioneer in the use of Internet-based, distance education in nationwide to teach students distance
- 33 credit hours of course work was developed
- HEART developed courses have been transferred to University of Southeast Sitka Campus for delivery in that region add sustainability to the program delivery

Dental Assistant

- 3 courses in Dental Assisting have been developed for distance delivery
- Courses were delivered by Maniiliaq in Kotzebue by a university approved local instructor
- Partnerships are under development with other rural providers add sustainability to the program delivery

Nurse Aide

The 9-credit Nurse Aide course was developed for accelerated delivery to a 5-week course. In addition, the course was developed for semester-based distance delivery. With new long-term care facilities emerging in rural regional hubs, the demand for nurse aides is slowly increasing with the ability for rural campuses to offer the clinical portions of the class locally. Some hospitals are also using nurse aides. The purchase of CareAssist bed systems for Northwest Campus and CTC and a patient lift for CTC add sustainability to the program delivery.

2+2 to EMS Bachelor Degree

Four courses have been developed specifically to attract Paramedics to the UAF School of Management Bachelor Degree in Emergency Management Services. An Emergency Medical Management concentration for the Bachelor Degree was developed from the four courses to be piloted in Fall Semester 2016.

Implementation Research Questions

The evaluation measured two applied research/evaluation questions :

Question 1: How has TAACCCT built the capacity of CTC and CRCD to deliver allied health programs to rural Alaska?

Question 2: How can the Allied Health programs offered under TAACCCT be sustained?

Measuring Institutional Capacity

A number of indicators were used to measure institutional capacity and sustainability built through the TAACCCT project. The following indicators are discussed in various sections in this report.

Question 1 – Institutional capacity building is measured by the indicators of: The number of CTC faculty engaged in distance education; the number of distance courses delivered; and the student enrollment in those courses both urban and rural.

Question 2 – *Sustainability is measured by the indicators of*: Course supports developed and equipment purchases to sustain distance delivery; continued and planned delivery of allied health programs; and partnerships developed to provide support for program delivery and/or student participation.

Participant Demographics & Progress

The HEART Project proposed to deliver higher education opportunities in Allied Health to rural Alaska students located in the CRCD region of 160 primarily roadless Alaska Native Villages. 80% of the 345 participants were based in Fairbanks or on the connecting road system and enrolled in courses delivered by CTC. Participant statistics were provided by the UAF Institutional Research based on enrollment in courses taught by project faculty or in courses developed by project faculty. Student demographics show:

Of the 345 participants the student status was:
72% (24) were under 30 years of age
59% (202) were part-time students

The race and ethnicity of students:
16% (56) Alaska Native
30% (103) unknown
42% (144) white
12% (42) other minorities

Award status of students:
7% (25) earned less that a 1-year award
6% (21) earned a Certificate
5% (18) earned an Associate Degree

A table on detailed demographic data is in Appendix B.

Table 3 shows the enrollment in HEART courses by programs and Campus. The table shows 16% or 56 students were enrolled through rural Campuses and 84% or 289 students were enrolled through CTC. The number of students enrolled at CTC is a bit misleading as, for example, the students enrolled at distant satellite sights are enrolled in the CTC course and show up in the CTC enrollment figures for paramedicine. The same occurs for some distant delivered Nurse Aide courses.

Table 1. Enrollment in HEART courses by program and Campus.

Program of Study	Campus								
	BBC	CC	CTC	IAC	UAF	KuC	NWC	Sitka	Totals
Dental Assisting			11						11
Medical Assisting			17					9	26
Nurse Assisting	13		100	8			21		142
Paramedicine			65						65
EMS 2+2					5				5
Other			96						96
Totals	13	0	289	8	5	0	21	9	345

Below are the four-year summative outcomes for the USDOL nine impact measures. Indicators by Project Year are in Appendix C.

