

**ALASKA STATE LEGISLATURE
SENATE EDUCATION STANDING COMMITTEE**

January 23, 2013

7:59 a.m.

MEMBERS PRESENT

Senator Gary Stevens, Chair
Senator Mike Dunleavy, Vice Chair
Senator Bert Stedman
Senator Charlie Huggins
Senator Berta Gardner

MEMBERS ABSENT

All members present

OTHER MEMBERS PRESENT

Senator Berta Gardner

COMMITTEE CALENDAR

SENATE BILL NO. 17

"An Act extending the special education service agency; and providing for an effective date."

- HEARD AND HELD

PRESENTATION: SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM)
EDUCATION IN ALASKA FIRST ROBOTICS-STEM ALASKA

- HEARD

PREVIOUS COMMITTEE ACTION

BILL: SB 17

SHORT TITLE: EXTEND SPECIAL EDUCATION SERVICE AGENCY

SPONSOR(s): SENATOR(s) STEVENS

01/16/13	(S)	READ THE FIRST TIME - REFERRALS
01/16/13	(S)	EDC, FIN
01/23/13	(S)	EDC AT 8:00 AM BELTZ 105 (TSBldg)

WITNESS REGISTER

TIM LAMKIN, Staff to Senator Stevens

Alaska State Legislature
Juneau, Alaska

POSITION STATEMENT: Presented SB 17 to the committee.

PATRICK PILLAI, Executive Director
Special Education Service Agency (SESA)
Anchorage, Alaska

POSITION STATEMENT: Provided an overview and supportive testimony for SB 17.

ERIC GEBHART, Chair
Governor's Council on Disabilities and Special Education
Anchorage, Alaska

POSITION STATEMENT: Provided supportive testimony for SB 17.

MILLIE RYAN, Executive Director
REACH Incorporated
Juneau, Alaska

POSITION STATEMENT: Provided supportive testimony for SB 17.

LES MORSE, Deputy Commissioner
Department of Education and Early Development
Juneau, Alaska

POSITION STATEMENT: Neutral on SB 17.

ELIZABETH NUDELMAN, Director
School Finance & Facilities
Department of Education and Early Development
Juneau, Alaska

POSITION STATEMENT: Neutral on SB 17.

BRUCE JOHNSON, Ph.D., Executive Director
Alaska Council of School Administrators
Juneau, Alaska

POSITION STATEMENT: Provided supportive testimony for SB 17.

BRIAN HOLST, Executive Director
Juneau Economic Development Council
Juneau, Alaska

POSITION STATEMENT: Provided an overview of the Science Technology Engineering & Math-Alaska (STEM-AK) education program.

DEBRA MUMM-HILL, Director
FIRST-Pacific Northwest
Portland, Oregon

POSITION STATEMENT: Provided an overview of the For Inspiration and Recognition of Science and Technology (FIRST) program.

MARY HAKALA, Education Coordinator
Juneau Economic Development Council
Science Technology Engineering & Math-Alaska (STEM-AK)
Juneau, Alaska

POSITION STATEMENT: Provided an overview of the Science Technology Engineering & Math-Alaska (STEM-AK) education program.

REBECCA PARKS, Program Manager
Juneau Economic Development Council
Science Technology Engineering & Math-Alaska (STEM-AK)
Juneau, Alaska

POSITION STATEMENT: Addressed questions regarding the Science Technology Engineering & Math-Alaska (STEM-AK) education program.

ACTION NARRATIVE

[7:59:44 AM](#)

CHAIR GARY STEVENS called the Senate Education Standing Committee meeting to order at 7:59 a.m. Present at the call to order were Senators Stedman, Huggins, Vice Chair Dunleavy, and Chair Stevens.

SB 17-EXTEND SPECIAL EDUCATION SERVICE AGENCY

[8:00:10 AM](#)

CHAIR STEVENS announced the consideration of SB 17, "An Act extending the special education service agency; and providing for an effective date." He said the Special Education Service Agency (SESA) was scheduled to sunset on. He explained that the sunset date was July 1, 2013 and it was imminent for the committee to decide if SESA should be extended. He noted that the committee would also address whether SESA belonged in the Department of Education & Early Development (DEED) or under the Governor's Council on Disabilities & Special Education (GCDSE).

