



Pathway to Employment

FINAL EVALUATION REPORT

Executive Summary

PATHWAY TO EMPLOYMENT DESCRIPTION AND ACTIVITIES

In October, 2013, the Sitka Campus of the University of Alaska Southeast (UAS) was awarded a round three Trade Adjustment Assistance Community College and Career Training Act (TAACCCT) grant from the U.S. Department of Labor. Grant funds were focused on improving fisheries technology education in Alaska by expanding and enhancing an existing Fisheries Technology (FT) certificate and degree sequence. The resulting program—Pathway to Employment—addressed an integral part of the Alaska Maritime Workforce Development Plan (2014), created by representatives of the state’s fisheries, seafood and maritime (FSM) industry sectors, Alaska state agencies and the University of Alaska. The plan called for industry, government, and educators to work together to increase the number of Alaskans in this workforce. Pathway to Employment had as its goal to assist TAA-eligible workers, veterans, Alaska Natives and other adults to acquire the skills, degrees, and credentials needed for high-wage, high-skill employment in the FSM industry. The program’s close tie with the Maritime Plan was cited as a promising practice in the 2016 monitoring visit by USDOL staff.

Using grant funding, the Sitka campus modified an existing certificate/associate degree program in Fisheries Technology in four significant ways, all of which were intended to help meet the outcomes goals outlined in the TAACCCT Solicitation for Grant Applications (SGA).

The first modification was to add two Occupational Endorsements (OE) to the program structure. OEs are a first level of credentialing, consisting of 14 credit hours of content coursework that can be completed in less than a year. This intervention was intended to increase outcome measures related to student retention, completion and post-program employment.

A second modification was to modularize and transition coursework to an iPad format that could be delivered asynchronously and which did not require internet access. This innovation also was cited as a promising practice in the program’s 2016 USDOL monitoring review. The change in program delivery was intended to increase student enrollment and completion.

OE courses articulate with the certificate and associate degrees in fisheries technology and complete the third modification—stacking credentials in the associate degree pathway in fisheries technology. In addition, the program sought to more closely align the associate-level coursework with that required for a bachelor degree. This modification was intended to increase post-training further education.

The final modification to be evaluated was the deployment of Outreach Coordinators in five regions of the state. This modification was intended to increase student recruitment, retention and post-program employment.

Over the four years of funding, the Pathway project served 118 unique individuals in five regions of Alaska. About half (49.2 percent) of the participants were male and 50.8 percent female. Five percent of students served were Alaskan Native and 75 percent were white. Although no TAA-eligible persons were served, 10 percent of the total population were veterans and 28 percent were Pell Grant eligible. More than half (56.8 percent) were between 18 and 29 years of age.

The program course content was developed with intensive involvement by industry and the program modifications introduced under the grant were based on practices that have proven successful in other workforce development programs run by the University of Alaska.

EVALUATION DESIGN SUMMARY

EVALUATION GOALS

The primary goal of the evaluation was to determine the effects of modifications to the fisheries technology program on student recruitment, retention and subsequent employment. A second goal was to identify the impact of program elements on increasing UAS capacity to respond to training needs in fisheries as well as other industries.

IMPLEMENTATION STUDY DESIGN

The TAACCCT Solicitation for Grant Applications (SGA) outlined four areas for which evaluative data and information on program implementation were to be gathered.

Exhibit 1:
Implementation Study Research Questions

How was the fisheries curriculum selected for use?
How was the FT program improved or expanded using grant funds? What delivery methods were offered? What was the program administrative structure? What support services and other services were offered?
Was an in-depth assessment of participants’ abilities, skills, and interests conducted to select participants into the grant program? What assessment tools and processes were used? Who conducted the assessment? How were the assessment results used? Were the assessment results useful in determining the appropriate program and course sequence for participants? Was career guidance provided, and if so, through what methods?

What contributions did each of the partners (employers, workforce system, other training providers and educators, philanthropic organizations, and others as applicable) make in terms of: 1) program design, 2) curriculum development, 3) recruitment, 4) training, 5) placement, 6) program management, 7) leveraging of resources, and 8) commitment to program sustainability? What factors contributed to partners’ involvement or lack of involvement in the program? Which contributions from partners were most critical to the success of the grant program? Which contributions from partners had less of an impact?

The Pathway to Employment Logic Model (Appendix A) provided the conceptual framework for the evaluation. The logic model laid out the relationship between inputs, implementation activities and expected outcomes.

The evaluation had both process (implementation) and outcomes/impacts components. For the process portion, the project used principles of the utilization-focused evaluation framework developed by Michael Patton to help inform and improve program implementation. The evaluator worked closely with project staff to establish procedures for monitoring the creation and implementation of the training program, based on the approved Statement of Work (SOW). The evaluator regularly met in person or telephonically with the Project Manager and the Data Analyst to obtain reports on progress and either attend scheduled meetings of the project team or reviewed minutes of such meetings. The evaluator also reviewed written documentation of project activities. Additional information on each of the implementation evaluation questions was obtained through interviews with project administration and faculty, outreach coordinators, advisory committee members and industry partners. Student satisfaction with the innovations introduced with TAACCT funding was measured through surveys.

The project Logic Model outlined short, mid and long term expected outcomes for building institutional capacity.

**Exhibit 2:
Capacity Building Outcomes**

Short Term	Successful practices are identified for increasing FT student recruitment, retention, completion and post-training employment.
Mid Term	Successful practices are implemented to benefit other UAS workforce development programs.
Long Term	Institutional capacity is improved for delivering effective workforce development programs. UAS Fisheries Technology Program is sustainable without outside funding.

Given the limited duration of the project, only short-term outcomes were considered in the evaluation. The evaluator interviewed administrators, faculty, student services staff and partners to begin identification of those Pathway practices which could be considered for other workforce development program offered not only at the Sitka campus but in the larger University of Alaska system.

OUTCOME/IMPACT STUDY DESIGN

The SGA mandated the following nine measures for which outcomes were to be reported.

**Exhibit 3:
SGA-Mandated Outcomes Measures**

1. How many unique participants were served?
2. How many participants completed a grant-funded program of study?
3. How many participants are still retained in their programs of study?
4. How many students completed credit hours?
5. How many students earned credentials?

6. How many students are pursuing further education after program of study completion?
7. How many students were employed after program of study completion?
8. How many students were retained after program of study completion?
9. How many of those employed who received a wage increase post-enrollment?

In addition to the above measures, campus administration and program faculty had specific research questions to be answered concerning the four program modifications selected for evaluation.

**Exhibit 4:
Program-Specific Outcomes Measures**

1. Did the use of student services/outreach coordinators in various regions of the state a) increase overall enrollment in the FT program and b) increase the geographic reach of the program?
2. Did modularizing the core FT curriculum have an effect on increasing student a) success in individual courses, b) persistence to the next course in sequence and c) completion of the entire curriculum?
3. Did obtaining an occupational endorsement (OE) have an effect on increasing a) initial employment or b) advancement in current employment/wages for program completers?
4. Did alignment of the Fisheries Technology curriculum with fisheries-related bachelor degrees in the UA system have an effect on student decisions to seek additional education/ training.

An experimental design for the evaluation of the Pathway to Employment project was ruled out because it was not possible to randomly assign eligible participants to either a treatment or control group. Not only was the potential pool of participants too small but also the University of Alaska policies prohibit assignment of potential students to a control or non-treatment group. With the limited number of potential participants (an estimated 50 unique participants) even a formal comparison group design was determined to be infeasible.

Small sample size precluded the use of statistical techniques for comparison group selection and outcome analysis such as propensity score matching and minimum detectable effects.

Given these constraints, the evaluation provided an outcomes-only analysis with reference to outcomes of the unmodified FT program, which has been in operation for over a decade. The program content was developed with and approved by industry. Because the Pathway project used this same curriculum, students who had enrolled and taken courses in the past provided a benchmark against which to measure the effects of program interventions on recruitment, retention, completion, post-program employment and continuing education.

Data for addressing outcomes were obtained from a variety of sources. All information on residence, enrollment, persistence, success in course, degree completion, retention and credit hours on individual students was obtained from the University of Alaska Banner system—the official student record-keeping system for UAS Sitka. Employment and wage data were obtained for program completers from the Alaska Department of Labor and Workforce Development Division of Research and Analysis. These data were pulled from Unemployment Insurance files, Alaska Permanent Fund Dividend files, Limited Entry Commercial Fishing License files and other sources.

More qualitative information concerning the importance of Occupational Endorsements and stacked credentials on program completion, post-program employment and decisions to pursue additional education was obtained from a survey of graduated students and from employers either by survey or through structured interviews.

IMPLEMENTATION FINDINGS

CAPACITY BUILDING

The desired result for the Pathway to Employment implementation was to build the FT program to a level that could be supported without external funding.

- Strong industry support was garnered through the Advisory Committee, internship placements and faculty/outreach coordinator contacts. As a

result, various employers contributed financial support for students, hosted interns and provided space in hatcheries and other workplace settings for the intensive, hands-on lab sessions. Employers have indicated that they will continue this level of support.

- The use of outreach coordinators gave the FT program statewide visibility and presence, leading to increased enrollments outside of the usual Sitka Campus catchment area. Cooperation with other UA campuses was essential to this effort. Future cross-campus sharing not only of the FT program but also of other specialized certificates and degrees can grow the ability of the entire UA system to meet workforce training needs.
- Stacked credentials appear to motivate students to continue their education from entry coursework through an associate degree, which again contributes to increased enrollments.
- Modularizing the curriculum and delivering it through iPads proved to be quite popular, especially with students in remote locations. This delivery mode has already proven quite popular and can assist in generating the levels of enrollment needed for program sustainability. The campus and the UA system can increase capacity to respond to training needs by extending this delivery mode to other training programs.

DEVELOPMENT & IMPLEMENTATION

- The Pathway to Employment program built on an established Fisheries Technology program and was one strategy in a broader University of Alaska effort to support the maritime industry as outlined in the Alaska Maritime Workforce Development Plan.
- Based on this plan and other industry input, curriculum was repackaged in a stacked format, from entry-level Occupational Endorsement through the AAS.

PROGRAM DELIVERY

- Courses were delivered through iPads as well as via more traditional distance education methods. Each credential required a hands-on intensive lab experience.
- Outreach coordinators spread program and student support—student recruitment, internship development and post-program employment placement—to all areas of the state.
- University of Alaska campuses in five regions provided office space and support to outreach coordinators.

PARTNERSHIPS

- Industry partners served on the Advisory Committee and provided financial and other support, including training and internship sites.
- Education partners from other UA campuses as well as non-profit training agencies provided program review, support for outreach coordinators and assistance with articulation between stacked credentials.

Exhibit 5:
SGA-Mandated Outcomes Measures

Performance Item	Target from SOW	Actual	% of Target Number Achieved
1. Total Unique Participants Served	50	118	236%
2. Total # who Completed a Grant-Funded Program of Study	40	22	55%
3. Total # Still Retained in their Programs of Study (or Other Grant-Funded Programs)	20	28	140%
4. Total # of Students Completing Credit Hours	44	15	261%
5. Total # of Students Earning Credentials	30	51	170%
6. Total # Pursuing Further Education After Program of Study Completion	10	11	110%
7. Total # Employed After Program of Study Completion	30	16	53.3%
8. Total # Retained in Employment After Program of Study Completion	30	16	53.3%
9. Total # of Those Employed at Enrollment Who Receive a Wage Increase Post-Enrollment	5	12	240%

PLACEMENT & ASSESSMENT

- Regional Alaska Department of Labor and Workforce Development Veterans Services and Vocational Rehabilitation offices recruited and assessed clients for the program.
- Other enrollees were assessed and placed by the student services staff at the Sitka Campus.