 # Measure

1 345 participants served - 114% of target
2 166 participants completed a grant funded program of study – 83% of target
3 132 participants retained in program of study – 161% of target
4 292 participants completing credit hours – 123% of target
5 49 participants earning credentials – 21% of target
6 52 participants pursuing further education – 173% of target
7 -9 Employment data not available from the State of Alaska at this time.

The curriculum for HEART Allied Health programs were selected according to National Standards specific to each program. The criteria for participants changed over the course of the grant from TA eligible only to any student that benefits from TAACCCT funded courses/instruction. This critieria increased the number of students benefiting from the project.

HEART Implementation Findings

The HEART grant was used to build institutional capacity through the increasing the knowledge and skills of faculty members in distance delivery.

Although the participants served were primarily urban-based and/or on the road system, HEART implementation efforts provide for future expansion and program sustainability in rural Alaska.

The partnerships with Alaska Native regional corporation hospitals and long-term care facilities were key to the success of the student and ability to distance deliver courses.

UAF CRCD met and went beyond the original design of the program with USDOL approval to expand the program into a region served by another University of Alaska Campus – the University of Alaska Southeast Sitka and Ketchikan Campuses.

Strengths of the program include the willingness of CTC faculty to expand beyond the Center's urban population and teach rural and Alaska Native students at a distance. Cross cultural communication, history of Alaska Native history and techniques to deliver courses at a distance was provided annualy to project faculty and staff.

A primary weakness of project implementationwas the lack of CTC leadership involvement and the abrupt ending of the program delivery in mid-semester, 2016.

Allied Health Program Impact Study & Outcomes

Impact Study Rational & Design

In Project Year 4, a quasi-experimental evaluation was conducted on the Nurse Aide program to determine the success rate of students in HEART funded distance delivered and accellerated courses. This impact study had two research questions that are measured:

Question 1: Are students in the treatment more successful than those in comparison courses?

Question 2: Is there a difference in success between the intervention delivery types: accelerated vs. distance delivered course?

Methodology

The quasi-experimental method compared a total of 47 Health F107 courses offered at six different UAF campuses over nine semesters (starting in summer semester 2013 through spring semester 2016) taught by six different instructors.

The particular outcome variable (dependent variable) of interest was student success as measured by letter grade.

The treatment group included student/participants in the accelerated and distance delivered courses and the comparison group of student/participants in traditional delivered courses.

Student distribution based on demographics for those in the treatment and comparison groups by count and percentage are detailed in an Appendix D table.

Sensitivity analyses by student demographics and course details showed that there were differences between students who were removed and those who remained in the dataset. The missing data most likely fall under the category of Not Missing At Random (Puma et. al., 2009). Students with no outcome data (letter grade) were less likely to be White, Asian or Hi/Pac Is and more likely to be Nat/Ind. Students with no outcome data (letter grade) were less likely to be in a distance delivered course, less likely to be at the UAF CTC campus, and more likely to be in a grant funded course. However, with only 7% missing data (38 out of 521), the best choice for dealing with missing outcome data was case deletion (Puma, et.al., 2009, p.8). See Appendix E for reference and details of sensitivity analyses.

The treatment consisted of both an accelerated program and distance delivered program. The comparison group was the traditional course offerings of Health F107 that occurred during the same semesters.

Table 2. Distribution of students by campus for treatment and comparison groups.

Campus	Type of Course Delivery			Total
	Comparison Traditional	Treatment Accelerated	Treatment Distance	
Bristol Bay	2	0	5	7
Chukchi	3	5	0	8
Interior Alaska	5	0	0	5
Kuskokwim	40	9	0	49
Northwest	0	11	0	11
CTC	243	127	33	403
Totals	**293**	**152**	**38**	483

The *course distribution* detailed in Table 2 shows the majority of students taking courses in Fairbanks at the UAF CTC campus while several other courses were offered in all delivery methods at the rural campuses around the state.

To address the overall research ideas in this study, the two research questions will be discussed below. For both questions, success is measured by course grade.

Question 1: Are students in the treatment more successful than those in comparison courses?

