Board 349: NSF INCLUDES ALRISE Alliance : Accelerate Latinx Representation in STEM Education.

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Eddie Bernice Johnson NSF INCLUDES Accelerating Latinx Representation in STEM Education (ALRISE) Alliance.

Abstract

The overarching broadening participation challenge addressed by the Eddie Bernice Johnson NSF INCLUDES ALRISE Alliance is to *accelerate Latinx representation in STEM education (ALRISE)*. Target audiences and Alliance members are Latinx STEM students and educators (faculty, staff, and administration) at 2-yr and 4-yr Hispanic Serving Institutions (HSIs). The approach to addressing this challenge includes providing professional development for faculty, staff and industry to serve Latinx students with intentionality, harnessing Latinx students' assets and creating a more welcoming environment that fosters reproducible success through culturally-responsive undergraduate Research and Work-based experiential learning.

This paper addresses our goal to establish ALRISE as a Networked Improvement Community. First we describe the components of the ALRISE Alliance framework of regional hubs, how they were implemented, what challenges we encountered, how we had to adjust, and what has been achieved to date. Key aspects include a Regional Hubs Manager who coaches Regional Hub leads and their full-time coordinators, all of whom are building relationships with the leads of STEM faculty/staff Teams representing the HSIs by region. Local STEM Team meetings, Regional Hub meetings and national convenings all lend to the communications strategy to engage at the individual, institutional, and network levels. Adjustments from deadline-driven activities to competency-driven deliverables reflected the need to meet HSIs where they are, just as faculty and staff are asked to meet their students where they are.Finally, work-based and undergraduate research-based experiences repositories complemented with culturally-responsive instruction are being made easily accessible.

Background

The ALRISE Alliance is NSF's Eddie Bernice Johnson INCLUDES Alliance that was awarded in August 2021 with the vision of developing a Networked Improvement Community (NIC) comprised primarily of two-year Hispanic Serving Institutions (HSIs) and emerging HSIs represented by their educators and community partners who collaborate to accelerate Latinx representation in STEM education through *Institutional Intentionality and Capacity Building for Culturally-Responsive Experiential Learning.*

The ALRISE Alliance team has extensive work in higher education and understands the value of building an infrastructure to support students in the higher education systems. The ALRISE Alliance was built as a Networked Improvement Community (NIC), a model that is shown to promote and support collaboration. The ALRISE Alliance structure provides a platform for gaining knowledge and sharing knowledge that can be customized for HSIs institutions that are the ALRISE members.

The ALRISE Alliance objective is to (1) purposely engage and support Latinx students pursuing STEM, (2) train educators and develop tools and resources to improve their support of Latinx students through culturally responsive practices and asset-based experiential learning, (3) advance the Latinx STEM pipeline and support retention/persistence, transfer, completion and other key STEM outcomes, (4) promote a culture of diversity in STEM research and innovation, and (5) diversifies the STEM workforce with a broader representation of Latinxs.

The ALRISE Alliance aims to identify system shifts that address these broadening participation: (1) Enable campus environments to be **intentional and culturally-responsive** to Latinx STEM students, but not to the exclusion of others (Excelencia, 2020)[2]; (2) **Place the necessity to change on institutions and educators** to harness Latinx students' **assets, strengths, and resilience** and create an environment that fosters reproducible success (Morrison, 2017)[4]; (3) **Mend the leaky pipeline** where Latinx STEM retention and completion rates are significantly lower than enrollment (Krogstad, 2014; Crisp, 2012)[1,3]; (4) Maximize the **current representation of Hispanics in STEM job** clusters which is at a low 7% (1.2M) of employed adults in STEM jobs (17.3M) as compared to 16% (21M) of all employed adults (131M) (Pew Research Center, 2018)[6]; and (5) **Increase the number of studies that are currently limited** in STEM research on innovative pipelines for underrepresented students (National Academies Press, 2017)[5].

Objective

The five goals that guide the ALRISE Alliance are:

- Goal 1: Establish ALRISE Networked Improvement Community
- Goal 2: Improve cultural responsiveness and intentionality among educators at member institution
- Goal 3: Build institutional capacity for EL programs to improve Latinx STEM student engagement
- Goal 4: Demonstrate Change and Intentionality at the Institutional level to serve Latinx

students in STEM

Goal 5: Demonstrate effectiveness of the ALRISE Alliance NIC design and infrastructure on mobilizing change at the individual, institutional and network levels

This paper addresses Goal 1: Establishing the ALRISE Networked Improvement Community (NIC). More specifically, the focus of this paper is *Objective 1.1: Operationalize the common vision and metrics, regional hub structures, and processes in the collaborative infrastructure through an Onboarding Book that translates individual interests to specific collective activities and fosters emergence of Alliance culture, norms, and identity.*

Program Description

This section will describe the components of the ALRISE Alliance Framework, how the Regional Hubs have been implemented, and what the key challenges have been.