SUPPORT SERVICES & CAREER GUIDANCE

- Sitka Campus provided on-site and distance-delivered student support services. Students in other regions accessed services at their home campus.
- Faculty provided career guidance and a career exploration course
- Outreach coordinators helped students link to local student services and employers for internships and post-completion placement.
- participant impacts & incomes

Key participant impact and outcomes follow the nine mandated outcomes in the SGA. Exhibit 5 displays the original outcome target, the actual achievement and the percent of the target achieved.

The low performance on the employment outcomes is explained in large part by the fact that many jobs in the fisheries industry—such as work on commercial fishing vessels and self-employment—are not captured in ADOLWD data.

In addition to the mandated outcomes, grant administrators sought to answer four questions concerning specific program elements: outreach coordinators, modularized curriculum, OEs and aligning the AAS curriculum with the BS.

- Evidence suggests that coordinators had a definite impact on extending the statewide scope of the program, which by the end of the grant period was accessed by students in all but one region of the state. Coordinators had a less noticeable impact on recruitment.
- Modularizing the core FT curriculum appeared to have some effect on increasing persistence to the next course in sequence and completion of the

entire curriculum. However, comparison showed no difference in overall GPA between completers of the modified and non-modified program.

- Obtaining an OE's effect on subsequent employment or advancement in employment was not verified, although some employers did indicate that having the credential would be of some benefit. When asked how important any of the three FT credentials was in securing employment, about an equal number replied "very important" and "not at all important".
- Faculty attempts to align the Fisheries Technology curriculum with fisheries-related bachelor degrees in the UA system had limited success by the end of the grant period, with two FT courses approved as equivalent to courses in the Fisheries degree.

LIMITATIONS

The small sample size of the comparison cohorts and program completers limited the findings of this evaluation study. While all participants—program staff, faculty, industry and education partners and students themselves—indicated a high degree of satisfaction with the program, quantitative measures of success were harder to come by. For example, pre/post program wages could be obtained for only a total of 22 students from the cohorts.

CONCLUSIONS

KEY FINDINGS

Although Pathway to Employment focused on developing a student skill set that may not have wide application nationally, the project utilized several elements that could be of value to others engaged in workforce development programs. While each of these contributed to the success of the UAS Sitka project, each had challenges.

- Outreach Coordinators: The purpose of the outreach coordinators was to extend the visibility of the program and student services such as recruitment and job placement outside of the

normal catchment area of the Sitka campus. To do so, it relied on relationships with other campuses, most of whom were in a different administrative and accreditation unit of the university system. In such situations, care must be taken to have clear role definitions prior to the start of the outreach activity and frequent communication throughout the course of the relationship. An additional lesson concerning outreach coordinators is that these positions should be at least half-time, benefitted positions in order to attract and hold good candidates.

- **Stacked credentials:** Stacked credentials are a fairly common practice in many workforce development programs and can be good motivators for students to continue along an academic degree sequence. However, two strong caveats emerge from the Pathway experience. First, the credentials must be closely tied in with employment. For the FT program, although employers did give consideration to job applicants who had one or more FT credentials, these were not required for employment. Second, because the FT credential sequence led to an associate of applied science degree, there was not a clear and seamless roadmap to a bachelor degree; that is, FT coursework did not transfer as meeting the core content requirements of a higher degree.
- **Pathway program** was transitioning coursework to iPads, including all of the courses necessary for achieving the first credential—an Occupational Endorsement. This innovation was cited as a promising practice by the USDOL staff performing the monitoring site visit in 2016. The Pathway experience indicates that faculty will need professional assistance to successfully transition courses and that opportunities for regular communication between the student and faculty need to be built into the courses both to enhance student success and to meet accrediting agency standards for course credit.

IMPLICATIONS FOR FUTURE WORKFORCE & EDUCATION RESEARCH

As noted by many of the TAACCCT evaluations, the time frame for evaluation was insufficient to adequately analyze the effects of program innovations and modifications. For example, the Pathway project had only two full years of graduates that could be tracked for employment and wage increase information. In addition, many students were still in the pipeline at the end of the grant period. A longer-term horizon is needed to answer such questions as:

- Are content-intensive credentials such as an occupational endorsement as useful for initial employment as an associate degree?
- Do employees with OEs advance at the same rate as employees with higher credentials?
- Do stacked credentials encourage students to continue their education even after employment?

If other programs do adopt the iPad format for courses, a valuable research activity would be to examine course and credential completion rates with this delivery mode as compared to on-line and on-site delivery of courses. ■

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Introduction

In October, 2013, the Sitka Campus of the University of Alaska Southeast (UAS) was awarded a round three Trade Adjustment Assistance Community College and Career Training Act (TAACCCT) grant from the U.S. Department of Labor. Prior to receiving the grant, UAS had been working with employers to identify current and future fisheries technology employment opportunities, existing and anticipated gaps in education and training, and the most efficient and effective ways of providing employment training for Alaskan students. The campus was also heavily involved with representatives of the state's fisheries, seafood and maritime (FSM) industry sectors, Alaska state agencies and other campuses of the University of Alaska in creating the Alaska Maritime Workforce Development Plan (2014). The plan is a call to action and a guide for industry, government, and educators to work together to enable Alaska's maritime sector to remain economically vibrant, ensure that Alaskans are qualified to fill these skilled and well-paid positions, and increase the number of Alaskans in this workforce.

Based on information from these sources, grant funds were utilized to significantly modify and en-

hance an existing Fisheries Technology (FT) program through innovative technology enhancements and program acceleration. The resulting program—Pathway to Employment—had as its goal is to assist TAA-eligible workers, veterans, Alaska Natives and other adults to acquire the skills, degrees, and credentials needed for high-wage, high-skill employment in the FSM industry.

As part of the grant requirements, UAS Sitka Campus engaged the services of Madden Associates to perform a third-party evaluation of both program implementation and outcomes. An interim evaluation report was submitted to the campus and funders in Fall 2015, detailing findings from the first two years of grant activity. This document constitutes the final report which covers the entire grant period: Fall 2014 through March 2017.

The report is organized in five main sections: 1) description of the Pathway to Employment program, 2) description of the evaluation design, 3) implementation study findings, 4) outcomes study findings and 5) conclusions and key lessons. ■

Program Description & Activities

Between 60,000 and 70,000 people in Alaska earn their living in fisheries jobs, and the next 10 years will see a large increase in the need for scientifically trained technicians, managers, and ecologists to work in the fisheries industry. Knowledge of ecology, biology, microbiology, business management, computer skills and communication skills is vital for today's Alaska fishing industry jobs. Education is necessary to make a rewarding, life-long career in today's fishing industry.

In 2011, the University of Alaska commissioned the McDowell Group to identify training needs and opportunities related to the state's fisheries and maritime industries. McDowell surveyed 250 FSM businesses and organizations and concluded that additional training and education opportunities would be especially welcome in six main areas:

- Technical support services for shore-side and at-sea fishing, processing and maritime operations.
- Seafood processing and mariculture technologies.
- Business management relevant to the FSM sector.
- Resource management for sustainable ocean resources.
- Mariner licensure and certification for career ladders,
- Safety and risk management.

Pathway to Employment was developed with these findings in mind.

Although the grant was awarded in October, 2013, the Sitka Campus did not get authorization to expend funds until April 7, 2014. The detailed evaluation plan was approved on June 30 of that year.

The delay in receiving authorization to expend funds necessitated a shift in the timeline for project implementation. The primary focus for Year 1 (2013/14 Academic Year) was on hiring and training project staff and faculty, implementing the recruitment and outreach plan, and securing academic approval for Fisheries Technology program changes

for the Fall 2014 term. Key project staff—the Project Manager and the Data Analyst—were hired in May 2014 while the one fulltime grant-supported faculty started in July and the part-time (.6 FTE) faculty in August of that year. Four of the five Outreach Coordinators called for in the grant were hired in September, 2014 in the strategic coastal communities of Valdez, Homer, Kodiak and Ketchikan. The fifth coordinator position, in Bethel, was not filled until Year 3 of the funding period.

The following table provides a timeline of implementation activities.

Table 1: Implementation Timeline

Date	Program Phase
October 2013	Notification of Grant Award
April 2014	Authorization to expend funds
	Academic approval received for changes in Fisheries Technology program
	Project Director, staff and faculty hired
	Recruitment and outreach plan implemented
June 2014	Detailed evaluation plan approved
Fall 2014	First semester of program implementation
	Outreach Coordinators hired
	Advisory Committee formed
November 2015	Interim Evaluation Report submitted
August 2016	On-site monitoring visit by US DOL staff
Fall 2016	iPad courses introduced
March 2017	Program funding ends

PROGRAM MODEL

PROGRAM ELEMENTS

The *Pathway* project sought to expand and improve the existing FT program in several ways, as described in the Statement of Work (SOW) narrative:

1. Expand the UAS FT program to TAA eligible/other adults in a wider geographic area of coastal Alaska and other regions of the state.
2. Add two new credentials: Occupational Endorsements (OE) in Fish Management or Fish Culture (14 credits each), developed with industry input and feedback to meet industry needs.
3. Modularize the core FT curriculum so it can be delivered asynchronously in a condensed format, with flexible timelines allowing for accelerated completion.
4. Create “stacked” credentials through the OEs, Certificates and AAS within the UAS Fisheries Technology Program.
5. Align FT degrees with other University of Alaska programs (i.e. UAS Fish Tech AAS with University of Alaska Fairbanks BA or BS of Fisheries.)
6. Increase exposure of the FT program to coastal Alaskans through local Student Services/ Community Outreach Coordinators (OC) efforts.

EVIDENCE-BASED DESIGN

Elements of the FT program—two certificates and an associate degree in fisheries technology—were developed with involvement of industry and have been offered via distance delivery over the past decade. However, prior research showed an underutilization of the program with respect to scope, retention, and completion. The program had limited success in attracting and graduating students and had been focused primarily in the Southeast region of the state. Under TAACCCT funding, the program underwent significant changes in design, delivery and duration.

The *Pathway to Employment* program design delivery, strategies and activities were built upon strong evidence concerning the creation of positive outcomes for TAA-eligible workers, Alaska Natives and

other adults. Successful programs for these students allow them to complete their education successfully and quickly, acquire relevant industry-recognized credentials and become gainfully employed, effectively progressing in their new careers.

There is a body of knowledge emphasizing the importance of experiential learning, specifically for Alaska Natives which has been used successfully by the University of Alaska in other workforce development programs.

PROGRAM RECRUITMENT & PLACEMENT

Pathway to Employment targeted TAA-eligible workers, veterans, Alaska Natives and other adults. Coastal Alaska has populations of people who are in urgent need of education and training in fisheries and other place-based employment fields. At the time the grant proposal was being prepared, the unemployment rate for Alaska Natives had jumped 21.3 percent as a result of the 2010 recession—the highest regional unemployment rate for American Indians and Alaska Natives in the US. Rural communities in Alaska have significant training needs for workers, as many people are unable to relocate to educational centers to obtain needed skills or credentialing. One of the barriers to employment has been the lack of educational opportunities in local areas such as remote geographic locations. Therefore, the program sought to offer individuals in rural Alaska access to fisheries technology courses both on-line and on iPads.