The treatment group consisted of both accelerated and distance delivered courses. The comparison group was formed by the traditional courses offered. The individual student grade was used for the outcome variable of success. Since the distribution of student grade did not follow a normal distribution (see Table 3) a nonparametric test was used for the following null hypothesis.

H0: The distribution of grade is the same across treatment and comparison groups.

Table 3. Distribution of student level grades.

	Letter Grade				Total
	A	B	C	F	
Comparison	113	149	28	3	**293**
Treatment	100	75	15	0	**190**
Total	**213**	**224**	**43**	**3**	**483**

There was a statistically significant difference in the distribution of grade between treatment (accelerated and distance combined) and comparison (traditional), using SPSS 24.0 to run a Mann Whitney U Test (p-value = 0.003). Note that this test is the equivalent to an independent samples t-test for normally distributed data.

This dataset does violate the assumption of independent samples required for the analysis since students were grouped into courses and thus were not independent. To address this concern student data were aggregated into course-level data using mean grade as the course grade following the ordinal scale associated with grade point average (A = 4.0; B = 3.0; C = 2.0; D = 1.0 and F = 0.0).

The mean grade distribution across the 47 courses did approximate a normal distribution as shown in Figure 1 on the next page and thus a t-test was used to compare results across treatment and comparison groups.

There was a statistically significant difference in the mean grade between treatment (accelerated and distance combined) and comparison (traditional), using SPSS 24.0 to run an Independent Samples T-Test (p-value = 0.016) using course level data.

Conclusion: In both cases the treatment group outperformed the comparison group and thus can be considered as improving student success. Table 4 on the next page provides the mean, standard deviation (SD) and median for the groups both at the student level and course level.

Question 2: Is there a difference in success between the intervention delivery types: accelerated vs. distance delivered course?

The individual student grade was used for the outcome variable of success. Since the distribution of student grade did not follow a normal distribution a nonparametric test was used, Mann Whitney U Test for the following null hypothesis.

H0: The distribution of grade is the same across types of treatment: accelerated vs. distance delivery.

There was no statistically significant difference in the distribution of grade between accelerated and distance delivery methods of the treatment, using a Mann Whitney U Test (p-value = 0.255).

Using the aggregated course data with mean grade outcome the results remain the same using an Independent Samples T-Test. There is no statistically significant difference in mean grade between the accelerated and distance delivery methods of the treatment (p=0.465).

Conclusion: There is no difference in student outcome of success, grade, by treatment delivery type. Descriptive statistics for each delivery type are shown in Table 5 for both student level and course level.

Assumptions: Note that the sample of students in this study were not selected at random nor were they organized into courses through randomization. Techniques applied to these student data assumed independent samples with non-normal distributions. Techniques applied to these course data assumed independent samples with normal distributions. With only six instructors over the nine semesters this study may be violating the assumption of independent samples at the course level as well.

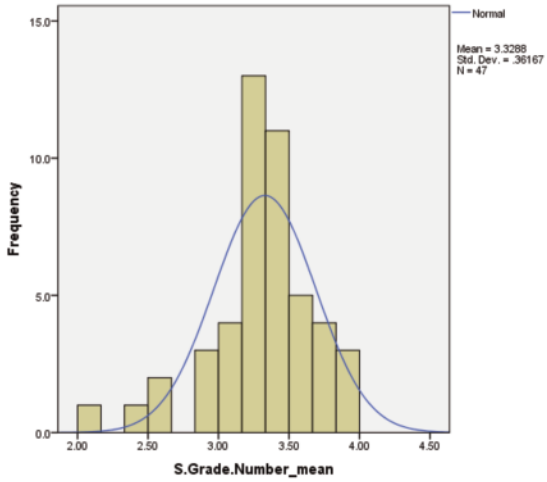


Figure 1: Distribution of mean grade scores for courses given students aggregated into courses.

Table 4: Descriptive statistics for grade at both the student and course level by treatment and comparison groups.