Components of ALRISE Alliance Framework

The ALRISE Alliance structure is designed to **mobilize change** at the individual, institutional and network levels. A **continuous improvement framework** for educator-led assessment, planning, and data analysis will be applied through iterations of a STEM-ESS Framework, which builds upon the results of previously funded efforts and the expertise of Alliance partners. Professional Development (PD) that uniquely infuses intentionality with EL at the individual level will also be developed. **Boundary brokers,** defined as those who cross organizational and/or cultural boundaries to facilitate access to or exchange information or coordinate efforts, will help **to scale and sustain** EL at the institutional level. The ALRISE Alliance addresses the five elements of collaborative infrastructure as follows: (1) Shared vision; (2)Partnerships; (3) Goals and Metrics; (4) Leadership and Communication; and (5) Expansion, sustainability and scale.

The ALRISE Alliance framework shown in the Figure 1 schematic describes who is participating, their role, and how communication and access to resources are accommodated.

Four rectangular columns represent regionally-aligned ALRISE members – both institutional members and individual members - in Regional Hubs. Hispanic Serving Institutions are represented by individual members who are educators, staff, faculty, and students on STEM teams of 7 to 10 members. These STEM Teams act as communities of practice when individuals on the team build rapport and through ALRISE offerings develop as institutional change agents (boundary brokers). Each Regional Hub is led by two administrative-level co-leads from a peer institution of the same region, with the goal that regional alignment and leadership proves effective in managing and advocating for the members in the region.

There are four regional hubs: Western Region with HSIs in California (Regional Hub Lead is Southwestern Community College in San Diego,California) Southwestern Regional Hub with institutions in Arizona as well as one from Illinois (Regional Hub Lead is Phoenix College in Phoenix,Arizona); South Central Regional Hub with HSIs in New Mexico and Texas (Regional

Hub Lead is Palo Alto in San Antonio,Texas); and Eastern Regional Hub currently with the goal to expand its representation of Florida HSIs with Miami,Florida serving as the sole member and regional hub lead.A recruitment plan has been developed and will be implemented as a model for other regions to expand their membership in the future.

To manage the day-to-day activities of the regions and to liaison between the ALRISE Backbone and the regional members, the Regional Hub Lead Institutions have each hired a full-time regional hub coordinator, and is proving to be a key upgrade to the communication and implementation efforts of ALRISE.

ALRISE partners are aligned to five subgroups based on expertise, resources, and engagement opportunities for members. Hispanic Serving Institutional Identity and Intentionality (HSI3) Subgroup partners are subject matter experts in cultural-responsiveness. With two co-leaders, this subgroup is developing training and offering workshops that incorporate culturally responsive strategies for in-classroom instruction and experiential learning activities.

Experiential Learning resources are available through the Undergraduate Research (URE) Subgroup and the Work-based Experiences (WBE) subgroup. Also with two co-leads, the URE Subgroup has undergraduate research networks and program managers as partners. An undergraduate research project coordinator is helping to maintain and coordinate ALRISE URE Subgroup efforts, such as identifying CURES Program Coordinators interested in becoming partners of the URE Subgroup, and identifying faculty who are looking to diversify their Research Experiences for Undergraduates (REUs). The WBE Subgroup is creating externships and other work-based experiences and is co-led by the CEO of one of the Technology Councils that serve as partners and are located in areas where our current ALRISE institutions exist. There are some gaps between the Tech Councils jurisdictions and HSI locations that we are addressing.

The Advocacy and Policy Subgroup is represented by Excelenica in Education and will survey ALRISE members and partners to determine the policy potential of our most promising processes and activities. These outcomes will be determined by the Research and Evaluation Subgroup that is co-led by the ALRISE Education Researcher and the External Evaluator who, with their post-doctoral teams, are conducting surveys and data collection efforts that are supported in part by the Backbone and Regional Hub Coordinators.

The Backbone team is represented primarily by the Center of Broadening Participation in STEM(CBP-STEM) at Arizona State University and is co-led by the ALRISE PI and the Regional Hubs Manager who, in addition to being a co-lead, serves as the Regional Hubs Manager. This manager position has been key to connecting the Backbone with the members of the Alliance through mentoring the Regional Hub Co-leads and supporting them in hiring their Regional Hub Coordinators. The Regional Hubs Manager is also mentoring and guiding the Coordinators to manage their Regional Hubs as well as to support and coach the STEM Team Leads who in turn want to champion their STEM Team members.