Beginning with Fall 2014 through March of Spring 2017 semester, the program enrolled 118 unique individuals, with the following characteristics:

Table 2:
Participant Characteristics

Characteristic	Number	Percent	Characteristic	Number	Percent
Gender			Disabled		
Male	58	49.2%	Yes	7	5.9%
Female	60	50.8%	No	103	87.3%
Race			Not Reported	8	6.8%
American Indian	2	1.7%	Pell Grant Eligible		
Alaskan Native	6	5.1%	Yes	33	28.0%
Asian	2	1.7%	No	59	50.0%
Hispanic	3	2.5%	Not Reported	26	22.0%
Native Hawaiian/ PI	1	0.8%	Veteran		
White	89	75.4%	Yes	12	10.2%
Not Reported	15	12.7%	No	106%	89.8%
Age			Highest Degree on Entry		
18 - 29	67	56.8%	High School Only	88	74.6%
30 - 39	25	21.2%	Certificate	3	2.5%
40 - 49	12	10.2%	Associate	5	4.2%
50+	14	11.9%	BA	4	3.4%
TA Eligible			BS	18	15.3%
Yes	0		Incumbent Worker		
No	118	100.0%	Yes	70	59.3%
Not Reported	0		No	25	21.2%
			Not Reported	23	19.5%

Evaluation Design

GOALS OF THE EVALUATION

The primary goal of the evaluation described in the Detailed Evaluation Plan was to determine the effects of program changes on student recruitment, retention and subsequent employment. A second goal was to identify the impact of program modifications on increasing UAS capacity to respond to training needs in fisheries as well as other industries.

RESEARCH QUESTIONS ADDRESSED BY THE EVALUATION

The TAACCCT Solicitation for Grant Applications (SGA) outlined four areas for which evaluative data and information on program implementation were to be gathered.

How was the fisheries curriculum selected for use?
How was the FT program improved or expanded using grant funds? What delivery methods were offered? What was the program administrative structure? What support services and other services were offered?
Was an in-depth assessment of participants' abilities, skills, and interests conducted to select participants into the grant program? What assessment tools and processes were used? Who conducted the assessment? How were the assessment results used? Were the assessment results useful in determining the appropriate program and course sequence for participants? Was career guidance provided, and if so, through what methods?
What contributions did each of the partners (employers, workforce system, other training providers and educators, philanthropic organizations, and others as applicable) make in terms of: 1) program design, 2) curriculum development, 3) recruitment, 4) training, 5) placement, 6) program management, 7) leveraging of resources, and 8) commitment to program sustainability? What factors contributed to partners' involvement or lack of involvement in the program? Which contributions from partners were most critical to the success of the grant program? Which contributions from partners had less of an impact?

In addition to these four areas, campus administrators and program staff desired more detailed information on how the program elements were being implemented and what, if any, program elements were leading or could lead to building institutional capacity.

CONCEPTUAL FRAMEWORK FOR THE IMPLEMENTATION STUDY

The evaluation had both implementation (process) and outcomes/impacts components. The Logic Model attached as Appendix A provided the framework for the evaluation. For the process portion, the project used principles of the utilization-focused evaluation framework developed by Michael Patton to help inform and improve program implementation. According to Patton "intended users are more likely to use evaluations if they understand and feel ownership of the evaluation process and findings". The evaluator worked with project administration and other primary intended users identified by the project in validating evaluation questions, analyzing data, and using evaluation findings for program improvement.

Of the six interventions, four were selected for the evaluation: adding the two OE credentials, modularizing the curriculum, creating stacked credentials and expanding outreach through the Outreach Coordinators. The interventions selected for the evaluation flowed from prior experiences with the FT and other workforce development programs. The interventions were focused on achieving the nine outcome measures mandated by the SGA and were intended to effect change in the target population in the following ways.

Create OE Credentials: An analysis of student persistence and completion in the prior, unmodified FT and similar programs revealed that students frequently were dropping/stopping out after they had completed the occupation-specific course work and were not taking the general education requirements (GERs) that are necessary to obtain a certificate or associate

degree. In addition, employers have indicated that they are seeking employees with occupation-specific skills and that a certificate/degree does not necessarily add value, particularly for initial employment. The two OE credentials created for the *Pathway to Employment* program packaged the FT courses related to Salmon Enhancement and Fisheries Management and did not require additional GER coursework. The OEs expedite student preparation for entry-level employment with all the required courses articulated with the certificate and AAS in FT. The two OEs were approved by the UAS Curriculum Committee in March, 2014 and were in place for the Fall 2014 semester.

The change was intended to increase 1) student enrollment, 2) retention to completion and 3) post-completion employment, including wage increases for participants already employed. (Outcome Measures 2, 4, 5, 7, 8 and 9.)

Modularize FT Curriculum: The seasonal nature of fisheries employment coupled with the remote location of many fisheries jobs suggested breaking semester-long courses into smaller modules that could be delivered by distance technologies and accessed asynchronously. This change was intended to enhance program completion. (Outcome Measures 2 and 5).

Stack Credentials: The OE credentials articulate with the certificate/associate degrees in Fisheries Technology. Stacked credentials were intended to encourage students who complete the OE to continue on through this established career pathway. (Outcome Measure 6.) The FT credentials/degrees, in turn, were designed to facilitate transition into a fisheries-related bachelor degree in the UA system.

Expand Outreach: The deployment of regional Outreach Coordinators was intended to increase student recruitment, retention and post-program employment. (Outcome Measures 1, 2, 5 and 7). Coordinators worked with Alaska Department of Labor and Workforce Development (ADOLWD) regional Job Centers, industry and other agencies to identify and recruit eligible participants into the program and to help place program completers into fisheries jobs.

By assisting students to utilize the student services of the University of Alaska (UA) regional campuses, as well as virtual student services—such a tutoring and advising—from the UAS Sitka campus, the coordinators contributed to student success and completion. Working with local employers to develop internship opportunities was expected to lead to post-program employment for students. (Outcome Measure 8.)

IMPLEMENTATION DATA & METHODS

The evaluator worked closely with project staff to establish procedures for monitoring the creation and implementation of the training program, based on the approved Statement of Work. The evaluator regularly met in person or telephonically with the Project Manager and the Data Analyst to obtain reports on progress. The evaluator either attend scheduled meetings of the project team, including the outreach coordinators and the advisory council and partners or reviewed minutes of such meetings. At each attended meeting, the evaluator was available to discuss evaluation findings to date and to encourage discussion of the implications of the findings on project implementation and on institutional capacity to delivery workforce development programs. Again, to quote Patton, “By actively involving primary users, the evaluator is preparing the groundwork for use”.

To obtain information on each of the implementation evaluation questions, the evaluator interviewed project administration and faculty, outreach coordinators, advisory committee members and industry partners. Student satisfaction with the innovations introduced with TAACCT funding was measured through surveys. The evaluator also reviewed written documentation of project activities, such as project staff recruitment and job descriptions, materials developed for the curriculum review process for the OE credentials, memoranda of understanding with other UA units and quarterly/annual reports to the funder.

Based on the selected evaluation questions, the evaluator developed the following implementation evaluation matrix.

Table 3:
Implementation Evaluation Timeline

Components	Evaluation Question	Data Source	Timeline
Curriculum selection	How was the FT program selected?	-Interviews with administration/ faculty	Spring/Summer Year 1
Program design and delivery	How was the fisheries program improved or expanded using grant funds, including delivery methods, administrative structure and support services?	-Interviews with project administration and faculty -Attendance at periodic project staff meetings -Written document review	-Annually -On-going
Student skills and interest assessment	What methods were used to conduct an in-depth assessment of participant's abilities, skills and interests?	-Interviews with project administration and faculty -Interviews with outreach coordinators -Interviews with ADOLWD Job Center staff	-Fall Year 1 -Spring/Fall semesters years 2 - 4
Partnerships	What contributions did each of the partners make? What factors contributed to partners' involvement or lack of involvement in the program? Which contributions from partners were most critical to the success of the grant program? Which had less of an impact?	-Interviews with project administration -Interviews with partners -Survey of partners -Interviews with outreach coordinators -Written document review -Attendance at partnership meetings	-Fall Year 1 initial interviews with administrators -Late Fall Year 1 interviews with partners/ outreach coordinators -Years 2 and 3, follow-up survey of partners -Year 4, final round of interviews with partners
Program implementation	To what extent were the activities and timelines in the SOW adhered to? What issues surfaced during the implementation? How were the issues resolved?	-Attendance at project meetings -Review of written documents -Interviews with project administration and staff -Discussion with primary users/key stakeholders	-On-going -Written status report at end of Year 2 -Regularly-scheduled feedback to project, and campus administrators -Final report at conclusion Year 4
Institutional Capacity	What elements of the intervention contribute to the long-term stability and sustainability of the FT program? What elements of the intervention can be adopted by or adapted for other UAS workforce development programs?	-Interviews with project administration and staff -Interviews with campus administration -Surveys of faculty/ students/ partners concerning satisfaction with specific interventions -Discussion with primary users/key stakeholders	-Interviews beginning in late fall of Year 1 -Final interviews mid-Year 4 -Satisfaction surveys Year 4

MEASURES OF CAPACITY BUILDING & INDICATIONS THAT WERE USED

The project Logic Model (Appendix A) outlines short, mid and long term expected outcomes for building institutional capacity.

Appendix A: Capacity Building Outcomes

Short Term	Successful practices are identified for increasing FT student recruitment, retention, completion and post-training employment.
Mid Term	Successful practices are implemented to benefit other UAS workforce development programs.
Long Term	Institutional capacity is improved for delivering effective workforce development programs. UAS Fisheries Technology Program is sustainable without outside funding

Given the limited duration of the project, only short-term outcomes were considered in the evaluation. The evaluator interviewed administrators, faculty, student services staff and partners to begin identification of those Pathway practices which could be considered for other workforce development programs offered not only at the Sitka campus but in the larger University of Alaska system. These are covered in detail in the section of this report on implementation study findings.

OUTCOMES/IMPACT STUDY DESIGN

An experimental design for the evaluation of the Pathway to Employment project was ruled out because it was not possible to randomly assign eligible participants to either a treatment or control group. Not only was the potential pool of participants too small but also the University of Alaska policies prohibit assignment of potential students to a control or non-treatment group. With the limited number of potential participants (an estimated 50 unique participants) even a formal comparison group design was determined to be infeasible. Small sample size precluded

the use of statistical techniques for comparison group selection and outcome analysis such as propensity score matching and minimum detectable effects.

Given these constraints, the evaluation provided an outcomes-only analysis with reference to outcomes of the unmodified FT program, which has been in operation for over a decade. The program content was developed with and approved by industry. Because the Pathway project used this same curriculum, students who had enrolled and taken courses in the past provided a benchmark against which to measure the effects of program interventions on recruitment, retention, completion, post-program employment and continuing education. After a thorough review of available student data, three cohort groups were identified: 12 graduates of the unmodified program (Ketchikan cohort), 24 graduates who had enrolled only in the modified program (Sitka cohort) and four graduates who had begun in the unmodified program but graduated from the modified program (Sitka/Ketchikan cohort). Although only 18 students who had completed the entire program at Sitka had graduated by the end of the Fall 2016 semester—the final full semester of grant funding—the evaluator has included six Spring 2017 graduates in the qualitative analysis later in this report, since these students lacked but four weeks to completion when grant funding ended in March 2017 and were thought to have valuable insights into program structure and quality. Cohort characteristics are displayed in the following table

Table 4: Comparison Cohort Characteristics

	Ketchikan	Sitka	Sitka/ Ketchikan		Ketchikan	Sitka	Sitka/ Ketchikan
Gender				Pell Grant			
M	58.3%	54.2%	25.0%	Yes	25.0%	16.7%	25.0%
F	41.7%	45.8%	75.0%	No	75.0%	58.3%	75.0%
Race				Age			
AK/AI	16.7%	8.3%	0.0%	NA	0.0%	25.0%	0.0%
Asian	0.0%	4.2%	0.0%	mean	40.2	31.6	31.8
WH	75.0%	83.3%	100.0%	median	39	29.5	29
NA	8.3%	4.2%	0.0%	mode	45	28	30
Veteran							
Yes	0.0%	12.5%	0.0%				
No	100.0%	87.5%	100.0%				

In the analysis of outcomes section, results are reported only for the students who had completed by December 2016 and who are included in the Year 4 Annual Report. Results are displayed by cohort, where possible. The Sitka/Ketchikan cohort was rolled into the Sitka cohort in the employment/wage data obtained from the Alaska Department of Labor and Workforce Development since these students graduated during the period of grant funding.