[8:01:16 AM](#)

CHAIR STEVEN called a brief at ease from 8:01:16 a.m. to 8:01:42 a.m.

TIM LAMKIN, staff to Senator Stevens, Alaska State Legislature, introduced SB 17 and noted that the bill essentially extended SESA's sunset to 2021. He explained that there were three underlying issues for the committee to decide: the importance of SESA to extend the sunset, consolidating SESA into DEED, leaving

SESA in the Department of Health & Social Services (DHSS), and addressing SESA funding issues.

8:03:06 AM

PATRICK PILLAI, Executive Director, Special Education Service Agency, introduced and presented a five minute video on the services provided by SESA.

8:06:01 AM

SENATOR GARDNER joined the committee meeting.

8:10:34 AM

MR. PILLAI presented an overview of the Special Education Service Agency (SESA) as follows:

Special Education Service Agency (SESA) Mission:

- SESA provides consultation and training to support the unique educational needs of individuals and the Alaskan communities that serve them.

SESA Background:

- Created in 1986; formed as a not-for-profit Corporation.
- Governed by the Alaska Governor's Council on Disabilities and Special Education.
- Receive Low Incidence Disabilities funding through DEED based on prior year's statewide total enrollment.
- Receives grant funding from State & Federal sources, (DHHS and DEED): Alaska Autism Resource Center, Alaska Deaf-Blind Grant, Bring the Kids Home Transition Initiative, Guiding and Instructing New Special Education Teachers Grant.

SESA Staff:

- Brenda Jager, SESA vision specialist, just completing her dissertation for a doctoral program in vision impairment from the University of Arizona. She has been with SESA for 14 years.

AS 14.30.630(b)(1) requires SESA to provide the following special education services:

- (A) Itinerant outreach services to students who are deaf, deaf-blind, mentally retarded, hearing impaired, blind and visually impaired, orthopedically disabled, health-impaired in other ways, and severely emotionally disturbed, and to students with multiple disabilities;
- (B) Special education instructional support and training of local school district special education personnel; and
- (C) Other services appropriate to special education needs.

8:12:51 AM

MR. PILLAI said that itinerant outreach services are provided throughout the state. He explained that support and training included: on-site, in-service for teachers and paraprofessionals for entire grade levels or schools. He noted that SESA recently completed training for: 245 paraprofessionals in the MATSU District, 56 special education teachers in Fairbanks, and the Bering Strait School District's educational aides met in Unalakleet to receive full scale training on positive behavioral support. He said SESA provided other services through grants that applied to autism and deaf-blind children. He noted that special projects included the creation of modules for the disability trainings on the DEED website.

8:14:06 AM

He referenced a SESA map that showed the 45 Alaska schools districts that were provided with services. He explained that SESA services included on-site training where specialists travel to school districts to assist with programming and in-service training. He said SESA collaborated with the [Alaska Native Medical Center] in Anchorage if a child required hearing aids or medical treatment. He stated that SESA served 260 low incident disability students with the total increasing annually.

He continued to provide a SESA overview as follows:

SESA Staff:

- Meriah Cory, Multiple Disabilities Specialist, was a graduate of Montana State University and a Peace Corps volunteer in Kazakhstan. Meriah contacted SESA and asked to work with the organization because it was similar to what she

was doing in Kazakhstan. She has been with SESA for one year.

SESA Services:

- On-site consultation: observations of classrooms, modeling of teaching strategies, modeling of evidence based strategies.
- In-service training for professional development.
- Alaska State Special Education Conference (ASSEC).
- Specific courses designed and offered for university credit.
- Alaska Deaf Education Advisory Board.
- Governor's Council/Education/Rural Education.
- DEED-Specific Grants-AARC/BTKH/DSI.
- Other Non-profits-Stone Soup/Center for Human Development/ILP.
- Distance Education.

MR. PILLAI said on-site consulting was the preferred method of training by teachers and paraprofessionals. He explained that the best-case scenario involved specialists teaching classes and allowing teachers and paraprofessionals to observe modeling of behaviors and strategies.