	Student Level Mean, SD, N	Student Level Median	Course Level Mean, SD, N	Course Level Median
Treatment	M: 3.45, SD: 0.64, N=190	4.00	M: 3.47, SD: 0.24, N=20	3.49
Comparison	M: 3.26, SD: 0.71, N=293	3.00	M: 3.23, SD: 0.41, N=27	3.25

Table 5: Descriptive statistics for grade at both the student and course level by treatment type.

	Student Level Mean, SD, N	Student Level Median	Course Level Mean, SD, N	Course Level Median
Accelerated	M: 3.42, SD: 0.65, N=152	4.00	M: 3.43, SD: 0.18, N=18	3.46
Distance	M: 3.55, SD: 0.60, N=38	4.00	M: 3.54, SD: 0.34, N=6	3.58

Conclusions

After three and one half years of delivering distance/accelerated allied health programs, the evaluation concludes that the HEART Project has developed successful distance delivery courses, faculty skilled in distance and cross-cultural delivery, and opened communication with a variety of rural Alaskan health providers and EMS services through rural Campus sites. The distance delivery of the four allied health programs are poised to be sustained if efforts to partner with regional health providers continue.

A supplement to this report will assist urban administrators and faculty with a partnering effort. An iBook-based *Health Education And Rural Training Systems Map for Allied Health* details a snapshot of the current status and future projections of the allied health and 2+2 programs in the rural regions. This document is shared to all campuses and rural providers who participated in the HEART project. In addition, members of the University of Alaska Allied Health Alliance which looks to coordinate allied health program delivery across the state, will also receive a copy.

This report provided outcomes and impacts on the HEART Project through four research questions.

Successes: The analysis on implementation research questions showed how the increase in institutional capacity through seven Program faculty increasing skills to deliver courses at a distance including knowledge on cross cultural communication. A total of 69 distance courses were delivered over nine semesters. The count of courses increased each Project Year from 3 courses in Year 1, to a high of 27 courses in Year 3 and 25 courses in Year 4. Fifteen (22%) of the courses were delivered through rural campuses. Enrollment statistics showed 16% or 56 students were enrolled through rural Campuses and 84% or 289 students were enrolled through CTC.

Sustainability of each allied health program developed is detailed on the following page.

Challenges: To continue and increase course and program delivery to rural Alaska students to meet provider needs.

Successes: The analysis on impact research questions for the Nurse Aide courses showed the treatment group (students enrolled in a distance or accellerated course) outperformed the comparison group and thus can be considered as improving student success.

There was no difference in student outcomes of success and grade, by treatment delivery of distance or accellerated delivery.

Challenges: In a time of declining state revenues to the UA system, it is a challenge for CTC to continue to deliver allied health courses at a distance to rural students. UAF eLearning is an asynchronous method of course delivery which, as noted, does not work well for rural and Alaska Native students. Building regional partnerships are one way to continue delivery, other methods are collaborating between universities to meet the growning allied health needs in rural Alaska.

Projections for sustainablity and bridging to rural Alaska follows by HEART Program:

HEART Paramedic Academy Sustainability

The goal of the distance HEART funded portion of the Paramedic Academy is to train Paramedics in rural sites for skills training to eliminate the need and cost of instructor travel. The use of remote polling software to make the courses interactive with satellite students, videos produced and equipment purchased, along with on site trained paramedics are a means to sustaining program delivery in rural Alaska. The mobility of the training equipment ensures a smooth transition to new satellite sites. The expansion of the HEART program to the University of Alaska Southeast region's Ketchikan Campus show promise of future expansion to Juneau, the state's capital.

HEART Nurse Aide Sustainability

Nurse Aides are entry level jobs, consequently the turnover is high and training takes place annually in the rural regions. Of the four rural regions represented, the Yukon Kuskokwim Delta region is by far the largest serving 56 villages. The Yukon Kuskokwim Health Corporation (YKHC) has an ongoing need for 50 trained Nurse Aides, with another 14 at the Elder's Center. Further, a large expansion at YKHC is in the future which will increase the number of Nurse Aides needed at the hospital.