OUTCOMES RESEARCH QUESTIONS ADDRESSED BY THE STUDY

The SGA mandated the following nine measures for which outcomes were reported in the annual report. Cumulative outcomes over the course of grant funding have been used in this report.

1. How many unique participants were served?
2. How many participants completed a grant-funded program of study?
3. How many participants are still retained in their programs of study?
4. How many students completed credit hours?
5. How many students earned credentials?
6. How many students are pursuing further education after program of study completion?
7. How many students were employed after program of study completion?
8. How many students were retained after program of study completion?
9. How many of those employed who received a wage increase post-enrollment?

In addition to the above measures, campus administration and program faculty had specific research questions to be answered concerning the four program modifications selected for evaluation.

1. Did the use of student services/outreach coordinators in various regions of the state a) increase overall enrollment in the FT program and b) increase the geographic reach of the program?
2. Did modularizing the core FT curriculum have an effect on increasing student a) success in individual courses, b) persistence to the next course in se-

quence and c) completion of the entire curriculum?

3. Did obtaining an occupational endorsement (OE) have an effect on increasing a) initial employment or b) advancement in current employment/wages for program completers?
4. Did alignment of the Fisheries Technology curriculum with fisheries-related bachelor degrees in the UA system have an effect on student decisions to seek additional education/ training.

OUTCOME DATA USED & THEIR RELIABILITY

Data for addressing outcomes were obtained from a variety of sources. All information on residence, enrollment, persistence, success in course, degree completion, retention and credit hours on individual students was obtained from the University of Alaska Banner system—the official student record-keeping system for UAS Sitka. Employment and wage data were obtained for program completers from the Alaska Department of Labor and Workforce Development Division of Research and Analysis. These data were pulled from Unemployment Insurance files, Alaska Permanent Fund Dividend files, Limited Entry Commercial Fishing License files and other sources. ADOLWD has been pulling wage information on workforce development program completers for the University of Alaska and other public/private career and vocational education providers in Alaska for over 20 years and has established a very formal, reliable and secure system for gathering and reporting this information.

More qualitative information concerning the importance of Occupational Endorsements and stacked credentials on program completion, post-program employment and decisions to pursue additional education was obtained from a survey of graduated students and from employers either by survey or through structured interviews.

OUTCOMES AND IMPACTS MEASURED

The four program research questions added to the nine mandated questions resulted in the following outcomes evaluation matrix.

Table 5: Outcomes Evaluation Timeline

Evaluation Question	Data Collection Method	Data Source
Did the use of outreach coordinators in various regions of the state a) increase overall enrollment in the FT program and b) increase the geographic reach of the program?	Analysis of semester-by-semester enrollment data Analysis of geographic spread of student pre- and post grant funding	University of Alaska (UA) Banner system
Did modularizing the core FT curriculum have an effect on increasing student a) success in individual courses, b) persistence to the next course in sequence and c) completion of the entire curriculum?	Comparison of GPAs from cohort and program students Analysis of persistence from semester to semester to completion Comparison of cohort and program student time to degree	UA Banner system
Did obtaining an occupational endorsement (OE) have an effect on increasing a) initial employment or b) advancement in current employment/wages for program completers?	Student assessment of value of OE to current employment Employer assessment of value of OE to employment	Graduate student survey Employer interviews Advisory Committee interviews Alaska Department of Labor and Workforce Development (ADOLWD) data
Did alignment of the Fisheries Technology curriculum with fisheries-related bachelor degrees in the UA system have an effect on student decisions to seek additional education/ training?	Student assessment of value of stacked curriculum to decision to pursue further education	Graduate student survey
How many unique participants were served?	Number of participants enrolled in the grant-funded program	UA Banner system
How many participants completed a grant-funded program of study?	Number of enrolled students completing coursework	UA Banner system
How many participants are still retained in their programs of study?	Number of students still in the program as of Spring 17 semester	UA Banner system
How many students completed credit hours?	Number of enrolled students that earned credit hours	UA Banner system
How many students earned credentials?	Number of enrolled students completing an occupational endorsement, certificate or degree	UA Banner system
How many students are pursuing further education after program of study completion?	Number of students completing the program who are enrolled in further education	UA Banner system Graduate student survey
How many students were employed after program of study completion?	Number of students employed after program completion	ADOLWD data Graduate student survey
How many students were retained after program of study completion?	Number of incumbent worker participants who were retained after completion	ADOLWD data Graduate student survey
How many of those employed who received a wage increase post-enrollment?	Number of program completers who received a wage increase immediately or after 6 or 12 months of completion	ADOLWD data Graduate student survey

Implementation Study

Findings

The evaluator used a number of strategies to understand the development and implementation of the Pathway program. This information was reported back to campus administration, program staff and faculty on a regular basis. The evaluator collected qualitative data via interviews with staff, faculty, Advisory Committee members and employers, student evaluations of faculty and courses, and review of written documents. This data was used to inform the following findings on the four required research questions.

CURRICULUM SELECTION

HOW WAS THE CURRICULUM SELECTED?

Alaska's maritime sector includes seafood harvesters; seafood processors; fisheries research, enhancement, and management; and marine occupations and support industries. Collectively, this sector is Alaska's largest private employer with more than 500 firms statewide and a workforce of over 68,000. According to the American Maritime Partnership, Alaska ranks third in the nation in per capita maritime jobs, and the thousands of Alaskan jobs directly related to the maritime industry contribute more than \$1 billion in economic impact.

Many of the job opportunities for completers of the Fisheries Technology program are with fish hatcheries. (NAICS code 112511: Finfish Farming and Fish Hatcheries). Hatcheries play a critical role in Alaska's commercial salmon harvests by boosting fish abundance. Thirty-four hatcheries are in operation: 20 in Southeast and the remaining 14 in Prince William Sound, Cook Inlet, Kodiak, Anchorage, and Fairbanks. Hatcheries are operated by regional aquaculture associations, non-profit organizations that fund operations through cost-recovery harvests and state and federal government agencies. Over the course of grant funding, the expanded FT program had direct contacts with 14 of the hatcheries to disseminate in-

formation about the program and to request assistance with recruitment, develop internship sites and facilitate post-program employment.

Program completers can also find employment in federal, state and regional agencies charged with fisheries management, such as the Alaska Department of Fish and Game (ADF&G). (NAICS Code 924120 Fish and Game Agencies). Alaska Native tribes and corporations are taking a more active role in resource management in their areas and require persons with technical skills. Outreach Coordinators who were placed in various regions of the state worked with local offices of the ADF&G and five tribal organizations.

Employers surveyed during development of the Maritime Workforce Development Plan noted that the number of Alaskans with the necessary skills to fill the available maritime positions is too low to meet demand. Alaska is currently experiencing a shortage of fisheries technicians and fisheries biologists—a trend predicted to continue for at least the next 10 years. In many occupations, employers note a "graying" of their workforce. The commercial fishing industry identified the need to "ready the next generation" to fill its positions and the ADF&G anticipates significant retirements over the next several years.

The Fisheries Technology program was established to meet these needs. The original curriculum for the associate degree and the certificate was developed over the past decade with extensive input from industry, in particular members of the regional aquaculture associations and fish processors. The program's close alignment with the University of Alaska's Maritime Workforce Development Plan was cited as a promising practice in the August 2016 monitoring report which followed an on-site review by US DOL personnel.

PROGRAM EXPANSION & IMPROVEMENT

Although the FT certificate and AAS degree program had been in operation for over ten years, the regional reach of the program was limited. With the advent of TAACCCT funding, it was determined to extend the program to other areas of the state where there were employment opportunities for program completers. Industry representatives who had worked with the earlier program indicated that the real value of the program was the fisheries-specific coursework and that employers were not necessarily looking for people with degrees. An analysis of student data over the past decade bore this out, as many students were exiting the program after completing only the content courses and not going on to complete the general education requirements of either the certificate or the associate degree.

This information led to the development of Occupational Endorsements, which packaged 14 credits of technical and fisheries science courses into a sequence which does not require additional general education coursework and can easily be completed in one academic year.

WHAT DELIVERY METHODS WERE OFFERED?

All of the Fisheries Technology content courses were offered on-site and via distance in a synchronous format from the Sitka campus. Beginning with the 2015/16 academic year, courses were modularized and loaded onto iPads to be delivered completely asynchronously. This delivery method assisted students who are in remote and coastal locations—for example, in summer field operations or on a vessel—to access the coursework. By the end of the grant period, all of the courses required for an Occupational Endorsement were available in the iPad format. General education courses and electives needed for the certificate and associate degree were available by distance from Sitka and other campuses in the UA system and on-site with a local campus.

What I liked best about the program was the opportunity to gain relevant job experience both before the start of the program and during my time with the program itself.

—Program graduate

Each level of credential—occupational endorsement, certificate or associate degree—required a face-to-face lab intensive and/or an internship. Labs were held in various locations around the state: Sitka, Ketchikan, Kodiak, Valdez, Homer and Anchorage. Travel and/or tuition assistance was made available from other funding sources, including industry, for students who did not have a lab in their community.

Internships were completed with the following agencies.

Table 6: Internship Placements

Alaska Sea Grant (Cordova)	Sitka Sound Science Center	Icicle Seafoods (Kodiak)
William Jack Hernandez Sports Fish Hatchery (Anchorage)	Alaska Dept. of Fish and Game (various sites)	Sitka Salmon Shares
Douglas Island Pink and Chum (Juneau)	UAF/BLAST (biomedical) program	Valdez Fisheries Development Association
Southern Southeast Regional Aquaculture Association (SSRAA)	Northern Southeast Regional Aquaculture Association (NSRAA)	

WHAT WAS THE PROGRAM ADMINISTRATIVE STRUCTURE?

The program was administered by the Sitka Campus of the University of Alaska. The Sitka Campus director served as the Principle Investigator for the grant. Administrative duties were carried out by a Program Manager, assisted by a Data Analyst. Over the course of the grant, two Education Technology Developers provided assistance with the iPad course development and with posting items to the Registry. Academic duties were performed by a lead faculty, who was supported by university funds, and two TAAC-CCT-funded faculty, one of whom served part-time. The full-time grant-funded faculty has subsequently been transitioned to university funds, a major step toward sustainability for the program in the future.

UAS entered into memoranda of agreement with the two other universities within the UA system: University of Alaska Fairbanks (UAF) and University of Alaska Anchorage (UAA). These agreements allowed four extended campuses of the UA system to provide the FT program in their respective regions: Kenai/Kachemak (Homer), Kodiak, Kuskokwim (Bethel) and Prince William Sound Community College (Valdez). The agreements spelled out the roles and responsibilities of each campus in program delivery and student support. UAS Ketchikan campus also participated in the program. An Outreach Coordinator was stationed in each of these campus communities.

*We welcomed the coordinator
into the campus community.
Local people became involved.
It was a good fit.*

—Host Campus Director

The evaluator interviewed each of the participating extended campus directors. From these interviews, several suggestions emerged which should be considered if the model is replicated. A major concern was better and more consistent communication between

the serving campus—here, Sitka—and campuses that host a coordinator. A second area was greater clarification of the role of the outreach coordinator vis-à-vis the host campus. Finally, there must be a good fit between the program being offered and the receiving campus. For example, in Bethel both commercial and subsistence fishing on the Kuskokwim River has been closed for the past several years. Therefore, interest by local residents in a fisheries technology program was very low. By contrast, Kodiak, with a strong fisheries economy proved a good site for placing an outreach coordinator.