He said in-service training was the main thrust for SESA. He noted that 15 SESA specialists were doing presentations at the upcoming Alaska State Special Education Conference (ASSEC), the main professional development conference session in Alaska. He disclosed that ASSEC was chaired by Patricia McDaid, SESA-Education Specialist/Coordinator. He noted that Dr. McDaid received her Ph.D. in autism from the University of Boston.

He said SESA's specific course designed programs assisted school districts in meeting their obligation for recording of professional development through on-site training and partnering with universities: Alaska Pacific University, University of Alaska-Anchorage, University of Alaska-Fairbanks, and University of Alaska-Southeast. He said an example would be if an individual was hired as an interpreter in rural Alaska, SESA would put in the training for the individual to sign and communicate if a district did not have funds for out-of-state instruction. He noted that the Special Education Handbook specified that an

individual hired in the previously mentioned capacity must be elevated from "novice" to "advanced" within a certain period of time. He said SESA was the entity that provided the training and collaboration with the Alaska State School for Deaf and Hard of Hearing for teachers to take the Science Communication Proficiency Interview (SCPI).

MR. PILLAI said SESA was part of the Alaska Deaf Advisory Board and provided a standard of education mandated by national forums for deaf education.

He said SESA's governorship was done through GCDSE. He explained that SESA worked on different platforms regarding rural education and education. He noted that SESA participated to receive feedback from communities to elevate deaf education standards.

He said two SESA specialists were training with the Center for Human Development for the Board Certified Behavioral Analyst (BCBA) endorsement. He said the GAINS Grant was the the Guiding and Instructing New Special Education Teachers at the preschool level. He explained that the Stone Soup Group had the community component and SESA had the educational component.

He stated that SESA had a Video Control Center (VCC) for video transmissions, Skype™, and [video] modules for school district access.

[8:19:12 AM](#)

MR. PILLAI said SESA worked on its website to provide a resource for rural Alaska. He explained that the SESA website was designed without excessive color or graphics to allow accessibility for individuals with screen reading disabilities. He noted that the SESA website allowed special education directors to download all of the referral forms required to access SESA services. He said the SESA website provided referrals, grant information, and direct access to specific services for low incidence disabilities.

He detailed the FY12 Student Consultation by District graphic display and noted the 45 districts that SESA was providing services to. He explained that a lot of the consultation was dependent on the size of district, the number of referrals, and the number of students with disabilities.

MR. PILLAI continued to provide a SESA overview as follows:

SESA Staff:

- Andrea Story, Education Specialist-Vision Impairment, has been working 22 years for SESA.

Impact on Students & Teachers:

- Reduced ability to promote evidenced based practices.
- Fewer on-site visits to provide targeted interventions.
- Shorter visits to maximize travel dollars to include more sites.
- Less time for classroom observation and program enhancement.
- Loss of guidance to new special education teachers and to classroom teachers encountering unique disabilities.
- Loss of child specific educational intervention strategies modeled on-site to teachers.
- Reduced ability to recruit quality specialists to Alaska.

MR. PILLAI said the impact on students and teachers for non-reauthorization of SESA, the main three areas goes back to session laws that created SESA in 1986 and those are:

1. Provision of services to raise the standard of special education services in school districts.
2. Collaboration between school districts to elevate special education specifically for kids with low incidence disabilities.
3. Provision of SESA specialists to meet the needs of a free and appropriate education.

He noted that targeted interventions stood out as being one of the most important SESA practices. He explained that targeted interventions pertained to the efficiency in elevating a child through an instructional media from a functional level to a higher level of functioning. He said an example of the expertise required by teachers related to a situation where an on-site special education teacher was not well versed in sign language and misinterpreted a student as having multiple disabilities. He said another example occurred when a special education teacher informed him that a student was reading a novel, but the student was actually not retaining the material due to the teacher's

lack of work with profoundly deaf children. He explained that special education teachers with special education credentials may not have worked with a particular disability. He noted a waiver program was enacted to address a shortage of special education teachers where individuals with general education backgrounds were working in special education without expertise with disabled students. He said specialists from SESA or different organizations were important to special education teachers.