HEART Dental Assisting Sustainability

Given existing conditions, two regions look to incorporate some level of the Dental Assistant program either at a distance or in person through the local campus. The *Professional Skills in the Workplace* was the most requested course by providers due to high turnover and lack of workplace soft skills. This course was developed for distance delivery under the Medical Assistant program.

Manilliaq and YKHC have plans to expand the dental facility in the next five years. The number of chairs will increase from 28 -32 at YKHC and from 8 to 14 chairs at Manilliaq and include a full pediatric residency so patients do not have to travel to Anchorage for care. The increase in dental providers comes with an increased need for dental assistants. Further, Alaska Tribal Health Consortium in Anchorage and Yuut Elitnaurviat in Bethel continue to train DHATs and the number of these mid-level practitioners will continue to grow with a corresponding need for dental assistants. Manilliaq has begun in person courses in Kotzebue during the summer of 2016 and YKHC is considering supporting a full cohort of students in the Dental Assisting program.

HEART Medical Assisting Sustainability

The UAF Community and Technical College has discontinued distance delivery of the MA program and it is not listed in the UAF 2016-17 Catalog. The program's move to Sitka Campus sustained the curriculum work supported by the TAACCCT grant and provided for the purchase of supplies for the three UAS campuses. This will enable all students regardless of location to have the same experience and equipment without having to leave their community.

In addition, Peace Health provides full tuition support to select students enrolling in the MA program and have a tuition reimbursement program for other students. Peace Health is taking a strategic move in training students with a plan to hire certified Medical Assistants for their facility.

The Sitka-based MA program can expand throughout the state through distance delivery and onsite training could be organized along with funding options, however the students will be part of the Sitka cohort with headcount and tuition going to Sitka Campus.

HEART Sustainability for the Bachelor in EMS

Program sustainability is directly linked to the ability to attract students from emergency management positions and military veterans. Instruction in Emergency Management is delivered to the Department of Homeland Security and throughout the Pacific Rim from Saipan, Guan, Hawai'i to Juneau, Anchorage, Fairbanks and Prudhoe Bay. There is also a ladder from the Bachelor Degree to a Master Degree.

Appendix A

Appendix A Table - Traditional and HEART Program Delivery Methods.

Occupational Industry	Career Pathway	Traditional Delivery Methods	HEART Delivery Methods
Allied Health	Dental Assisting	One-year didactic in person	Distance Delivery
	Medical Assisting	Two-year didactic with clinical skills testing	Distance Delivery with intensive clinical skill testing
	Nurse Assisting	Semester-based 9-credit program	Accelerated 5-week & distance delivery
	Paramedic	Two-year didactic with out of state field externship	Accelerated 2-semester didactic & 500 hour out of state field externship
Emergency Services	EMS 2+2	New courses/pathway for Paramedics	Distance Delivery using Adobe Connect for access to students with low bandwidth

Appendix B

Appendix B Table - HEART participant demographics by Campus with program and award status.

	Student Participants by Campus						% of Students	
Campus	BBC	CTC	IAC	NWC	UAF	Sitka	Total	%
Gender								
Men		75			5		80	23%
Women	13	214	8	21		9	265	77%
Total Participants	13	289	8	21	5	9	345	
Race/Ethnicity								
American Indian/ Alaska Native	5	32	5	14			56	16%
Asian		5					5	1%
Black		10	1				11	3%
Hispanic	1	2	1				4	1%
Native Hawaiian/ Pacific Islander		2					2	1%
Multi-race	2	16		1		1	20	6%
White	4	128			4	8	144	42%
Unknown	1	94	1	6	1		103	30%
Age at Intake								
19 and under	6	48	2	14		1	71	21%
20-21		48		1		2	51	15%
22-24	1	50	2	3	1	1	58	17%
25-29	3	57	2	2			64	19%
30-34	1	41	2		2	2	48	14%
35-49	1	37		1	2	2	43	12%
50+	1	8				1	10	3%
Unknown							0	0%
Pell Eligibility								
Eliigible	1	80	5	1	1	3	91	26%
Not eligible						6	6	2%
Unknown	12	209	3	20	4		248	72%
Student Status								
Part-Time	13	158	4	17	5	5	202	59%
Full-Time		131	4	7		4	146	42%
Program Completers	10	107	5	18			140	41%
Pursing further education	3	43	3	3			52	15%
Awards								
Earned less than 1-year Award	6	1	1	17			25	7%
Earned Certificate more than 1-year		21					21	6%
Earned a Degree		18					18	5%