The Title III program on the Sitka Campus is looking at the outreach coordinator model as one that might be replicated in that program.

WHAT SUPPORT SERVICES AND OTHER SERVICES WERE OFFERED?

Fisheries Technology students were supported by the Student Services offices of the Sitka campus. Services included academic advising, tutoring and academic coaching, test proctoring, learning resources, technology support and disability assistance. Many of the services are available on-line. For the first two years of program operation, one academic advisor was responsibility for all FT students, and was in monthly contact. This dedicated contact is no doubt an important reason why persistence of students from semester to semester was high from Fall 14 to Spring 15 and from Spring 15 to Fall 15.

The Outreach Coordinators also provided support services to students in their region, including recruitment, supporting persistence and completion, liaising with staff on the Sitka and local campus and assistance with internships and job placement.

In a survey of program graduates administered in Spring 2017, respondents indicated using the following services.

Respondents reported that faculty were the major source of assistance (92.3 percent) followed by campus student services staff (61 percent) and program staff (53 percent). On a scale of 1 to 5, with 5 being

“Very satisfied”, respondents rated satisfaction with services available to them as 4.55.

Table 7: Support Services Usage

Service	Percent
Recruitment Information about the program	61.5%
Assistance information about the program	76.9%
Help in securing financial aid	53.8%
Assistance with program enrollment	53.8%
Assistance with obtaining and internship	69.2%
Assistance with job-seeking skills (e.g., resume writing, interviewing, etc.)	30.7%
Information about employment opportunities	53.8%

Each Outreach Coordinator worked with the local Alaska Department of Labor Job Center to assure that students took advantage of the services offered by these centers. OCs also developed relationships with Vocational Rehabilitation and Veterans Services organizations in their regions both to recruit students and to link eligible students with services.

ASSESSMENT

WHAT ASSESSMENT TOOLS AND PROCESSES WERE USED?

Assessments of program applicants were conducted in several ways. Potential participants who were referred to the program by a DOL Job Center, Vocational Rehabilitation or Veterans Services underwent an initial assessment to verify the eligibility for agency services and ability to benefit from the program. Once a potential participant applied with the Sitka Campus for the program, he/she worked with a student advisor to complete a participant enrollment form. The form collected information on demographics, prior education, employment status, veteran status, barriers to employment and TAA/WIOA eligibility. Further as-

essment depended on prior education and the level of credential desired. For example, a student enrolling in a certificate or AAS degree with only a high school diploma was required to take the standard math and English placement exams required of all students admitted to the university. Students who only sought an Occupational Endorsement were not required to take the placement exams, regardless of level of prior education. Faculty also provided program applicants with information and advising on which program level (OE, certificate, AAS) best meets the applicant’s needs and interests.

WHO CONDUCTED THE ASSESSMENT?

Assessments were conducted by job counselors at the involved agencies and by student services staff at the Sitka Campus. If a student in one of the other participating campus communities needed placement tests, those were administered by the local college and results forwarded to Sitka.

HOW WERE THE ASSESSMENT RESULTS USED?

Assessment information was used by student services staff to refer students to tutoring services or other learning resources, as needed. If the assessment indicated that a student needed disability services, these would have been provided through the Sitka Campus student services office. However, of the seven students (5.6 percent) reporting a disability, none required special accommodation to engage in the coursework.

WERE THE ASSESSMENT RESULTS USEFUL IN DETERMINING APPROPRIATE PLACEMENTS?

The assessments were useful in assisting faculty and student services staff to help students choose the appropriate level and emphasis for their FT experience. Faculty also used aggregated assessment information in reviewing course content and outcomes.

WAS CAREER GUIDANCE PROVIDED, AND IF SO, THROUGH WHAT METHODS?

Career guidance was offered through several avenues. Faculty were a primary source of career guidance, as all three FT faculty have experience with and many contacts in the fishing industry. Outreach Coordinators were a source of local employment information. Most participants were introduced to ALEXsys—Alaska’s On-line Job Bank—and were encouraged to register with their local DOL Job Center. The Kodiak Outreach Coordinator established contact with the DOL Seafood Employment Center in Anchorage, and shared that information with the faculty and other Outreach Coordinators. The Seafood Office is the crossroads for Alaska’s seafood workers and many seafood employers recruit directly from there. Job openings were also posted on the Fisheries Technology website. In Fall 2015, a new one-credit seminar—Careers in Fisheries—was introduced and was offered annually thereafter.

PARTNER CONTRIBUTIONS

The Fisheries Technology Program worked with a number of partners in both informal and formal ways. Informally, faculty and Outreach Coordinators had multiple contacts with the fishing industry, resource management agencies, educational institutions, DOL and other agency job counselors and training providers. These informal contacts were a source of recruitment, internships, job placement and suggestions for program content and program improvement. Informal contacts were recorded by staff, faculty and Outreach Coordinators and were collected into a database, which was used for broad information dissemination as well as additional personal contacts. By the end of the grant period, the database contained 120 entries involving 88 different entities in 22 Alaskan locations. Contacts were made with the following types of agencies (Table 9, next page).

More formal relationships with partners included the Fisheries Technology Advisory Committee (AC) and the memoranda of agreement with participating campuses in the UA system. The FT AC was comprised of

seven members: three from industry and four from education/training agencies. Committee meeting were generally held once an academic semester.

More formal relationships with partners included the Fisheries Technology Advisory Committee (AC) and the memoranda of agreement with participating campuses in the UA system. The FT AC was comprised of seven members: three from industry and four from education/training agencies. Committee meeting were generally held once an academic semester.

Table 8: Advisory Committee Membership

Name	Title	Agency	Representing
Forrest Bowers	Deputy Director, Division of Commercial Fisheries	Alaska Dept. of Fish and Game, Juneau	State fisheries manager
Steve Reifensstuhl	General Manager	Northern Southeast Regional Aquaculture Association	Southeast salmon industry
Caroline Cherry	Hatchery Operations Coordinator	Cook Inlet Aquaculture Association, Kenai	Southwest salmon industry
Lisa Busch	Executive Director	Sitka Sound Science Center, Sitka	Marine education and outreach
Cathy LeCompte	Assistant Dean	Community and Technical College, University of Alaska Anchorage	Career and technical education
Andrew Seitz	Chair, Undergrad Fisheries Program	University of Alaska Fairbanks	UA fisheries degree programs
Paula Cullenberg	Director	Alaska Sea Grant Program	Statewide marine outreach and education

Table 9: Industry and Education Contacts

Local/State Agency	Federal Agency	Hatchery/ Aquaculture Association	Educational Institution	Tribal/Alaska Native Association
Alaska Dept. of Fish and Game (ADF&G)	Kachemak Bay Research Reserve	Cook Inlet Aquaculture Association	Alaska Sea Grant	Ahtna, Inc.
ADF&G, Division of Sport Fish	Coast Guard Marine Safety Detachment Kodiak	Douglas Island Pink & Chum (DIPAC)	Center for Alaskan Coastal Studies	Seldovia Village Tribe
Homer Office ADF&G	NOAA Kasitsna Bay Laboratory	Gulkana Hatchery	East Carolina University	Sitka Tribe of Alaska
Alaska Department of Labor (ADOL)	US Coast Guard North Pacific Regional Fisheries Training Center	Kitoi Bay Hatchery	v	Association of Village Council Presidents
ADOL Career Development	Wrangell St. Elias National Park	Kodiak Regional Aquaculture Association	KPC/ Kenai Peninsula College	
ADOL Sitka	Sitka Coast Guard	Northern Southeast Regional Aquaculture Association (NSRAA)	Prince William Sound Community College (PWSCC)	
Alaska Governor's Office		Port Armstrong Hatchery	PWSCC - Copper Basin Center	
Alaska Office of Vocational Rehab		Prince of Wales Hatchery Association	Sitka Sound Science Center	
City of Ketchikan		Prince William Sound Aquaculture Corporation	Alaska Pacific University	
Homer Port and Harbor Authority		Sitka Sound Science Center - Sheldon Jackson Hatchery	University of Alaska Fairbanks	
Sitka Economic Development Association		Solomon Gulch Hatchery (SGH)	University of Alaska Southeast	
Sitka Conservation Society		Southern Southeast Regional Aquaculture Association		
		Tamgas Creek Hatchery		
		William J Hernandez Sport Fish Hatchery		

During Years 2 and 4 of the grant, the evaluator conducted telephone or face-to-face interviews with all members of the Advisory Committee, asking about their involvement with the eight items listed in the SGA. The Year 4 interviews asked respondents to indicate their level of satisfaction with their involvement in these activities using a five-point scale, with “5” indicating “Very satisfied”. Responses to individual items are shown in the following chart.

Table 10: Advisory Committee Satisfaction

	Satisfaction with Involvement	# responding
Program design	3.00	5
Curriculum development	3.00	6
Recruitment	3.20	5
Training	4.00	4
Placement	5.00	1
Program management	NA	6
Leveraging resources	3.50	4
Program sustainability	3.50	4

The somewhat low ratings for the first two items—program design and curriculum development—were due in large part to the fact that most of the design and development had been completed prior to receiving the TAACCCT funding. Advisory Committee members did report that they had been advised of and offered opportunities to give input on planned new courses. In both round of interviews, the members responded that they did not have nor desire any role in program management.

Overall, the members rated their satisfaction with serving on the committee at 3.58 out of 5.0. While all members saw the committee as providing a strong link between industry and the FT program, they indicated that they would have liked to assist in forging a stronger link between the FT credentials and employment.

Members also were interested in developing a career pathway that included greater articulation between the FT AAS and four-year degrees within the UA system. All members indicated that more frequent Advisory Committee meetings would have been helpful.

PARTNER INVOLVEMENT IN PROGRAM DESIGN

The impetus for the Fisheries Technology program came from industry, particularly the hatchery associations in Southeast Alaska. The decision to apply for TAACCCT funding to expand the program to other areas of the state was the result of the maritime workforce development efforts spearheaded by the University of Alaska system and involving representatives from the maritime and fishing industries, state and federal resource management agencies and education/training institutions across the state. The decision to package elements of the existing program into OEs was the direct result of industry involvement.

*I am thrilled we have this program.
I would definitely use the OE as
part of the process for hiring.
—Hatchery employer*

PARTNER INVOLVEMENT IN CURRICULUM DEVELOPMENT

The original FT curriculum was developed by UAS with heavy involvement of industry and educators from other branches of the UA system, particularly the Fisheries program at UAF. One faculty member was with a regional aquaculture association at the time and was active in curricular design. As indicated above, the FT Advisory Committee provided advice on new courses, for example Open Water Diver. UAF Fisheries faculty were heavily involved with curriculum review and with issues of articulation with the bachelor of fisheries degrees offered by that campus. When interviewed, the AC members from UAF and UAA indicated strong interest in working with FT faculty to develop career pathways that would clearly detail

the route from an OE to a bachelor degree. The FT program faces the same issues that other associate of applied science degrees have with articulation to the bachelor level. Many technical courses do not readily transfer as meeting higher degree requirements, often necessitating an additional year or two to obtain a BS. However, with careful advising, some of this difficulty can be avoided. A detailed career pathway assists both students and advisors to efficiently plan the transition from one educational level to the next.

A better solution, however, is to assure that FT coursework can directly apply to a bachelor degree. FT faculty worked with faculty at UAF and UAS to begin the process. As of the end of the TAACCCT grant period, curriculum committees at both UAF and UAS Juneau had agreed that two FT courses--FT 274, Fisheries Biology and FT 222 Alaska Salmon Culture II--can substitute for two courses required for the BS in Fisheries. Securing approval for this equivalency is a major step in eventually working out a full articulation between the two degrees. That this is important is attested to by Advisory Committee members, students and employers, all of whom noted the lack of articulation as a major weakness of the current program.