MR. PILLIA said guidance for new special education teachers was an important SESA service. He cited an example of a new teacher who did not realize that a student required a simple medical procedure prior to being fitted for a hearing aid.

He explained that the ability to recruit quality specialists was imperative in order to provide on-site special education teachers with a highly qualified instructor.

[8:25:43 AM](#)

CHAIR STEVENS asked what would happen if the legislature did not act and the sunset process was invoked. He called attention to a second question and asked if SESA dealt with private schools.

MR. PILLAI answered that if SESA was not reauthorized by July 1, operations would begin to shut the program down within a one year time period.

CHAIR STEVENS assessed that a shutdown process would divert attention and make SESA less effective.

MR. PILLAI answered yes. He said SESA would not be able to meet the demands of the school districts in providing services. He emphasized that specialists would immediately be looking for other jobs once a shutdown was announced.

He addressed Chair Stevens' second question regarding private schools and explained that SESA worked with any school that had a public school teacher who provided program oversight.

[8:28:02 AM](#)

SENATOR DUNLEAVY asked if SESA followed the teacher and not the student. He inquired if a child in a private or home school program would be dependent on receiving SESA support through a special education teacher.

MR. PILLAI answered correct. He noted that SESA had not provided services to home schools. He reiterated that SESA would provide support if a public school teacher was involved with oversight. He explained that SESA did observations with the intent of elevating local capacity. He clarified that a SESA specialist worked with a student while a special education teacher observed.

SENATOR DUNLEAVY asked if SESA's services were mandated.

MR. PILLAI answered yes. He explained that a statute mentioned itinerant services and professional development. He clarified that SESA provided itinerant services when a referral was received from a special education teacher who required assistance with a student. He said a SESA specialist would provide three to five days of assistance to special education teachers, paraprofessionals and students.

SENATOR GARDNER addressed SESA's distribution of services and asked why Mat-Su and Anchorage received assistance from only seven specialists. She noted that the Anchorage area accounted for over half of Alaska's population.

MR. PILLAI answered that the larger school districts had their own resources. He noted that paraprofessional training was not counted as on-site consultation. He explained that SESA only provided Anchorage with on-site consultation for deaf-blind students.

SENATOR GARDNER asked Mr. Pillai to address the shortage in special education teachers.

MR. PILLAI responded that there were approximately 70 unfilled positions for special education teachers during the previous year. He noted a study from the University of Alaska-Fairbanks that showed 38 percent of special education teachers did not know what the expected job stress levels were. He said there was a high need for qualified special education teachers and SESA's support was an important facet to assist in addressing the wide array of disabilities.

[8:32:35 AM](#)

ERIC GEBHART, Chair, Governor's Council on Disabilities and Special Education (GCDSE), stated that it would be hard to retain specialists if SESA was allowed to sunset. He noted that contracts would have to be offered to tenured teachers by March 15. He explained that SESA specialists really were specialists

that were highly sought after to do other things. He said SESA would like to give their specialists every confidence to sign their contracts and stay. He emphasized that SESA did not want to lose the great teaching resources that they had.

8:34:53 AM

MR. GEBHART addressed the importance to fund the SESA services that were provided to schools, parents, students, and communities.

He addressed the issue regarding SESA's governance and noted that the committee had three options to consider: maintain multi-department oversight, move SESA entirely under DEED, or allow DHSS to direct funding to SESA. He explained that he felt the current structure for SESA worked. He said the committee should be aware that DEED was currently not structured to govern SESA.

8:38:05 AM

CHAIR STEVENS pointed out that SESA specialists were required to travel and noted that a special person was required for the job.

MR. GEBHART replied yes.

SENATOR GARDNER addressed SESA's governance and asked that for Mr. Gebhart to clarify departmental oversight.