Furthermore, on the Backbone from the Center of Broadening Participation in STEM is our Grants Coordinator who has the tall task of managing the Alliance’s paperwork for contracts,

subaward agreements, invoice payments, and faculty stipends. The Backbone and the Alliance both benefit from Arizona State University support services such as data management experts from the Research Technology Office, web design experts in marketing, finance operations, and post grant award services out of the Office of Research and Special Projects Administration.

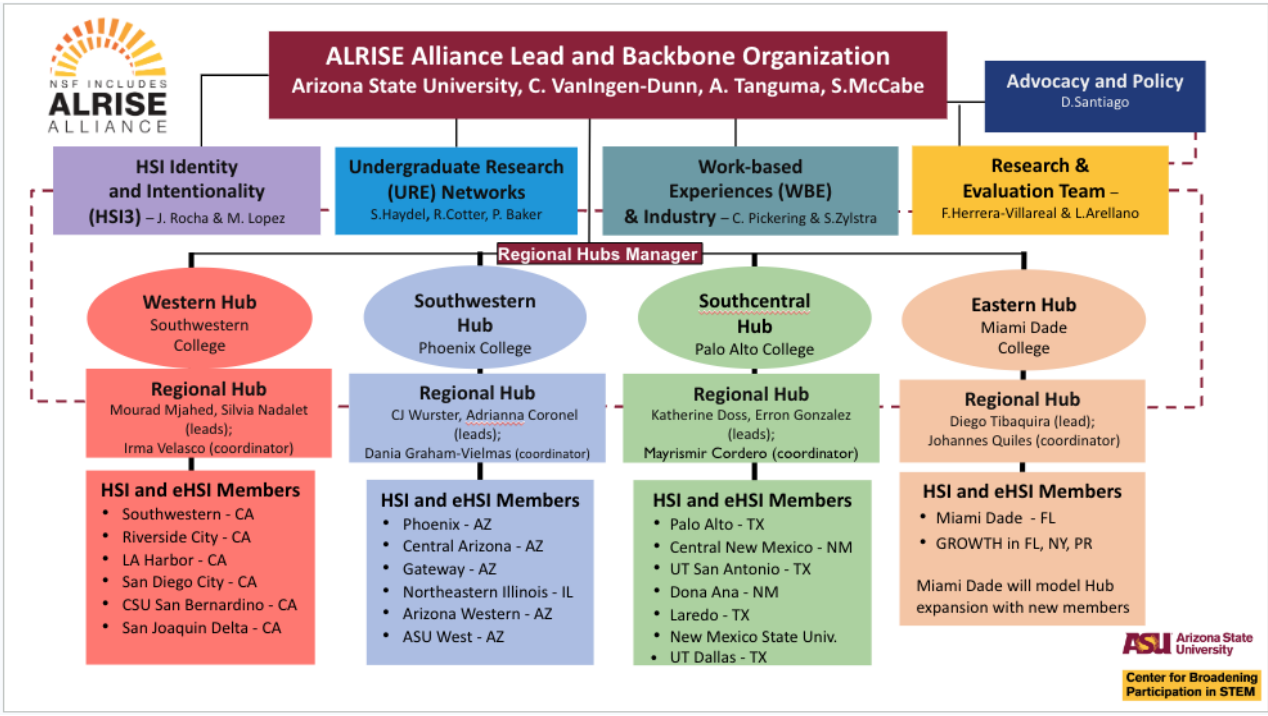

Figure 1. ALRISE Alliance Infrastructure of ALRISE Alliance.

Alliance Implementation of Regional Hubs

Four Regional Hub Coordinators are currently building their own regions and working together to restore the human connection post COVID-19. This collective effort is creating a ripple effect across the Alliance.The ALRISE Alliance coordinators are creating a worldview experience that can be shaped to see members interact and connect with each other. The coordinator's heart also represents the innermost aspects of the ALRISE Alliance, the source of motivation and desire to Accelerate Latinx representation in STEM education (ALRISE) with institutional intentionality and capacity building for experiential learning.

ALRISE is a multi-institution alliance that brings together 14 community colleges and 6 universities in 4 regional hubs that offer monthly regional meetings. The Alliance has a total of 181 members that include 88 faculty, 29 administrators, 51staff, and 13 students.

To increase the efficiency in the STEM workforce within the nation, ALRISE Alliance's infrastructure as a Networked Improvement Community (NIC) is driven by the literature in education research. Higher educational systems function in a matter that only supports the organization. Community colleges serve populations of diverse students that utilize the many functional formats to earn a certificate or an associates degree, or earn credits that allow their

transfer to a four-year institution and completion of a bachelor's degree. Universities also serve a population of diverse students that seek to complete a bachelor's, master's, and professional level degree.