Have the AAS be able to transition to a bachelor degree to make it easier to advance your education in the fisheries field.
—Program graduate

PARTNER INVOLVEMENT IN RECRUITMENT

Partners assisted with recruitment at various levels. All of the Advisory Committee members interviewed indicated that they felt a responsibility to spread the word about the FT program in their agencies. The industry representatives indicated that they encouraged employees to enroll in the program, where appropriate. Agency partners, such as DOL Job Centers, Vocational Rehabilitation and Veterans Services referred eligible students to the program either directly or through the Outreach Coordinators. Industry also provided

financial support for recruitment. Icicle Seafoods, Inc., in Petersburg, Alaska contributed substantial funds for program advertising and recruiting materials. Icicle continues to fund an annual scholarship as does Douglas Island Pink and Chum (DIPAC) which assist with recruiting. Southern Southeast Regional Aquaculture Association contributed \$1,000 to assist students to complete the program and has indicated an intention to maintain this level of support.

Each advisory committee member has a network that can be used to promote the program.
—Program graduate

PARTNER INVOLVEMENT IN TRAINING

Partners provided sites for the on-site labs in salmon culture and fisheries management techniques in Sitka, Anchorage, Homer, Ketchikan, Valdez and Kodiak. Alaska Pacific University, the NOAA Kachemak Bay Research Reserve, Cook Inlet Aquaculture Association, Sitka Sound Science Center and the Alaska Department of Fish and Game Hernandez Sport Fish Hatchery hosted salmon culture labs. Industry partners also supplied internships. Participating campuses provided general education coursework needed for degree completion. Advisory Committee members rated their satisfaction with their involvement in training a 4.0 out of 5.

PARTNER INVOLVEMENT IN PLACEMENT

DOL Job Centers were prime sources for job placement. AC industry members indicated that they assisted with placement of program completers and rated their satisfaction with this role at a 5.0 out of 5. Northern Southeast Regional Aquaculture Association committed to funding two \$5,000 post-program apprenticeships. Other industry contacts notified faculty when there are job openings. These were posted on the FT website. Outreach Coordinators worked with employers in their regions to assist with job placement.

PARTNER INVOLVEMENT IN PROGRAM MANAGEMENT

Program management was under the control of the UAS Sitka Campus. None of the Advisory Committee members or other partners interviewed for this report felt that they had a role in program management.

PARTNER INVOLVEMENT IN LEVERAGING OF RESOURCES

As indicated above, industry partners contributed funds for recruitment materials, scholarships and apprenticeships. The MOAs with participating campuses leveraged TAACCCT resources by tapping into local student services and general education courses.

PARTNER COMMITMENT TO PROGRAM SUSTAINABILITY

The expanded Fisheries Technology program was designed to be sustainable with resources within the university. However, industry and agency long-term commitment to providing lab sites and internships is essential for continued program operation. Industry partners have indicated a willingness to make that commitment. The annual scholarship support from industry also contributes to sustainability. Relationships with the UAF School of Fisheries and with other extended campuses of the UA system which were built under TAACCCT funding will also help sustain the program.

WHAT FACTORS CONTRIBUTED TO PARTNERS' INVOLVEMENT IN THE PROGRAM?

For many of the partners, the personal contacts with program faculty and Outreach Coordinators were significant factors in becoming and continuing to be involved with the program. Participation in the Advisory Committee and having a voice in program development contributed to continued involvement by members of that body.

WHICH CONTRIBUTIONS WERE MOST CRITICAL TO THE SUCCESS OF THE GRANT PROGRAM?

Input from both industry and education/training program partners was crucial to developing the content curriculum of the FT program and for designing the degree structure—OE, certificate and associate. Word of mouth promotion of the program within industry and throughout the various regions of the state was valuable in increasing both enrollment and the geographic reach of the program. Support provided by the participating campuses through office space for Outreach Coordinators and assistance to local FT students also enhanced success.

Hosting intensive lab sessions and providing internship opportunities were vital contributions from industry and training providers. Student financial aid from industry also helped in supporting student success.

WHICH CONTRIBUTIONS FROM PARTNERS HAD LESS OF AN IMPACT?

Based on information from interviews of both partners and program staff, all partner contributions had an impact on program delivery.

CAPACITY BUILDING

The desire to build the Fisheries Technology program to a level where it could be sustained by the Sitka campus without external funding was a key driver in the decision to apply for TAACCCT funding. The campus utilized grant funding in a variety of ways to build up a strong student base.

INDUSTRY ENGAGEMENT

As with any workforce development effort, a first step was forging close ties with industry. This industry support was already strong for the program because of heavy industry involvement in the development of the original curriculum. This support was fostered during the grant period through many contacts between faculty and industry partners formally through the Advisory Committee, but less-formally and more often through working with individual partners to recruit students, arrange for internships and assist with placement of graduates.

To determine the level of industry involvement and satisfaction with the program, the evaluator surveyed/interviewed 13 supervisory individuals from eight hatchery or resource management agencies. The overwhelming majority of respondents (85.7 percent) indicated that the Fisheries Technology graduates that they had employed were able to perform their duties “very well”. A similar percentage indicated that they would employ another graduate if a position would come available. In addition to hiring graduates, the employers had the following connections with the program.

Table 11: Employer Involvement

Employers	# responding
Served on Advisory Committee	2
Current Employee taking classes	5
Provided internship	7
Provided space for lab	3
Provided scholarship	2

DEVELOPMENT OF OES AND STACKED CREDENTIALS

One of the identified weaknesses of the original Fisheries Technology program that was delivered prior to TAACCCT funding was that many students were dropping out of the program before completion of a certificate or degree. An analysis of those dropping out revealed that most were exiting the program after they had completed the fisheries course content but before completing the general education requirements such as English, communications and math. In addition, those students who did stay with the program were taking on the average around two and one-half years to complete an associate degree.

Based on this information, the faculty developed an Occupational Endorsement in both Fisheries Technology and Fisheries Management consisting of 14 credits of fisheries coursework without additional

GER requirements. The OE coursework fits seamlessly into the FT certificate and provides the basis for the content-specific coursework of the AAS. A description of the coursework involved in each of the stacked credentials is found in Appendix B.

As will be reported in more detail in the following section concerning outcomes, the OE was a popular option, with half (11) of the program completers during the grant period obtaining only an OE. More than half of the employers surveyed (57 percent) indicated that the OE was an important modification in preparing students to work in the industry. Surveyed graduates were asked how important the opportunity to earn an OE was in their decision to enroll in the FT program. Of the 20 respondents who answered this question, a little over one-third replied that it was “Important” or “Very Important”.

Stacking course content does appear to have led to students persisting in the program. Of the 22 program completers, eight took an OE but then continued on to a certificate/AAS degree. When asked how important stacked credentials were to their decision to enroll, 52.4 percent replied that it was “Important” or “Very Important”.

While OEs and stacked credentials have contributed to the growth in enrollment in the program, students, faculty and employers all indicated that the FT credentials would be more valuable if they articulated to a bachelor degree. Of the 15 surveyed graduates who were enrolled in an educational program as of Spring 2017, 50 percent were pursuing a bachelor degree and an additional 7 percent a master’s degree. Almost two-thirds of those enrolled (64.3 percent) were in a fisheries-related field. Of the 13 students who recommended improvements to the FT program, four cited the need for articulation to a bachelor degree. This was the most commonly-cited recommendation.

I had to go out crabbing for work after I had started the final test. I just left it plugged in and it was still there waiting for me when I got back
—iPad student

iPAD COURSES (MODULARIZING)

A major program innovation was to modularize the curriculum and transition courses to an iPad platform. This innovation allowed students in all areas of the state—even those without reliable internet—to access the program. As mentioned earlier, this was particularly important for the target student population who often spend large amounts of time in remote monitoring locations or on board boats and ships. The first iPad courses were offered on a pilot basis in Spring 2016. By Fall 2016, six courses were offered by this delivery method, including the four courses that make up the Occupational Endorsement. The iPad course delivery was cited as a promising practice in the monitoring report from the August 2016 on-site program review. Nine courses that were developed or modified with TAACCCT funding have been entered in Skills Commons, an OPEN digital library of workforce training materials. The courses are cross-referenced under Industry Sector 11: Agriculture, Forestry, Fishing and Hunting; Occupation 45: Farming, Fishing and Forestry and Instructional Program 03: Natural Resources and Conservation.

Satisfaction surveys for students in iPad courses were conducted in both Fall 2016 and Spring 2017, with 18 and 32 respondents respectively. The Spring 2017 responses are included in this evaluation because although the official close of the grant activity was the end of March 2017, by that time enrolled students had completed most of the semester. Student responses were very positive, as seen in Table 12.

Of the seven surveyed graduates who indicated that they had taken iPad courses, five indicated that they were “Satisfied” or “Very satisfied” with this form of course delivery. Two did not respond to the question.

Table 12: Student iPad Course Evaluation

Question/ Answer	Fall 2016	Spring 2017
Was the semi-asynchronous format useful to you?		
Yes	83%	94%
No	6%	0%
Maybe	11%	3%
NA		3%
If other courses were offered in this format would you be interested?		
Yes	72%	80%
No	6%	0%
Maybe	22%	18%
NA		2%

OUTREACH COORDINATORS

In the analysis of ways to increase enrollment in the FT program, it became clear that the demand in Southeast Alaska alone was not sufficient to assure a critical mass of students. In addition, the need for trained technicians, although strong on South-east, was also felt in other regions of the state. Because all of the program coursework was already delivered by distance, and with the plans to modularize the curriculum further through iPads, the program was poised to become more of a state-wide presence than in the past. Outreach Coordinator were hired by the program and stationed in five regions of the state to provide greater visibility for the program, recruit students and assist with internship and post-completion placements with local fisheries-related industry. An examination of distribution of students in Spring 2014 (the last semester before TAACCCT grant funding) and of

the entire student population serviced by the TA-ACCCT funding shows that the program, while still primarily centered in Southeast Alaska, now reaches all areas of the state.

Table 13: Geographic Distribution of Students

Region	Unique Participants			
	Spring 14		Fall 14/Spring 17	
	No.	Percent	No.	Percent
Southeast	7	46.7%	58	49.2%
Gulf Coast/ Kenai	4	26.7%	18	15.3%
Anchorage/ Mat-Su	1	6.7%	12	10.2%
Interior	0	0.0%	4	3.4%
Northern	0	0.0%	1	0.8%
Southwest/ Bristol Bay	0	0.0%	8	6.8%
Out of State	3	20.0%	17	14.4%
Total	15		118	

hour count accrue to the sending not the receiving campus. Added to this is the fact that all three major administrative units—UAS, UAA and UAF—are separately accredited and, as a result, a program from one MAU cannot be offered by another campus without undergoing the formal curriculum and program approval process of that MAU. Despite these difficulties, there is some movement within the system to better utilize specialized resources. Under the Strategic Pathways initiative adopted by the UA Board of Regents, UAF and UAS are cooperating on a joint bachelor degree in fisheries. The Fisheries Technology program, as reported above, is working to align its coursework with this degree. As this alignment increases, the incentive for cross-MAU cooperation particularly with UAF campuses should be strengthened. ■

CROSS CAMPUS/MAU COOPERATION

Successful offering of a program statewide required the cooperation of other campuses in the UA system. *Pathway to Employment* sought to obtain this cooperation through Memoranda of Agreement with the two other major academic units of the system—University of Alaska Fairbanks and University of Alaska Anchorage, which in turn covered the extended campuses of both these units. The memoranda spelled out roles of both the Sitka campus and the receiving campus. Based on interviews with the directors of the five involved campuses, it appears that this attempt at cross-campus coordination was only partially successful. While there were some gaps in communication and some role confusion, the major barriers to increased cooperation are institutional; that is, there is little incentive for a campus to advertise and recruit for a program from another campus in that the tuition and credit

Outcome Study Findings

Desired outcomes for the Pathway project included the nine outcome measures articulated in the SGA as well as the four program specific research questions:

1. Did the use of student services/outreach coordinators in various regions of the state a) increase overall enrollment in the FT program and b) increase the geographic reach of the program?
2. Did modularizing the core FT curriculum have an effect on increasing student a) success in individual courses, b) persistence to the next course in sequence and c) completion of the entire curriculum?
3. Did obtaining an occupational endorsement (OE) have an effect on increasing a) initial employment or b) advancement in current employment/wages for program completers?
4. Did alignment of the Fisheries Technology curriculum with fisheries-related bachelor degrees in the UA system have an effect on student decisions to seek additional education/ training.