MR. GEBHART explained that one of the five responsibilities for GCDSE was being the SESA board. He said GCDSE consisted of nine people that did the actual work of the board, five council members, Don Enoch-DEED Special Education Coordinator, a Council of Administrators of Special Education (CASE) representative, a School Administrators Association representative, and a National Education Association-Alaska (NEA-Alaska) special education representative. He said SESA emphasis in serving rural areas dictated that the majority of council members were either based in rural areas or had experience in rural areas. He stated that he believed GCDSE's current structure for SESA worked. He referred to a legislative audit that reported that maintaining SESA within the current governance structure would require GCDSE to be intentional in their communications.

CHAIR STEVENS noted that the audit report that Mr. Gehart mentioned suggested that the legislature review SESA's governance. He explained that the auditors did not specify how or what the legislature should address. He said the committee

would consider the three governance options that Mr. Gehart had presented.

[8:41:27 AM](#)

SENATOR HUGGINS asked Mr. Gebhart what, outside of funding, he would do to fine tune SESA.

MR. GEBHART replied that he would increase SESA's capacity to provide assistance from a distance.

SENATOR GARDNER noted SESA's static-funding for the past 14 years. She asked if the number of students served by SESA changed, the amount of service to each student changed, and if SESA had a wait-list.

MR. GEBHART replied that SESA did not have a wait-list. He explained that SESA served when called to serve. He noted that SESA had decreased the number of specialist visits due to the cost of travel. He said SESA had fewer specialists than it used to have and the number of students was continuing to increase.

SENATOR GARDNER asked if students were being less served by SESA because of fewer staff members, more students, and less travel by specialists.

MR. GEBHART answered yes.

[8:44:49 AM](#)

MILLIE RYAN, Executive Director, REACH Incorporated, said she was a former executive director for GCDSE. She addressed SESA's governance structure history and noted that GCDSE was chosen due to its special education advisory role to the legislature, governor, and DEED. She agreed that maintaining GCDSE as the governing council required legislative review. She noted SESA's valuable role in training REACH staff members to assist blind and deaf individuals with developmental disabilities. She explained that SESA's services outside of school districts were often overlooked.

[8:48:14 AM](#)

LES MORSE, Deputy Commissioner, Department of Education and Early Development, introduced himself.

ELIZABETH NUDELMAN, Director, School Finance & Facilities, Department of Education and Early Development, introduced herself.

CHAIR STEVENS asked for comments on SB 17 and the auditor's findings in regards to SESA.

MR. MORSE replied that he would address the ongoing confusion of the governance structure and budgeting for SESA. He said DEED had not felt any confusion with SESA's governance. He explained that some of the confusion could be attributed to SESA's funding. He noted that DEED was clear with the auditors that the history of SESA's funding was legislatively driven. He said AS 14.30.650 specifically stated that the legislature would make appropriations and not DEED. He explained that DEED allocated funds and the legislature appropriated funds. He said appropriation was a decision and allocation was executed based upon a plan or budget. He disclosed that DEED did not necessarily suggest changes to SESA's governance or budgeting and noted that changes came through legislation. He noted his perplexity to the confusion with SESA when representatives from SESA testified last legislative session and addressed their governance and budgeting process.

He addressed SESA' governance and noted that DEED was not structured to take on SESA's governance. He explained that DEED would require infrastructure change to govern SESA. He stated that it was important for DEED to continue to work closely with GCDSE and SESA. He said communication had improved over the past two years.

He referenced a statement that DEED's Special Education Administrator's title and role changed. He clarified that the Special Education Administrator's title and role did not change. He noted that the Special Education Administrator attended all of SESA's meetings.

[8:51:44 AM](#)

CHAIR STEVENS asked for Ms. Nudelman's thoughts on SESA.

MS. NUDELMAN replied that she concurred with Mr. Morse's comments and enjoyed communicating with SESA.

[8:53:21 AM](#)

BRUCE JOHNSON, Ph.D., Executive Director, Alaska Council of School Administrators (ACSA), said ACSA saw SESA as an important ingredient to their success in Alaska. He explained that it was the school districts' obligation to meet the needs of students with low incidence disabilities. He said he believed that SESA provided the educational services to students with multiple

disabilities in a more cost effective way than individual school districts.

