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Implementing the Perkins V Career and Technical Education Act for the Advancement of STEM Careers Among Tribal Communities

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***C**areer and technical education courses, funded by a 2018 re-authorization known as the Strengthening Career and Technical Education for the 21st Century Act, provide an ideal opportunity for the advancement of science, technology, engineering, and mathematics (STEM) careers in the United States. The article takes a close look at the conditions and implications of the re-authorized "Perkins V" for the advancement and promotion of career and technical education courses among tribal communities.*

Keywords: tribal community, Indian, minority, vocational education

Introduction

Tribal colleges and universities (TCUs) are crucial to their communities' economic, cultural, and spiritual survival, sustaining American Indian traditions while providing essential services that enrich their communities through research and scholarship (Boyer, 1997). Tribal and indigenous communities have a rich history of organizing and managing collective activity (Houser, 1991). The local indigenous community is considered a cornerstone and believes that it must take the education of its members into its hands lest they remain academically underserved (Stein, 2001). Indigenous representation in the educational process has the potential to safeguard the community values and aspirations of its members (Gwynne et al., 2020; Staniland, Harris & Pringle, 2020). Respecting such differences can contribute to retention as well in learning communities with like-minded classmates (Schmidtke, 2017).

TCUs typically operate in remote regions where their students have no alternative higher education prospects (Table 1). Providing vocational education in remote locations is always a challenge (Masek & Ibrahim, 2014). The TCUs offer an academic lifeline to Native Americans who would otherwise be cut off from educational advancement. Most of these institutions do not receive any financial support from state appropriations, grants, or contracts. Non-Native students at TCUs are often cut off as well from state funding. North Dakota and Montana are the only states that partially subsidize non-Native students at TCUs on a per capita basis. Arizona provides an annual sum to be used by TCUs for maintenance and capital expenses. The majority of the states contribute nothing. The backbone of funding for TCUs remains the complex allocation procedures enacted under the Tribally Controlled College or University Assistance Act of 1978 (TCCUAA). Without this funding for Native students, many TCUs would collapse. However, the Act does not allocate any money for non-Native students. Non-Native students are most often part and parcel of the community, such as ranchers' wives trying to earn a degree. After graduation, they would most likely remain in the area (Bartels 2019). Students from tribal communities tend to be poor, lacking part-time job

opportunities that could otherwise alleviate their financial burden. Due to the economic hardships faced within their communities, TCUs are also severely constrained in the amount of tuition they may charge to fill any revenue shortages. While the Native population has increased by about forty per cent from 2000 to 2010, TCUs have experienced enrolment growth of only about ten per cent over the same period (Nelson & Frye, 2016).

Table 1
Percent Non-Native Enrolment at Tribal Community Colleges and Universities (TCUs)

Institution	**State**	**Percentage Non-native Enrollment**
Ilisagvik College	AK	47
Bay Mills Community College	MI	44
College of Menominee Nation	WI	41
Keweenaw Bay Ojibwa Community College	MI	33
Lac Courte Oreilles Ojibwa Community College	WI	32
Fort Peck Community College	MT	26
Salish Kootenai College	MT	24
Saginaw Chippewa Tribal College	MI	20
Institute of American Indian & Alaska Native Culture	NM	19
Nueta Hidatsa Sahnish College	ND	19
Sisseton Wahpeton College	SD	18
United Tribes Technical College	ND	15
Tohono O'Odham Community College	AZ	15
White Earth Tribal and Community College	MN	13
Sinte Gleska University	SD	11
Cankdeska Cikana Community College	ND	10
Aaniiih Nakoda College	MT	10
Navajo Technical University	NM	10
Stone Child College	MT	8
Leech Lake Tribal College	MN	8
Sitting Bull College	ND	7
Northwest Indian College	WA	7
Chief Dull Knife College	MT	6
Little Priest Tribal College	NE	6
Oglala Lakota College	SD	5
Turtle Mountain Community College	ND	5
Nebraska Indian Community College	NE	5
Little Big Horn College	NE	3
Blackfeet Community College	MT	3
Dine College	AZ	2