PARTICIPANTS SERVED AND CERTIFICATES EARNED

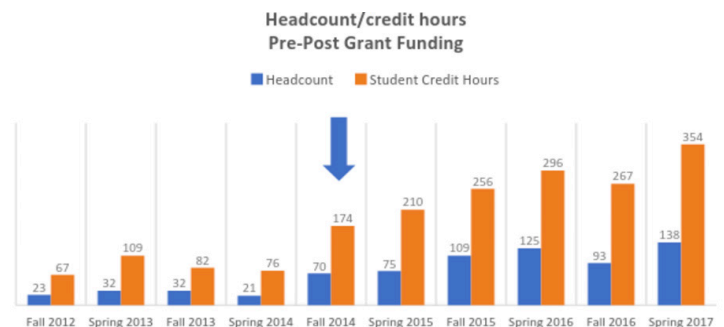
The first set of SGA outcomes measure how successful the Pathway program was in serving participants and in participant completion and credential attainment. The following table displays enrollment and completion data as compared to the targets set out in the original grant proposal's SOW.

Table 13: Geographic Distribution of Students

Performance Item	Target from SOW	Actual	% of Target Achieved
Total Unique Participants Served	50	118	236%
Total Number Who Have Completed a Grant-Funded Program of Study	40	22	55%

Total Number Still Retained in Their Programs of Study (or Other Grant-Funded Programs)	20	28	140%
Total Number of Students Completing Credit Hours	44	115	261%
Total Number of Students Earning Credentials	30	51	170%

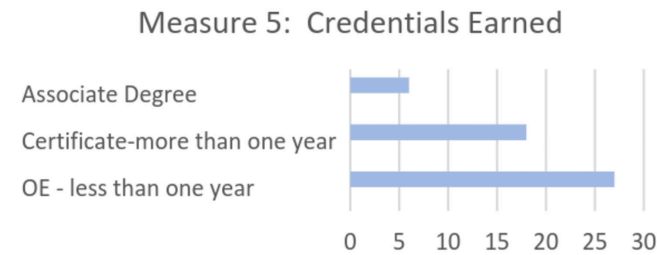
The number of students eventually served and those completing credit hours (Items 1 and 4) far exceeded the number estimated in the SOW and showed steady growth over the period, reaching a peak in the final semester of the grant period. The arrow indicates the first semester of full program implementation.



The lower number for students completing the program (Item 2) is due in part to the late program start. Since authorization to spend grant funds was not received until April 2014 and the grant closed in March 2017, the program had only two full academic years of operation: AY 2014/15 and AY 2015/16. Six additional students graduated in Spring 2017, bringing the totals for Item 2 to 28. Although the grant was not able to report these additional students in the Year 4 Annual Report, the evaluator believes that they should be considered when judging the success of the program in meeting its stated outcomes, since at the time the

grant ended, the Spring semester was almost complete. If these students are included, the percentage of the target number achieved for this item is 70 percent.

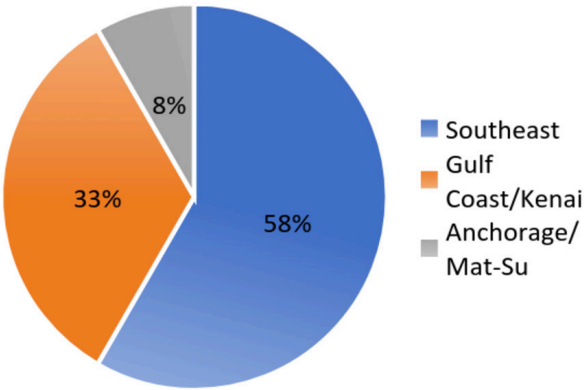
A further factor in the relatively low percentage



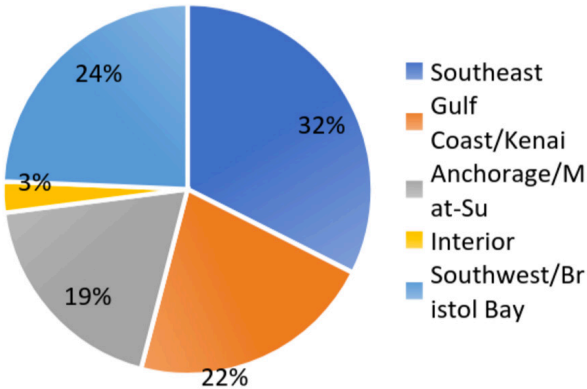
for Item 2 is that the target numbers in the original SOW were reversed. It is clear from talking to program staff that the developers of the SOW misunderstood the relationship between Items 2 and 5. Item 2 speaks to the unique number of students who achieved a credential. Students who achieved more than one credential are to be counted only once. By contrast, Item 5 speaks to the number of credentials; that is, if a student achieves more than one credential, each credential is counted. Therefore, the correct targets should have been 30 for Item 2 and 40 for Item 5, since the number of credentials will always equal or exceed the number of unique students completing their program. With the lower target for Item 2, the program achieved a success rate of 73.3 percent.

The first program-specific research question looked for a relationship between student services/outreach coordinators in various regions of the state and increases in both overall enrollment in and the geographic reach of the FT program. While not conclusive, there is some evidence that the outreach coordinators did have some effect on both outcomes. When asked how they had heard of the program, the third highest response was “regional coordinators”. However, more than twice as many students indicated that their primary source of information was college advisor/student services staff followed by the college website. Employers and faculty were nearly as frequently cited as outreach coordinators.

Spring 2014 Students by Region



Spring 2017 Students by Region



The influence of regional coordinators on the regional disbursement is more discernable. As can be seen in the above charts, geographic distribution of students changed considerably from Spring 2014 the last semester before the program was implemented and Spring 2017, the final program semester. Enrollment increased in the Gulf Coast/Kenia and the Southwest/Bristol Bay region, where coordinators were stationed, and also in the Anchorage/Mat-Su area which did not have a dedicated coordinator but was serviced by Kodiak.

The second program-specific research question queried the effect that modularization of the curriculum had on student success in the course, student persistence from semester to semester and student completion (Items 3 and 5).

The evaluator looked at student GPAs, and time to completion from the cohorts.

Table 15: Cohort Comparisons—GPAs and Time to Degree

	Ketchikan Cohort	Sitka Cohort	Ketchikan/Sitka Cohort
GPA			
AAS			
mean	3.5	3.5	3.3
median	3.6	3.6	3.4
mode	3.6	3.6	none
OE			
mean		3.3	
median		3.2	
mode		4	
Time to degree			
AAS			
mean	2.4	2	2
median	2.5	2	2
mode	3	1.5,2,2.5	2
OE			
mean		0.84	
median		0.88	
mode		1	

As can be seen, there is no difference in the GPAs for students gaining an Associate Degree between the Ketchikan and Sitka cohorts, and only a slight difference between these cohorts and the four students who started under the Ketchikan program but completed at Sitka. Since only Sitka students were exposed to the modularized curriculum, it can be assumed that this modification had no influence on student success in course. There is, however, a slight difference between the time to degree for the Ketchikan and Sitka cohorts: a mean of 2.4 years for Ketchikan AAS graduates compared to 2.0 years for Sitka. The mode for the Ketchikan cohort is also higher than for the other two groups. Because of the small numbers involved, it is impossible to determine the statistical significance, if any, of these differences. The much more condensed time to degree for the OEs is to be expected, since that credential requires only 14 credit hours. It is worthy of note, however, that the mean length of time to complete the en-

dorsement was less than one year, indicating that students who pursued this credential persisted for the two semesters it took on the average to complete the coursework.

POST-COMPLETION EMPLOYMENT

Post-program placement was of considerable concern to the funding agency, as evidenced by the following mandated outcome measures.

Table 16: Post-Completion Employment and Wage Increases

Performance Item	Target from SOW	Actual	Percent of Target Number Achieved
7. Total Number Employed After Program of Study Completion	30	16	53.3%
8. Total Number Retained in Employment After Program of Study Completion	30	16	53.3%
9. Total Number of Those Employed at Enrollment Who Receive a Wage Increase Post-Enrollment	5	12	240%

The numbers in the above table are taken directly from the ADOLWD data on 21 of the 22 graduates of the Sitka cohort for which data were available. The analysis found that 17 of the graduates were residents of Alaska as of July, 2017. Of these 16 were employed in jobs for which UI was paid. However, the data do not include those positions such as on a commercial fishing vessel or self-employment for which DOL wage data are not available, nor do they include out-of-state placement. By contrast, of the 12 graduates in the Ketchikan comparison cohort, only six were employed on CY2016 and only three had received a wage increase since completion of training. If the six students who graduated in Spring 2017 are included, the number of employed increases to 19, or 63.3 percent of the SOW target.

In the survey of graduates—which included six Spring 2017 graduates—20 respondents indicated that they were employed. In the same survey, 14 indicated that they had received a wage increase. The survey data may have picked up a few of the graduates who were in jobs that were not counted in the ADOLWD data. They are reported for informational purposes only as they are not independently verifiable.

ADOLWD data for 16 of the 21 completers compared pre- and post-training wages. There is no ready explanation for the fact that average post-training wages for students completing in 2016 are low-

er than pre-training wages. However, on the student in-take forms, several students reported seeking a career change. It is possible that this change resulted in a wage cut as the student moved to an entry-level position in the fisheries industry.

Table 17: Completer Wages

Year completed	Pretraining wages		Post-program Wages			
	Total	Average	6 months		12 months	
			Total	Average	Total	Average
2015 (n=7)	\$98,460	\$14,066	\$48,985	\$6,998	\$154,867	\$19,358
2016 (n=9)	\$181,814	\$20,202	\$75,298	\$10,757	\$122,223	\$15,278

Information for program-specific question 3–Did obtaining an occupational endorsement (OE) have an effect on increasing a) initial employment or b) advancement in current employment/wages for program completers—was obtained directly from the graduate survey and more indirectly from employer interviews.

Graduates were asked how important they thought their fisheries technology credential was in securing employment. Of the 19 respondents to this question, eight thought it “Very important”, while four responded that they were already employed with their current employer. Seven of the 19 did not think that the credential was important. While only four of the eight employers who responded to this question thought the credential was “Important” or “Very important”, all indicated that having the credential would give a job applicant the edge, all other things being equal. It was this lack of direct connection between obtaining a credential—be it an OE, certificate or AAS—and employment that most interviewees cited as the second major weakness of the program, after the lack of articulation to a bachelor degree.

With respect to wage increases, eight graduates who reported receiving an increase felt that having the credential was “Somewhat” to “Very important”; four said it was “Not important at all”.

POST-COMPLETION FURTHER EDUCATION

The program was also asked by the funders to track completed students to determine if they were continuing their education, with the following results.

The final program-specific research question asked if the alignment of the Fisheries Technology curricu-

lum with fisheries-related bachelor degrees in the UA system had an effect on student decisions to seek additional education/training and thus achieving Item 6 of the mandated outcomes.