To ensure that the ALRISE NIC creates an operationally common vision and metrics across the four regional hubs, the ALRISE backbone team first needed to develop inter-infrastructure processes to establish the NIC in the ALRISE backbone.

The ALRISE Alliance model was built with the human connection in mind and the endless possibilities of these connections to build upon existing and new relationships. In essence the Alliance is de-siloing the work while preserving unique contexts that matter. In the context of capacity building and culture, it sometimes can have a positive or negative effect on higher education systems. Therefore, the ALRISE Alliance has taken effective initiatives into account, as these initiatives are driven by the NIC framework. This includes creating a culture of continuous learning, fostering a growth mindset, and encouraging open communication and feedback with the members. By aligning the NIC framework across five levels - individual, team, single institution, multiple institutions in regions, and nationally throughout the alliance, the goal is that in the near future a systemic shift will emerge.

The Onboarding Book was created to ensure that members had an adequate understanding of how the infrastructure would serve them by implementing an active learning process. The Onboarding Book assists and guides coordinators in better explaining to the members the shared vision, meetings, and metrics required for collaboration. ALRISE Alliance inter-infrastructure premium goal is to ensure the common vision is emphasized and collaboration is necessary to create a problem-solving community. Monthly regional hub meetings foster members to create collaborative learning, and generate new knowledge to support their specific regional hub. Coordinators create a space for members to raise concern, provide support to manage meetings and identify ways to mutually engage and foster emerging norms within the regional hubs.

Challenges encountered and how we had to adjust

ALRISE Alliance was confronted with two challenges when developing the initial infrastructure of the alliance: the need for good communication (emails, flyers, announcements, chat) and unclear methods to track member participation.

For communication, the ALRISE Alliance put in place a Slack channel for members to engage in conversation, and in hope to address concerns in collaboration within a Slack platform. However, the ALRISE Alliance members pose unique challenges to connecting, accessing, usage of the Slack platform.The communication issue decision that was made by the alliance in the usage of the Slack platform, generally hinges on the firewall of each institution's systems and usability of the members. Mostly Hispanic Serving Institutions are ill-equipped with enterprise systems that are not supported by the IT department. Consequently, at our regional monthly meeting, members proposed discontinuing the use of the Slack platform due to some members not receiving announcements or flyers.

To address this communication gap, and to support members of the alliance who were eager to engage with others, the ALRISE Alliance established a web based platform that is mobile friendly and user friendly for members to access across all internet platforms. This platform is the *Mighty Networks* cloud-based software and is an easy to use application and keeps the members informed. It also allows members to create a community and give the ability to have members chat with each other. The core focus is on community design and engagement. Work-based and undergraduate research-based experiences repositories complemented with culturally-responsive instruction are being made easily accessible. This has been the best tool for the backbone team and members to create quick posts, articles, create sub groups, and then members can personalize notifications.

The second challenge was to seamlessly track member participation. The approach during the inception of the alliance was to have a task list with due dates for members to complete. This type of approach would not work for the faculty as they are looking for the outcomes and outputs of each of these tasks, which were not available. The initial approach also included tracking meeting attendance. This became cumbersome and did not support busy faculty who could contribute in more ways than simply attending all the meetings. The Alliance made adjustments to address these member participation challenges and transitioned from deadline-driven activities and required meeting attendance to competency-driven deliverables and multiple engagement touch points in addition to meeting attendance, reflecting the need to meet STEM Teams where they are, just as faculty and staff are asked to meet their students where they are. Furthermore, the Arizona State University Backbone team wanted to ensure that the creation of a team-based approach was designed to gain knowledge among each other and be able to collaborate in a space that is not driven by "task" but more by each individual's human cognition.

Results/Achievements to Date

- Documented an onboarding process that gets updated annually.
- Completed STEM-ESS baselines with 20 HSIs, initiated PDSA cycle with 4 HSIs
- Piloted WBE Externships model
- Hosted the first annual national ALRISE Convening; and finalized plans for the second annual convening.
- Created a repository to host shared resources and communications and promote collaboration

Conclusion

The effect of the NIC framework in this second year of the ALRISE Alliance is that members continue to meet in their STEM Teams and integrate with other members at their institution to discover new ways in creating change at their institution. Second, participation within the ALRISE Alliance in a STEM Team and regional hub has been very effective for the members to be involved in moving the objective of the ALRISE Alliance. Monthly STEM Team meetings provide structure for members to discuss goals that can be institutionalized and to design ways to increase intentionality for their students. Third, is the interdisciplinary collaboration among STEM Teams across the Alliance. Coming together to serve 181 members and having a one

hour meeting to discuss common vision, has been beneficial to the members. The interdisciplinary collaboration is beginning to help create community and social relationships that influence change in general knowledge and learning.

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