Source: Integrated Postsecondary Education Data System (IPEDS). 2017

In seeking to align their educational programs with technological advancements, TCUs are increasingly joining forces with the American Indian Higher Education Consortium (AIHEC) to promote advanced manufacturing initiatives, a broad range of innovative applications of new technologies in the design and manufacture of products that together are transforming the way products are designed and produced around the world. As technology is constantly changing and

the cost of technological innovation spirals, tribal colleges can only bring the latest technological advancements to their students by partnering with industry (Flemister, 2020). The goal of this partnership is to prepare an American Indian advanced manufacturing workforce versatile in the design, manufacture, and marketing of high-quality products in partnership with industry and the National Laboratories. Initially funded by the Department of Energy's National Nuclear Security Administration (NNSA), the project seeks to establish STEM-based economic development within tribal communities. Despite this support, the project remains underfunded on a national level. Despite the financial restrictions, National Laboratory research engineers provide guidance to the colleges in the design of environmental monitoring drones, satellite electronics, and energy storage systems which can lead to new products. Such technological opportunities enrich the advanced manufacturing curriculum to ensure that courses prepare students for tomorrow's workforce needs (Kuslikis, 2018).

Perkins V

A potentially better source of funding for STEM-based education at TCUs could be the *Strengthening Career and Technical Education for the 21st Century (Perkins V) Act* that was passed by Congress in mid-2018. The notion of investing in career training opportunities usually generates bipartisan support in Washington (Beverly, 2021). The Act provides about $1.2 billion in federal support for technical education programs nationwide and has been supported by technology companies who sense that vocational education needs a new direction as technology increasingly permeates all fields of study.

The Act is referred to as "Perkins V" since the Act is a reauthorization of what was originally known as the *Carl D. Perkins Vocational and Technical Education Act* that was first authorized by the federal government in 1984. Since then, it has been reauthorized in 1998, 2006 and 2018. Section 116 of Perkins V focuses on native American programs in which it includes Alaska Natives as defined in the Alaska Native Claims Settlement Act (43 U.S.C. 1602) and Native Hawaiians whose ancestors were natives of the State of Hawaii prior to 1778. Although funding available under this section is supposed to be matched by the Bureau of Indian Education, it is more an expectation than a requirement. The Act states that "If sufficient funding is available, the Bureau of Indian Education shall expend" a matching amount. However, there are some caveats which would make it difficult for the Bureau to wiggle out of such an obligation. For example, the Bureau cannot in the face of Section 116 funding expend less than the amount it expended the previous fiscal year on career and technical education. It also cannot pry its matching fund from accounts and programs that support other Indian education programs. The Bureau does not enjoy *carte blanche* on how to spend the funds since it must work jointly with the Secretary of Education in planning for the funds' expenditure. If a tribe is severely limited in its potential, it could join forces with other tribes in applying for the funds as a consortium.

Section 116 allows for some special authorized activities. For example, in recognition that Indian students may not always have access to work-study programs in remote geographic areas, they may be allowed to draw stipends instead from grants obtained under this Section. The stipends may not exceed reasonable amounts prescribed by the Secretary. The same grants may also be used in special cases where it is determined that it would be best to provide preparatory, refresher, and remedial education services that would enable students to succeed in their career and technical

programs of study. To avoid the possibility that grant money is frittered away on academic programs of dubious quality, the Secretary, in awarding grants, will give special consideration to programs that encourage tribal economic development plans and that are taught by TCUs that are properly accredited by nationally recognized agencies, and whose career and technical education programs are also accredited at the national level.

Section 117 of Perkins V deals exclusively with the funding of tribally controlled postsecondary career and technical institutions that are not receiving assistance under title I of the TCCUAA or the Navajo Community College Act. The purpose is to assure that career and technical education programs for Indian students do not remain unfunded due to constraints in the two Acts. Eligibility for assistance under Perkins V does not preclude TCUs from receiving federal financial assistance under any program authorized under the Higher Education Act of 1965, the Snyder Act of 1921, or under any other applicable program for the benefit of higher or technical education. Perkins V authorizes the appropriation of about ten million dollars annually to tribally controlled postsecondary career and technical institutions.