[8:55:01 AM](#)

CHAIR STEVENS stated that the committee faced the issues of extending SESA's sunset and following the audit's recommendation to address governance.

[SB 17 was held in committee.]

**PRESENTATION: Science, Technology, Engineering, and Math (STEM)
Education in Alaska, FIRST Robotics-STEM Alaska**

[8:56:06 AM](#)

CHAIR STEVENS stated that the next order of business would be the Science, Technology, Engineering, and Mathematics-Alaska (STEM-AK) program presentation.

[8:56:59 AM](#)

BRIAN HOLST, Executive Director, Juneau Economic Development Council (JEDC), explained that JEDC operated the STEM-AK program statewide. He said JEDC worked in supporting economic development in Juneau and Southeast Alaska. He noted that JEDC also supported industries throughout Alaska: technology transfer, cluster development, and STEM-AK.

He said JEDC had been engaged in promoting STEM education in Alaska since 2006. He described STEM-AK as a means to help develop the talent needed in the changing economy and the ever more technology laden world. He said STEM-AK was initially funded via an agreement with the U.S. Department of Defense and expanded throughout Alaska with the support of the state's congressional delegation. He said STEM-AK earned the designation and funding as the Alaska partner for the National Defense Education Program for the past four years. He noted that STEM-AK's annual funding was \$140,000. He explained that as federal funds diminished over recent years, JEDC had reached to the private sector, charities, and the state via capital appropriations from the legislature. He referenced Governor Parnell's State of the State Address. He said, "The jobs of tomorrow will require more education and more training, so we must begin preparing our students today, of all Alaska's natural resources our children are unquestionably the most valuable." He said the 2012 Alaska Advisory Task Force Report on Higher Education and Career Readiness stated that the education level of citizens was tied to Alaska's economic development. He referenced Alan Greenspan, former Chairman of the Federal

Reserve. He said, "If you can solve the education problem, you don't have to do anything else, if you don't solve it, nothing else is going to matter all that much."

MR. HOLST explained that a strong K-12 education was very important and providing more training opportunities was a strategic investment. He noted that resources to support education were limited and encouraged more investment in STEM education. He explained that STEM education was critical to national competitiveness, advanced societal underpinnings, national security, and Alaska's business competitiveness. He stated that preparing students with strong backgrounds in STEM education would provide Alaskan businesses with the talent required and create opportunities for Alaskans to prepare for the jobs of tomorrow. He said strong STEM programming supported business leadership and noted that the most common undergraduate degree for Fortune 500 CEO's was engineering at 22 percent. He said Georgetown University recently identified that the United States of America's (USA) education system was not producing enough STEM capable students to keep up with demand in traditional STEM occupations and other sectors across the economy that demanded similar competencies. He addressed wages and noted that college graduates with STEM related majors earned more money than non-STEM graduates.

[9:01:21 AM](#)

He summarized JEDC's concerns regarding the talent pipeline in Alaska and quoted Deborah Wince-Smith of the Council on Competitiveness that: "Talent will be the oil of the 21st century." He noted that hundreds of thousands of dollars had been invested annually in Alaska on professional development enrichment and outreach efforts to deliver STEM education to Alaska's K-12 students. He said STEM-AK was operating in 25 school districts. He explained that STEM-AK programs included: Engineering is Elementary; summer camps; SeaPearch and SeaGlide Underwater Robotics; The Saturday Thing, a tinker's workshop; professional development; and For Inspiration and Recognition of Science and Technology (FIRST) Robotics, STEM-AK's largest program. He explained that JEDC was especially proud of STEM-AK's FIRST Robotics and noted that Alaska had FIRST's highest USA participation rates in robotics programs in addition to the highest percentage of participation by girls.

[9:02:52 AM](#)

DEBRA MUMM-HILL, Director, FIRST-Pacific Northwest, explained that FIRST was an international company, a 501(c)(3) nonprofit organization. She said FIRST was in the business of workforce

development in the STEM fields. She noted that FIRST was established in 1992 to start STEM education at an early age in order to affect the workforce. She said FIRST had K-12 programs and was broader in scope than a robotics competition. She commended JEDC for their work with STEM-AK. She noted that Alaska had the highest per capita participation in First with over 2,000 K-12 students building robots.