Appendix C

Appendix C Table - *HEART* Round 2 Outcome Measures by year.

		SOW Target/Actual					
Outcome Measures	**SOW Target**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Total Actual**	**% of Target**
1. Total Unique Participants Served	302	50 / 26	152 / 150	100 / 88	na / 81	345	114%
2. Total Number Who Have Completed a Grant-Funded Program of Study	200	40 / 21	80 / 42	80 / 77	na / 26	166	83%
3. Total Number Still Retained in Their Programs of Study (or other grant funded programs)	82	5 / 0	62 / 59	15 / 30	na / 43	132	161%
4. Total Number of Students Completing Credit Hours	237	40 / 21	80 / 127	117 / 102	na / 42	292	123 %
5. Total number of Students Earning Credentials	237	40 / 8	80 / 8	117 / 24	na / 9	49	21%
6. Total Number Pursuing Further Education After Program of Study Completion	30	15 / 2	15 / 14	30 / 24	na / 12	52	173%
7. Total Number Employed After Program of Study Completion	190	32 /8	64 / *	84 / *	na / *	*	*
8. Total Number Retained in Employment After Program of Study Completion	152	32 /8	50 / *	60 / *	na / *	*	*
9. Total Number of Those Participants Employed at Enrollment Who Receive a Wage Increase Post-Enrollment	90	15 / 12	40 / *	40 / *	na / *	*	*

* Awaiting data from Alaska Department of Labor and Workforce Development.

Appendix D

Appendix D Table: Student demographics distributions for treatment and comparison groups by count and percentage.

Variable	Treatment (count)	Comparison (count)	Treatment (%)	Comparison (%)
Gender				
Male	29	26	15.23	8.9
Female	161	267	84.7	91.1
Race				
Asian	5	7	2.6	2.4
Black	5	10	2.6	3.4
Hi/Pac Is	6	3	3.2	1.0
Native/Ind	40	45	21.1	15.4
Other	69	107	36.3	36.5
White	65	121	34.2	41.3
20 and under	64	183	33.7	62.5
21-30	95	78	50.0	26.6
31-40	21	17	11.1	5.8
41-50	6	7	3.2	2.4
51-60	4	6	2.1	2.0
61 and older	0	2	0.0	0.7

Appendix E

Sensitivity Analyses

By Student Demographics

Students with no outcome data (letter grade) were less likely to be White, Asian or Hi/Pac Is and more likely to be Native/Indian. Of those with no outcome variable (letter grade) 87 percent were female and 95 percent were not Hispanic. The race distribution was 42 percent Other, 37 percent Native/Indian, 16 percent White and 5 percent Black. In comparison to the subgroup of students with outcome data (letter grade) an equivalent percent were female (89 percent) and not Hispanic (96 percent). The race distribution was slightly different with a lower percent of Native/Indian receiving a grade (18 percent) as well as more White receiving a grade (39 percent). Further, additional minority groups received grades that were not represented in the no outcome subgroup: Asian and Hawaiian/Pacific Islander.

By Course Details

Students with no outcome data (letter grade) were less likely to be in a distance delivered course, less likely to be at the UAF CTC campus, and more likely to be in a grant funded course.