The per capita payment for Indian students under the Act is determined by dividing the amount available for grants by the sum of the Indian student counts of such institutions for the program year. The onus is on the TCUs to submit timely information, including detailed accounting of each institution's operating and maintenance expenses, to access the grants. Allowable expenses include those incurred in the maintenance and operation of the programs, including development costs, academic instruction (including special programs for students with disabilities), materials, boarding costs, transportation, day-care support, and student stipends. Allowable capital expenditures include operations and maintenance, such as minor improvements and repair, and physical plant maintenance costs if they are necessary for the conduct of the program. TCUs are consulted in the setting up of complaint resolution procedures for grant determinations and calculations.

Indian Count

The word "Indian" is often used loosely on non-Native university campuses. Perkins V is quite strict however about what qualifies as Indian, something the Act notes has been determined elsewhere in law. Under the Indian Self-Determination and Education Assistance Act's Section 4 (25 U.S.C. 5304), the word "Indian" means a person who is a member of an Indian tribe. "Indian tribe" means any Indian tribe, band, nation, or other organized group or community which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians. A tribal organization must be controlled, sanctioned, or chartered by a governing body which is democratically elected by the adult members of the Indian community. If the organization sets out to serve more than one Indian tribe, the approval of each tribe is a pre-requisite for the organization to enter into contracts for federal grants. In the TCCUAA of 1978, one senses a legislative concern that a tribal stamp on higher education activities should not open the gate for token operations for the sake of accessing grant money. As a matter of fact, Section 2 (25 U.S.C. 1801) holds that in the formation of a "tribally controlled college or university," it cannot be recognized as such if a tribe operates more than one. Much as education could uplift the fortune of the immediate surrounding community, there is broad awareness that TCUs need to prepare their students for economic opportunities that extend well beyond tribal confines. Therefore, Perkins V mandates in Section 3 that programs of study could be aligned with

industry needs in the state or region as opposed to merely the tribal community. Most TCUs tend to be small, averaging about 750 students per institution (Nelson & Frye, 2016). In the absence of large enrolment numbers, many institutions lacking tuition dollars essentially disappear. This explains why Perkins V, in trying to set the bar about which tribal institutions qualify for funding, does not burden institutions with crushing requirements. A tribal institution is only required to have been in operation for a mere minimum of three years. It also must enrol no less than one hundred students, the majority of whom are Indians.

Perkins V is strict on how one determines the Indian student count for each academic year. The count is taken in the third week of the fall and spring terms. For each academic year, the Indian student count shall be the quotient obtained by dividing the sum of the credit hours of all Indian students by twelve. Any credit earned during a summer term shall be added to the count in the following fall term. Students without secondary school degrees would still be counted if the institution that admitted the student has established criteria that allow such admission. At the same time, no credit earned by an Indian student for the purpose of obtaining a secondary school degree shall count towards the sum of the credit hours.

State and Tribe

Perkins V reaffirms, in Section 121, the need for state administrators to include "Indian Tribes and Tribal organizations present in the State" in coordinating the development, submission, and implementation of the State plan, and the evaluation of the program, services, activities and hearing process. Such consultation with the Governor and appropriate agencies and groups recognizes that TCUs are not just grant recipients but also active participants and decision-makers in the design of technical education in the state plan. In the past, each state plan had to be reviewed every six years. Recognizing that technical education must adapt quickly to technological changes in the larger world, each state plan is now reviewed every four years instead.