9:04:02 AM

MS. MUMM-HILL provided a historical perspective of STEM Initiatives. She said the last big push occurred in 1957 when the Russians launched the Sputnik satellite. She explained that the USA was motivated by a fear of the Soviet Union (USSR) and noted that Sputnik was a spy-satellite. She said President Kennedy initiated the Space Race in 1961 between the USA and the USSR. She explained that President Kennedy challenged the USA to put a man on the moon within ten years and the goal was attained in 8.3 years. She noted that the average age at the National Aeronautics and Space Administration (NASA) during the moon-landings was 24 years old. She said the USA built the strongest STEM work taskforce during the Space Race. She explained that the moon-landing's success was attributed to inspiring 16 year olds when President Kennedy made his 1961 speech. She noted that it was considered a patriotic duty to be smart in science and math.

She said the Space Race generation was retiring and noted that the USA had an enormous problem with filling STEM related job openings from retirees as well as new opening jobs. She explained the jobs impact from the "graying" of the IBM and Boeing workforce; 75 percent of IBM and 50 percent of Boeing employees were at retirement age. She noted that national defense contract employers did not have the luxury of hiring employees from India and China as the internet companies were able to do. She explained that FIRST focused on the problem of national defense contract companies having to hire employees from American-soil.

She addressed the USA's unemployment statistics and noted that 18 million Americans were unemployed. She explained that there were 4.3 unemployed Non-STEM people for every one job versus one unemployed STEM person for every 1.7 jobs. She said the USA did not have a jobs problem, but a problem with getting people ready for the right jobs. She explained that FIRST worked with students, parents, and educators to shift focus on the STEM jobs market at an early age.

She said projections for STEM related jobs from 2008 to 2018 would increase by 17 percent and Non-STEM jobs would increase by 9.8 percent.

MS. MUMM-HILL explained that the USA, USSR, and Germany had led the world for decades in science and math aptitudes. She noted that during the past 20 years, the USA had persistently fallen behind the rest of the world for science and technology. She explained that the USA ranked twenty-third in science proficiency among the Organisation for Economic Co-operation and Development (OECD) countries and thirty-fifth in math proficiency. She stated that Shanghai, China students were two to three grades above USA math students.

[9:07:07 AM](#)

MS. MUMM-HILL said FIRST believed that children had to be engaged at the elementary school age level, not middle school or high school. She explained that two thirds of USA scientists noted that their career interests were garnered in elementary school. She stated that attitudes regarding science subjects and careers start to decline quickly from ages 10 to 14.

She said lower science and math proficiency was a national security risk. She noted that the USA had put out the second generation of students who had never touched a tool. She said the United States Military Organizations affirmed that the country with the best weapons and warfare would be the world's superpower. She explained that FIRST worked closely with Israel, every Israeli student went into the military, and every Israeli student was on a FIRST Robotics team. She noted that building robots built STEM aptitudes.

MS. MUMM-HILL addressed the annual number of worldwide engineering bachelor degrees that were earned and noted that South Korea, [population: 50 million], was putting out more engineers than the entire USA, [population: 314 million]. She said 2012 engineering bachelor degrees awarded were: 62,403 in South Korea and 59,536 in USA. She noted that engineers hired by USA companies in 2012 included: 30,000 at Boeing, 11,000 at Microsoft, and 6,000 at Google. She said the USA had to get children to understand what engineering was about and show that a person did not have to be brilliant at math to succeed. She explained that engineering was about being creative, creating new technologies, working with your hands, and working on teams. She emphasized the importance of getting children into the STEM fields due to the demand in STEM related jobs.

She noted that STEM capable careers would require STEM proficiency and not just STEM literacy. She said knowing how something was made was more important than knowing how to use something. She said FIRST focused on students not being just users of technology, but to understand imbedded technologies, algorithms, and computer programming languages.