Appendix D Table 1. Sensitivity analysis of missing outcome data for distance delivered courses

Distance Delivery?		No Outcome Data		With Outcome Data	
		Frequency	Percent	Frequency	Percent
Valid	No	37	97.4	443	91.7
	Yes	1	2.6	40	8.3
	Total	38	100.0	483	100.0

Appendix D Table 2. Sensitivity analysis of missing outcome data for HEART funded courses

HEART Funded?		No Outcome Data		With Outcome Data	
		Frequency	Percent	Frequency	Percent
Valid	NO	28	73.7	375	77.6
	YES	10	26.3	108	22.4
	Total	38	100.0	483	100.0

Reference

Puma, M.J., Olsen, R.B., Bell, S.H., & Prince, C. (2009). *What to Do when data are missing in group randomized controlled trials*. Report to U.S. Department of Education, NCEE 2009-0049.

Appendix F

Evaluation Methodologies

The TAACCCT evaluation has two primary purposes: to evaluate program implementation and to collect and analyze data on participant outcomes/ impacts. This report provides details and insights on the outcomes and impacts of delivering four allied health programs in Alaska. During this three year period, from 2013 through 2016, the evaluation team: attended regular meetings and monitored project implementation to the Statement of Work Strategies; conducted interviews with project faculty and administrators; held focus groups with students in person and at a distance and deployed e-surveys; met continually with UAF Insitutional Research and project managment on participant data; and organized site visits and teleconferences with rural campus staff and regional providers to assess the need for allied health programs and inquire into the sustainability of these four programs through partnerships. An impact study was conducted in the final project year on the program that enrolled the most students, Nurse Aide.

Data Collection

Qualitative data was collected from a variety of sources including project participants, faculty, interviews with health and dental providers, Indian Health Service Corporation administration, fire chiefs, rural Campus directors, student surveys, and reports.

Methods to collect and analyze qualitative data - Data collected through interviews, recorded digitally for accuracy, and transcribed verbatim with participant consent. Interview data was coded and analyzed by immersion in the data (Miles and Huberman, 2004).

Quantitative data reporting on participant enrollment, completion and award information was performed by by UAF Institutional Research. Participants were identifed by those enrolled in project faculty courses by course registration number. UAF IR also provided data for the quasi-experimental analysis and is responsible for collecting employment from the State of Alaska Department of Labor. Student data was collected and reported in line with FERPA requirements.

Methods to analyze qualitative data - SPSS 24.0 was used to run an Independent Samples T-Test (p-value = 0.016) using course level data. In both cases the treatment group outperformed the comparison group and thus can be considered as improving student success.