While Perkins V allows tribal education establishments to have separate access to funding like all states do and may not burden them with the same regulatory requirements, in no way does it absolve states from ignoring them in consultation processes. Whenever the state is setting up a combined plan such as in line with the Workforce Innovation and Opportunity Act (29 U.S.C. 3113), it must consult representatives of Indian tribes within its confines irrespective of whether they operate any academic institutions. If they happen to operate a TCU, it too must be consulted. Likewise, when the Comptroller General of the United States is evaluating programs of study aligned to high-skill, high-wage occupations, it must consult with a geographically diverse audience that includes Indian tribes and tribal organizations.

States are major players in the funding of American education as they benefit from state tax and the largesse of the American government. Perkins V puts the onus on the states to establish statewide partnerships with local educational agencies and Indian tribes in an attempt to eliminate inequities in student access to high-quality program of study and foster:

> Support for programs and activities that increase access, student engagement, and success in science, technology, engineering, and mathematics fields (including computer science, coding, and architecture), support for the integration of arts and

> design skills, and support for hands-on learning, particularly for students who are members of groups underrepresented in such subject fields, such as female students, minority students, and students who are members of special populations (Section 124, (b)(16)).

It is to the TCU's advantage to contribute time and attention to the state's leadership activities under Perkins V where the state is expected to make forms of instructional content widely and freely available, and which may include use of open education resources. The state is expected to lead in partnering with public-private partnerships in capacity-building and scalability of the delivery of high-quality career and technical education. Partnering with the state could lead to a TCU achieving economies of scale in activities that improve career and technical education for high-skill, high-wage occupations.

Challenges

One area that TCUs are best positioned to deliver to American society is in the teaching of native languages (Gillespie, 2021) most of which are on the verge of extinction. Even before the advent of the internet, English had taken over as the primary language in most Indian communities. Once the internet came in, young members had an extra incentive to communicate in English. Without English, young people feel isolated from the larger world around them. It is with increasing urgency that TCUs feel compelled to give extra weight to their native languages. The general feeling is that it may already be too late to salvage the persistence of native languages. Without a grasp of the native language, native customs and values are filtered through English communication where important shades of meaning are lost in the translation. Leech Lake Tribal College has invested heavily in teaching students how to speak Ojibwe (Uran, 2012). However, Perkins V overlooks what a native language means to the identity of its speakers and offers funding for the speaking of English instead. For Perkins V, the term 'English learner' refers to secondary school students who are English learners or adults who have limited ability in speaking English due to the prevalence of another dominant language in the family or community. The official website for Leechlake Tribal College notes that "From native geneticists who developed maize, to the southwestern chemists who produced dyes for pottery and weaving, Native Americans were involved in genetics, engineering, architecture, chemistry, pharmacology, and physics long before Europeans landed in North America." Yet when it comes to teaching STEM subjects as part of its Associate of Arts degree, the College mentions only English in its suggested study plan for the students. English is the heart and soul not only of communications in STEM but increasingly also of what should have been the last native bastion, the Indian community which increasingly speaks English rather than its native language. The extinction of native languages also means the demise of ways of thinking that cannot be replicated. In promoting English as the dominant language, including for STEM education, there is the unintended consequence of relegating native languages to further oblivion.

Although Indian tribes are not burdened with the same amount of paperwork that states are in securing funding under Perkins V, tribes are not as well funded or manned as states in generating reports for the federal government. As a result, giving account for the money, how it will be spent and where it has been spent, is relatively more burdensome for tribes than for states. As far back as 1991, the Senate Select Committee on Indian Affairs complained that while the statutory provisions directly associated with Indian programs can be quite brief, with most tribal allocations back then

being for $100,000 or less, the corresponding documentation and reporting requirements imposed on the tribes compounded the complexity at the tribal level. Each government agency has its unique reporting procedures. As a result, no matter how closely related the services may be, a tribe could be faced with voluminous paperwork and multiple reports adjusted for different procedures. While the various programs share a common goal, to increase economic self-sufficiency among Indians, the paperwork involved is frustrating to everyone as tribal program managers spend an inordinate amount of time pushing papers and minimizing the possibility that federal monitors will challenge the allocation of the costs.