MS. MUMM-HILL addressed the Bill & Melinda Gates Foundation (BMGF) and their realization that investing hundreds of millions of dollars into STEM curriculum did not work when the majority of resources went into standards, measures, and assessments. She noted that a small amount of BMGF's STEM investment was going into professional development and students. She said BMGF had changed their STEM support via a Request For Proposal (RFP) assessment process that ensured resources were focused on professional development and student delivery.

She said FIRST was in alignment with BMGF's STEM investment vision by providing students with an informal learning environment that was not driven by grades, tests, or text books. She explained that FIRST met after school, was hands-on, and had the greatest motivational impact on children to pursue STEM careers. She said FIRST's success was attributed to not having to follow traditional educational standards, measures, and assessments.

[9:11:17 AM](#)

MS. MUMM-HILL said other states were making STEM education a priority by bringing together a wide array of STEM program deliverers and making sure everyone understood the needs for STEM jobs. She said the K-12 and college education systems were receiving assistance to understand what curriculum was required for STEM jobs.

[9:13:06 AM](#)

MARY HAKALA, Education Coordinator, Juneau Economic Development Council, STEM-AK Program, said she had been working on STEM-AK for six years. She said there were over 2,000 students participating in the FIRST Robotics program with over \$70,000 invested from Alaska industry that required a prepared workforce. She noted that she would continue to encourage Alaska's oil, gas, and mining industries to increase their STEM investment. She divulged that the FIRST Robotics program had a college scholarship fund available to students.

MS. HAKALA said the previous weekend there was a FIRST Lego League competition in Anchorage with over 500 students divided

into 53 teams that represented over 50 communities. She explained that the FIRST Robotics program worked well in villages as well as in the larger school districts. She stated that STEM-AK was proud of their highest per capita participation in FIRST. She noted that 45 percent of the STEM-AK's FIRST Lego League participants were girls, the highest percentage in FIRST. She explained that the 9 to 14 age group was a pivotal time period when girls typically tune out of STEM opportunities.

[9:15:42 AM](#)

MS. HAKALA said FIRST Robotics was not everywhere in the state and she encouraged school districts to jump onboard. She explained that STEM-AK provided a statewide infrastructure to support coaches, teachers, and students to participate in FIRST Robotics tournaments. She noted that STEM-AK's SeaPerch Underwater Remote Operated Vehicles were on display in the committee room. She explained that students in the Petersburg SeaPerch workshop used underwater robots to inspect the hulls of boats. She said STEM-AK's First Robotics was an engineering tool that motivated students to learn hands-on by soldering, wiring, and waterproofing. She noted that for many of the students, the STEM-AK First Robotics robots were the first thing they ever built. She said STEM-AK was working with the U.S. Navy on beta-testing underwater-glider technology for children. She pointed out that STEM-AK was offering summer camps that U.S. Navy engineers would be attending to work with middle school students on underwater robotics.

[9:18:47 AM](#)

CHAIR STEVENS addressed BGMF's grants not getting to the students. He asked if BGMF's funding was getting to the STEM-AK students.

MR. HOLST replied yes. He said JEDC was very proud with the direct investment that was being made in the STEM-AK programs. He noted that British Petroleum (BP) was the largest corporate investor in STEM-AK. He stated that Alaska businesses had shown great interest in providing volunteers for STEM-AK programs. He said STEM-AK complemented and added to a school's curriculum.

SENATOR HUGGINS observed that STEM-AK was a supplemental program and asked if at some point it would be integrated into the school's curriculum.

[9:20:48 AM](#)

REBECCA PARKS, Program Manager, STEM-AK, said FIRST Robotics was an official class in the Anchorage School District and taught as

an introduction to engineering for high school freshmen. She noted that schools throughout the state offered STEM-AK programs as an elective course.

MR. HOLST said STEM-AK's "Engineering is Elementary" program was a concept where engineering training was brought to classrooms. He noted that the Alaska Workforce Investment Board had made an investment to support career education at an earlier age.

[9:23:02 AM](#)

CHAIR STEVENS agreed that talent was the oil of the future. He said it was important to also keep the education-pipeline open as well.

[9:23:31 AM](#)

There being no further business to come before the Senate Education Committee, Chair Stevens adjourned the meeting at 9:23 a.m.