Limitations to Quantative Data Collection

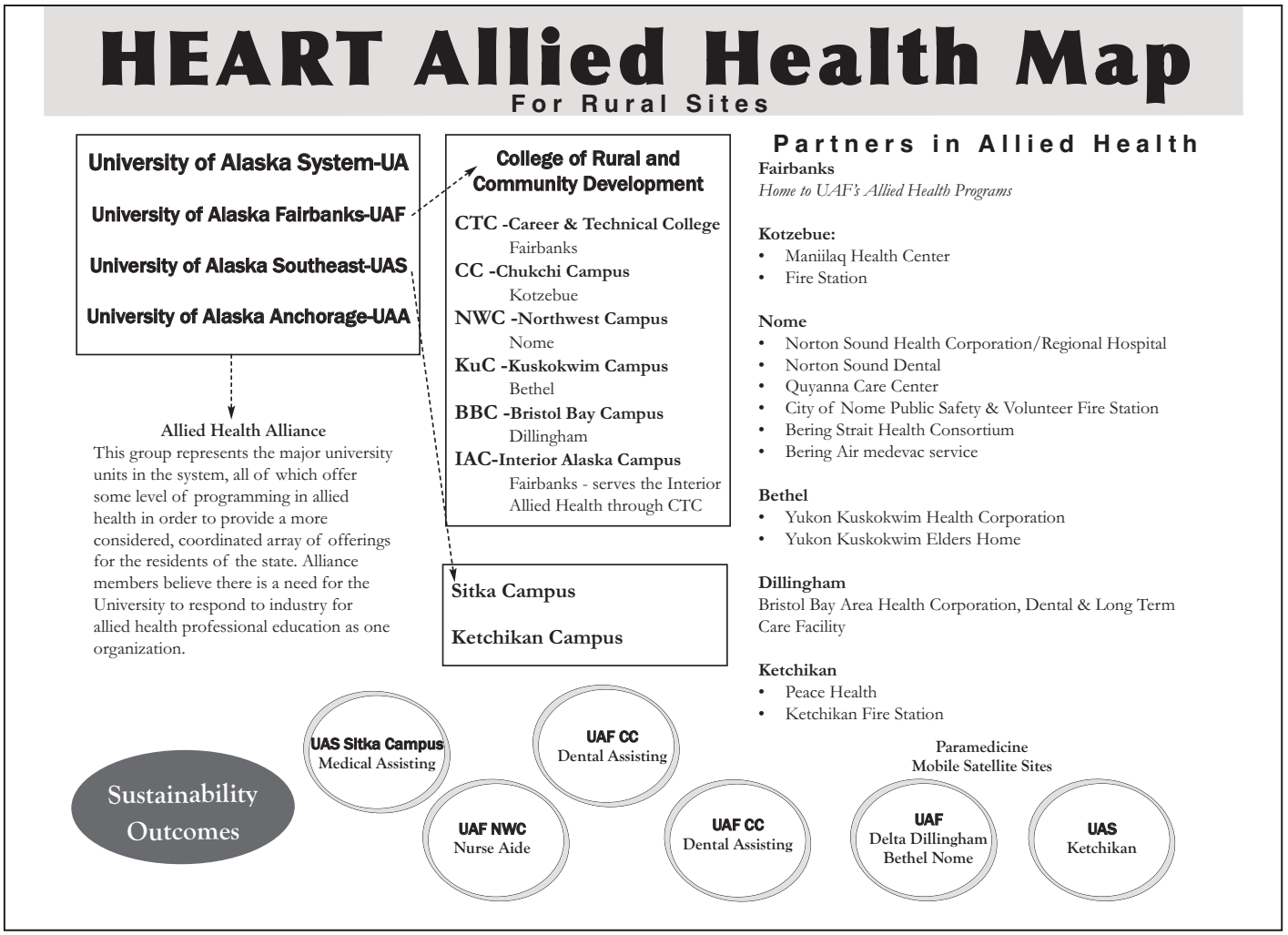
This study employed a comparative research design where participants were in existing groups (classes offered at different locations and during different semesters) with no random assignment. Further, students were not independent as they were grouped into classes with no randomization or researcher control. For these reasons internal validity was low. External validity was high since the sample was almost the full population and included most students at UAF taking the HLTH 107 course. Further students were in natural settings and not settings controlled by the researcher.

Subgroups were similar across treatment groups (accelerated, distance delivery, and traditional) based on gender and ethnic/racial groups; however, students were more likely to be 20 years old and younger in the comparison group vs. 21-30 years old in the treatment group. Overall the age distribution was similar between groups in terms of 30 years old and under vs. 31 years old and older (Gliner, Morgan & Leech, 2009, p. 352, p. 359).

The results are promising at both the student-level and course-level showing the treatment group outperformed the comparison group and thus can be considered as improving student success. To rigorously study the alternative types of course delivery in the future a research design implementing and assessing randomization of groups, equivalent starting points, and controlled variables and settings is needed.

Gliner, J., Morgan, G. & Leech, N. (2009). *Research methods in applied settings: An integrated approach to design and analysis (*2nd ed.). New York, NY: Routledge.

Miles, M.B. and Huberman, A.M. (1994). *Qualitative data analysis*. Thousand Oaks. Sage Publications.



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