Conclusions

Career and technical education courses provide an excellent platform whereby science, technology, engineering, and mathematics are applied for the advancement of high-paying careers among tribal communities. Instead of reducing education into simple concepts such as vocational versus academic camps, integrated and interrelated syllabi (Cutshall, 2003) promote an interdisciplinary curriculum driven by higher order thinking skills (Heong et al., 2019). Integration is not just a superior approach; it is also a requirement if a school uses Perkins Act funds (Brustein, 2006). With the 2018 reauthorization of the Perkins Act, additional emphasis is placed on education programs in pursuit of high-skill, high-wage occupations where STEM education is a pre-requisite for a proper preparation. Real integration is where the rubber meets the road (Moye, 2011).

Miller and Roehrig (2018) note how STEM education opportunities for American Indian youth have been historically inadequate. As a result, in comparison to their peers, American Indian students perform lower on standardized assessments of science education. A culturally based STEM curriculum that uses Indigenous traditions that reclaim cultural identity as a focal context is perhaps more likely to inspire its students in the transmission of knowledge (Straka et al. 2020). Miller and Roehrig (2018) further demonstrate how the game of Snow Snakes ("Gooneginebig" in Ojibwe), for example, offers an opportunity for culturally based resources to be integrated with STEM education. Thus, while Perkins V sets the direction of what type of jobs to aim for in the new career and educational training curriculum, Indian tribes must design their own programs to give full meaning to their students as to what they are trying to accomplish. In a study embedded with Dakota and Lakota values and traditions, Kant, Burckhard & Meyers (2018) found a link between culturally relevant enrichment activities and students' interest in STEM education and careers. Science identity and values are strong predictors of STEM career pathway persistence (Estrada, Hernandez & Schultz, 2018). Culturally based contexts may offer the critical link for STEM learning among tribal communities. Augure et al. (2017), drawing on their experience with the Blackfeet Native Science Field Center, the Lakota Native Science Field Center, and the Wind River Native Science Field Center, suggest that it may be best to draw on an Indian cultural perspective of a topic first, following this up with the Western scientific perspective on what is being discussed. Perkins V is more focused on the result than on the nitty gritty work on how to get there. If the Indian community can show results that are compatible with Perkins V's demands within the constraints of the Act, the funding process will result in a win-win situation for everyone involved.

Author Notes

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References

Al Kuslikis, A. (2018). Advanced manufacturing initiative promotes STEM-based development. *Tribal College: Journal of American Indian Higher Education*, 29(3). https://tribalcollegejournal.org/advanced-manufacturing-initiative-promotes-stem-based-development/

Augare, H. J., Davíd-Chavez, D. M., Groenke, F. I., Little Plume-Weatherwax, M., Lone Fight, L., Meier, G., & Wippert, R. (2017). A cross-case analysis of three native science field centers. *Cultural Studies of Science Education,* 12(2), 227-253. doi.org/10.1007/s11422-015-9720-6

Bartels, D. (2019, February 21). Committee kills bill to give scholarships to tribal colleges for non-tribal students. *Capjournal Bureau*, https://www.capjournal.com/cjbureau/committee-kills-bill-to-give-scholarships-to-tribal-colleges-for/article_ad3f6226-3614-11e9-8ba1-7b622462f00d.html

Beverly, R. (2021). HVACR apprenticeship tide turns. *Air Conditioning, Heating & Refrigeration News*, 272(8), 1-16.

Boyer, P. (1997). *Native American colleges: Progress and prospects. A special report.* Jossey-Bass, Inc. ERIC Number: ED409037.

Brustein, M. (2006). *Perkins Act of 2006: The official guide*. Alexandria, VA: Association for Career and Technical Education.

Cutshall, S. (2003). The core connection: CTE and academics: A perfect fit. *Techniques,* 78(6), 18-21.

Estrada, M., Hernandez, P. R., & Schultz, W. P. (2018). A longitudinal study of how quality mentorship and research experience integrate underrepresented minorities into STEM careers. *CBE - Life Sciences Education,* 17(1), 13.