Table 18: Post-Completion Education

Performance Item	Target from SOW	Actual	Percent of Target Number Achieved
6. Total Number Pursuing Further Education After Program of Study Completion	10	11	110%

Pathway to Employment sought to encourage participants to seek additional training in two ways. First, it stacked the FT credentials so that there was a seamless transition from obtaining an OE through completing an associate of applied science degree. Second, it has worked to better articulate the FT course content with the bachelor degree in fisheries that is co-offered by UAF Fairbanks and UAS Juneau campuses. Stacked credentials have been available throughout the grant period. However, as noted elsewhere in this report, FT faculty had only limited success by the end of the grant period with securing articulation agreements with the bachelor program faculty. By March 2017, two FT courses had been approved as equivalent to courses in the Fisheries degree.

Data on graduates reveal that ten of the 28 Sitka graduates (including Spring 2017 graduates) utilized the stacked credentials, earning at least two during the course of the grant funding. All of the graduates who had started in Ketchikan but graduated in Sitka had earned all of the credentials available at the time of graduation.

Table 19: Credentials Earned

	Ketchikan	Sitka	Ketchikan/Sitka
Credentials			
OE only	0	14	
Certificate only	1	1	
AAS only	10	2	
OE/Cert	0	1	
Cert/AAS	1	1	
OE/Cert/AAS		5	4
Total Completers	12	24	4

Of the graduated Sitka students who responded to the interview/survey, eleven of the 19 students were

enrolled in a post-secondary program: seven full-time and four part-time. Of those, seven are pursuing a bachelor degree and four an associate degree. Nine of the eleven are enrolled in a fisheries-related field. Ten students who are not currently enrolled indicated that they planned to enroll in a post-secondary program in the future. Three-fourths of all respondents—whether currently enrolled or not—indicated that they planned to continue their education. Of these, 14 stated that they planned to continue in a fisheries-related field. Seven said that their eventual goal is a bachelor degree, while 12 are aiming to achieve a master’s degree. These responses give impetus to the need to articulate the FT coursework with the bachelor degree in Fisheries. ■

Conclusions

The UAS Sitka campus successfully implemented the Pathway to Employment TAACCCT grant, modifying and delivering a Fisheries Technology program to all regions in Alaska. Despite the late start occasioned by a delay in receiving authorization to expend funds, all of the six program elements spelled out in the Statement of Work are in place and are achieving the intended goals of increasing both enrollment in and the geographic reach of the FT program. For the most part, the targets for the nine SGA mandated student outcomes have been met or exceeded. For the two areas where performance has fallen somewhat short of targets—the number of program completers and the number who are employed after completion of the program—the shortfalls are due in large part to the late program start which resulted in only two full academic years of operation. The fact that many jobs in the fisheries industry in Alaska, such as work on commercial fishing vessels or self-employment, are not captured in Alaska Department of Labor and Economic Development wage data may also have underestimated actual employment and wages of completers.

The *Pathway* experience has increased the capacity of the campus to sustain the FT program in

the future. Increased enrollments, greater state-wide visibility, strong industry support and greater cooperation between the multiple campuses of the University of Alaska system all auger well for the health of the program. That the one full-time grant-funded faculty has been transitioned to university funding is a sign of this health. Another good sign is the progress made in better articulating the FT coursework with the bachelor of fisheries. Finally, the use of the iPad format is making coursework available to areas of the state that hitherto have not been well served.

KEY LESSONS

Although Pathway to Employment focused on developing a student skill set that may not have wide application nationally, the project utilized several elements that could be of value to others engaged in workforce development programs: outreach coordinators, stacked credentials and modularized curriculum on iPads. While each of these contributed to the success of the UAS Sitka project, each had challenges.

OUTREACH COORDINATORS

The purpose of the outreach coordinators was to extend the visibility of the program and student services such as recruitment and job placement outside of the normal catchment area of the Sitka campus. To do so, it relied on relationships with other campuses, most of whom were in a different administrative unit of the university system. In some ways, this model is similar to the consortium model used in many of the other TAACCCT grants that deliver a program across separately administered and accredited bodies. In the Alaska case—and no doubt in many consortia arrangements—the benefits accruing to each partner were not equal; for example, assignment of tuition revenues and credit hour production. In such situations, care must be taken to have clear role definitions prior to the start of the outreach activity and frequent communication throughout the course of the relationship.

An additional lesson concerning outreach coordinators is that these positions should be at least half-time, benefitted positions in order to attract and hold good candidates. It would also be more cost-effective to have such positions be responsible for several programs rather than just one. Finally, such positions should be allowed to recruit and work with high school students in order to build a pipeline for the program(s). Interaction with secondary school students was not allowed under TAACCCT funding.

STACKED CREDENTIALS

*I liked the program, but let's
face it. Most people get
nowhere without a BS degree.
—Program graduate*

Stacked credentials are a fairly common practice in many workforce development programs and can be good motivators for students to continue along an academic pathway. However, two strong cave-

ats emerge from the *Pathway* experience. First, the credentials must be closely tied in with employment. For the FT program, although employers did give consideration to job applicants who had one or more FT credentials, these were not required for employment. Second, because the FT credential sequence led to an associate of applied science degree, there was not a clear and seamless roadmap to a bachelor degree; that is, FT coursework did not transfer as meeting the core content requirements of a higher degree. One way to overcome this problem—which is common to most AAS degrees—is to establish the associate degree as an associate of science under the administration of an academic rather than a career/technical unit. In the FT case, it would have been beneficial to establish the degree as an AS under the School of Arts and Science rather than an AAS in the School of Career and Technical Education.

MODULARIZED COURSES OF iPADS

One of the most successful modifications utilized in the *Pathway* program was transitioning coursework to iPads, including all of the courses necessary for achieving the first credential—an Occupational Endorsement. As mentioned earlier, this innovation was cited as a promising practice by the USDOL staff performing the monitoring site visit in 2016. The modification allowed access to the coursework from anywhere without the need for internet connection. While this is essential in Alaska, where many of the students were in remote locations, it could also be beneficial to other programs that wish to extend their reach to the broadest possible audience. The *Pathway* experience indicates that faculty will need professional assistance to successfully transition courses and that opportunities for regular communication between the student and faculty need to be built into the courses both to enhance student success and to meet accrediting agency standards for course credit.

IMPLICATIONS FOR FUTURE WORKFORCE & EDUCATION RESEARCH

As noted by many of the TAACCCT evaluations, the time frame for evaluation was insufficient to adequately analyze the effects of program innovations and modifications. For example, the Pathway project had only two full years of graduates that could be tracked for employment and wage increase information. In addition, many students were still in the pipeline at the end of the grant period. A longer-term horizon is needed to answer such questions as:

- Are content-intensive credentials such as an occupational endorsement as useful for initial employment as an associate degree?

- Do employees with OEs advance at the same rate as employees with higher credentials?
 - Do stacked credentials encourage students to continue their education even after employment?
- If other programs do adopt the iPad format for courses, a valuable research activity would be to examine course and credential completion rates with this delivery mode as compared to on-line and on-site delivery of courses. ■

Appendix A: Pathway to Employment Logic Model

Inputs Investments / Resources	Outputs		Outcomes – Impact		
	Activities	Activity Outputs	Short Term	Medium Term	Long Term
<ul style="list-style-type: none"> University of Alaska Southeast (UAS) Fisheries Technology Program Program Faculty Project Staff TAACCCT funding Campus Student Services Outreach Coordinators Network of UAS extended campuses Industry advisory board UAS partnership in the Alaska Fisheries, Seafood and Maritime Initiative (FSMI) AKDOLWD – Job Centers, Alaska Research & Analysis UAS Institutional Research UAS Sitka Campus experience with successful workforce development programs Coastal community partnerships Industry employer partnerships UAS FT Program students UAS Sitka Campus faculty and staff 	<ul style="list-style-type: none"> Create Fisheries Technology (FT) Occupational Endorsements Modularize FT program curriculum Create stacked credentials within the FT program Deploy community outreach coordinators to recruit and support FT students across coastal Alaska 	<ul style="list-style-type: none"> Number of participants: <ul style="list-style-type: none"> Served Completing a TAACCCT-funded program Still retained in their program of study (POS) or another TAACCCT-funded program Completing credit hours Earning credentials Enrolled in further education after grant-funded POS completion Employed after grant-funded POS completion Retained in employment after POS completion Who are incumbent workers receiving a wage increase post-enrollment 	1a) Individuals find education valuable and enroll in Fisheries Technology courses and programs 1b) Students gain knowledge and skills that lead to employment in Fisheries related jobs 2) Successful practices are identified for increasing FT student recruitment, retention, completion and post-training employment	1) Fisheries Technology Program completers: <ul style="list-style-type: none"> a) seek and obtain employment b) pursue further education c) obtain job advancement 2) Successful practices are implemented to benefit other UAS workforce development programs	1) Productivity in Alaska's Fisheries Industry is improved through the increased number of flexible and multi-skilled workers 2) Institutional capacity is improved for delivering effective workforce development programs 3) UAS Fisheries Technology Program is sustainable without outside funding

Appendix B: Credential Requirements

OE	Credential	AAS
Minimum 14 Credits	Minimum 32 credits • General Requirements – 11 • Program requirements – 21	Minimum 60 credits • General Requirements—17 • Program Requirements—43
Intro to Fisheries of Alaska	Introduction to Fisheries of Alaska	Introduction to Fisheries of Alaska
Alaska Salmon Culture I	Alaska Salmon Culture I	Alaska Salmon Culture I
Alaska Salmon Culture II	Alaska Salmon Culture II	Alaska Salmon Culture II
Fundamentals of Fisheries Biology	Fundamentals of Fisheries Biology	Fundamentals of Fisheries Biology
	Fisheries Tech Internship (3cr)	Fisheries Tech Internship (6 cr)
		Fundamentals of Fisheries Oceanography
		Fisheries Management Techniques
		Fisheries Management Techniques Lab
		Introduction to Limnology
		Fisheries Management, Law, Economics
One of the following:	One of the following	8 credits of the following:
Alaska Salmon Culture Lab	Alaska Salmon Culture Lab	Alaska Salmon Culture Lab
Fisheries Tech Internship (1 cr)	Fundamentals of Fisheries Oceanography	Small Business Management
	Introduction to Limnology	Spreadsheet Concepts and Applications
	Small Vessel Operator	Database Concepts and Applications
	Outboard Motor Maintenance	Scuba Diving
		Survey of Statistics
		Instructor-approved electives
	Other Requirements	Other Requirements
		CIOS (3 cr)
	Written and Oral Communication Skills (3 cr)	Written and Oral Communication Skills (6 cr)
	Computational Skills (4 cr)	Computational Skills (4 cr)
	Science Skills (4 cr)	Science Skills (4 cr)

Appendix C: Acronyms Used in the Report

- AAS – Associate of Science
- AC – Advisory Committee
- ADF&G – Alaska Department of Fish and Game
- ADOLWD – Alaska Department of Labor and Workforce Development
- AY – Academic Year
- DIPAC – Douglas Island Pink and Chum
- DOL – Department of Labor (Alaska)
- FT – Fisheries Technology
- FTE – Full Time Equivalent
- GER – General Education Requirement
- MOA – Memorandum of Agreement
- OC – Outreach Coordinator
- OE – Occupational Endorsement
- SGA – Solicitation for Grant Applications
- SOW – Statement of Work
- TAA – Trade Adjustment Act
- UA – University of Alaska
- UAA – University of Alaska Anchorage
- UAF – University of Alaska Fairbanks
- UAS – University of Alaska Southeast

Appendix D: References

Alaska Maritime Workforce Development Plan, (2014). Fairbanks, AK: University of Alaska, http://www.alaska.edu/fsmi/AKMaritimeWFDPlan_HighRes_5-22-14.pdf

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