Flemister, L. (2020). Strengthening work-based learning with Perkins V. *Techniques: Connecting Education and Careers*, 95(3), 10-13.

Gillespie, M. (2021). Culturally responsive language and literacy instruction with Native American children. *Topics in Language Disorders*, 41(2), 185-198. doi:10.1097/TLD.0000000000000249

Gwynne, K., Rojas, J., Hines, M., Bulkeley, K., Irving, M., Mccowen, D., & Lincoln, M. (2020). Customised approaches to vocational education can dramatically improve completion rates of australian aboriginal students. *Australian Health Review*, *44*(1), 7-14. doi:http://dx.doi.org.uri.idm.oclc.org/10.1071/AH18051

Kant, J. M., Burckhard, S. R., & Meyers, R. T. (2018). Engaging high school girls in native american culturally responsive STEM enrichment activities. *Journal of STEM Education: Innovations and Research,* 18(5), 15-25.

Leechlake Tribal College. (2019). Retrieved from http://lltc.edu/academics/degreeprograms/stem.htm

Masek, A. & Ibrahim, N.H. (2014, December 10-11). Exploring potential ways to increase the level of education and provide upskilling for rural youth community. *International Conference on Economics, Education and Humanities (ICEEH'14)*, 80-83.

Mei Heong, Y., Hie Ping, K., Jailani MD Yunos, J., Widad Othman, W., Tee Tze Kiong, T., Mohamad, M. M., & Kok Boon Ching, K. (2019). Effectiveness of integration of learning strategies and higher-order thinking skills for generating ideas among technical students. *Journal of Technical Education and Training*, 11(3), 32-42. Retrieved from https://publisher.uthm.edu.my/ojs/index.php/JTET/article/view/3151

Miller, B. G., & Roehrig, G. (2018). Indigenous cultural contexts for STEM experiences: Snow snakes' impact on students and the community. *Cultural Studies of Science Education, 13*(1), 31-58.

Moye, Johnny J. (2011). Real integration--Where the rubber meets the road. *Techniques: Connecting Education and Careers* (J1), *86*(3), 48-51.

Nelson, C. A. & Frye, J. R. (2016, May), Tribal college and university funding: Tribal sovereignty at the intersection of federal, state, and local funding, *ACE-CPRS Issue Brief*, https://www.acenet.edu/news-room/Documents/Tribal-College-and-University-Funding.pdf

Schmidtke, C. (2017). The role of academic student services in the retention of American Indian students at a sub-baccalaureate technical college. *Journal of Career and Technical Education*, 31(1). doi.org/10.21061/jcte.v31i1.1509

Schuyler ("Sky") H. (1991), Building institutions across cultural boundaries, *Tribal College Journal, 2*(3).

Senate Select Committee on Indian Affairs (1991), *Authorizing the Integration of Employment, Training and Related Services Provided by Indian Tribes. Report to Accompany S. 1530*. Senate, 102d Congress, 1st Session. Congress of the U.S., Washington, DC. Proquest Document ID: 62933104

Staniland, N. A., Harris, C., & Pringle, J. K. (2020). 'Fit' for whom? career strategies of indigenous (māori) academics. *Higher Education*, 79(4), 589-604.

Stein, W. J. (2001), It Starts with a dream: Road map to initiate a tribal college. *Tribal College: Journal of American Indian Higher Education*, 12(3). Retrieved from https://tribalcollegejournal.org/starts-dream-road-map-initiate-tribal-college/

Straka, S., Hart, M., Callahan, A., Robinson, D., & Robson, G. (2020). Prioritizing indigenous elders' knowledge for intergenerational well-being. *Canadian Journal on Aging*, 39(2), 156-168. doi.org.uri.idm.oclc.org/10.1017/S0714980819000631

Uran, C.S. (2012), *The aesthetics and politics of Ojibwe language revitalization*. PhD (Doctor of Philosophy) thesis, University of Iowa, DOI.org/10.17077/etd.g6vgmqzg