**CSU Academic Preparation and Quantitative Reasoning**
**Steering Committee**
**August 11, 2020**

**In Attendance**

Lande Ajose, Marty Alvarado, Elisha Smith Arrillaga, Mary Barlow, Alma Barreras (for Tony Thurmond), Loren Blanchard (chair), Robert Collins, Nathan Evans, Wenda Fong, Alondra Esquivel Garcia, Linda Darling-Hammond, Lillian Kimbell (observing), Marquita Grenot-Scheyer, Romey Sabalius, Ilene Straus and Edward Sullivan

**Executive Summary**

Introductions and Member Goals

> Lande Ajose: It's our responsibility to do our best in state government to ensure that our students have timely access to an education. It is a cost to the state the longer students stay (in college). The Governor is invested in our students' ability to continue on their academic journey and doing what we can to support.

> Mary Alvarado: I want to make sure that we're clear on impact for transfer students, that our system is in alignment so that we're not inadvertently leaving students out of the conversation or opportunity; keep equity front and center for all students; and lastly I want to push us on assumptions in education. How can we do things differently.

> Elisha Smith Arrillaga: My hope with my presence is to represent the community and parents. I'm interested in dialogue that happens around connections to PK-12, and in parallel working to improve PK-12 resources around equity to ensure students are prepared.

> Mary Barlow: I want to take the information and shared knowledge from this group and share out with the 47 school districts in Kern County as well as the 58 county superintendents. We have found in Kern County serious needs related to addressing the equity gap, particularly in the COVID environment which has drawn a bright line underneath the digital divide.

> Robert Collins: How do we create for faculty a culture of advising for quantitative reasoning that will enable issues of transfer and onboarding for 23 (CSU) campuses? How can we enable this project to go forward successfully?

> Wenda Fong: What I'm most concerned about is eliminating the equity gap for our students so once they enter (college) they can succeed and, in a timely fashion, graduate. Community, families, students, school districts, community colleges – we are anxious to hear all of your input.

Alondra Esquivel Garcia: I'm a fourth-year student at San Francisco State. My focus is on how we are going to support low-income, Black and brown communities.

Linda Darling-Hammond: We need more quantitative reasoning in the U.S.; we need people to conceptualize how they approach data and problems in ways that draws on thinking ability and applies that reasoning. Our standing in mathematics is due to how we teach math …procedural vs. deep understanding. The other piece of the puzzle is quality of teaching and the shortage of math and science teachers. You can help inform us as we go through our work and we can help inform you as we look at achievable goals for this initiative.

Ilene Straus: I'd like to see quantitative reasoning implemented in school by taking a strong conceptual model. We need to consider capacity for training and curriculum.

Romey Sabalius: We don't have to invent a new box; we might look at alternative teaching models and other countries, many less prosperous than the U.S. I personally reached success through education and I'm here to support our students and our state.

Alma Barrera (on behalf of Tony Thurmond): There are many issues that Superintendent Thurmond is interested in, including higher education and teacher preparation. He wants to bring equity and access to the discussion.

Presentation Summary

- **Committee's charge**: As approved in January 2020, our charge is to develop and monitor indicators and metrics to assess the impact and effectiveness of the quantitative reasoning admissions requirement.

- **Goal and rationale:** Expand access and equity for all students to achieve their personal and professional goals. Students with additional quantitative reasoning preparation in high school experience greater success in college and graduate in a timely manner

- **Requirement:** Graduating high school students, beginning with the entering first-year class of 2027, be required to complete one additional course of quantitative reasoning to meet minimum qualifications for CSU first-year admission.

- **Proposal enhancements:** Formation of a steering committee; seven-year implementation timeline; annual presentation to CSU Board of Trustees; independent analysis; automatic exemption; investment in teaching capacity and support of outreach and enrichment activities; and strengthen community college transfer pathways.

- **Implementation updates:** Our work has been focused in three primary areas: curriculum (development), strengthening teaching capacity and communication. COVID-19 impacted our efforts through the spring semester as our faculty and K-12 partners were addressing the transition to virtual teaching and learning.

We have used the successful Expository Reading and Writing Curriculum (ERWC) as a model to expand QR course availability in California high schools. Through the California Mathematics Readiness Challenge Initiative (CMRCI) courses, co-developed by CSU and high school faculty, we provide an additional way for students to meet the requirement. Through the CSU Math and Science Teacher Initiative (MSTI), the CSU plans to double the number of math, science and computer science teachers prepared by the system (from 1,000 to 2,000 annually). The CSU will also increase outreach programs to focus on quantitative reasoning, with a focus on the communities that have the lowest math and science achievement levels.

- **Independent analysis:** Nine firms with California and national educational research portfolios were identified as candidates to undertake the independent analyses. Senior CSU leadership selected a final candidate and contract discussions are underway. Additionally, data sharing agreement needs have been discussed. Most of the proposed analytic work will require access to student record level data. It will be necessary for the firm to sign separate data sharing agreements with both CDE and CSU.

## Discussion on Committee's Charge: Summary by Themes

<u>Defining Success/Progress</u>

- Success may mean different things to you, such as producing more teachers to teach quantitative reasoning, more high school offerings or perhaps less demand for academic preparation for first-time freshman.

- As we think about teaching and learning in different ways and structures, how do we think about what this requirement looks like in alternative formats? …more focused on facilitation of mastery and teaching and learning.

- Success for stakeholders would mean seeing a representation of color in the CSU that is the same as the California population.

- Ultimately representation across a range of disciplines and majors; this is an element we've talked about in consultation over the last few years and a critical driver in this discussion.

- Teacher diversity and retention is what the Superintendent is focused on; ensuring that our most vulnerable students do have access to these quantitative reasoning courses and to quality teachers and that teachers feel prepared. Disaggregated data is also important.

- Data access and how can we support student and teachers from marginalized communities.

Defining Metrics/Indicators for Analysis

- Are there any limitations of number of metrics we are able to track over course of time? Background demographics of students is essential to understand what requirement means for different populations: collection of data disaggregated by race and ethnicity, first generation, undocumented, ESL. What is data saying about rural vs. populated areas, particularly by zip code. Want to know the extent to which students from particular socio-economic backgrounds continue to experience barriers and are they evaporating or increasing.

- Demographics already part of the conversation. If there are metrics this group wants to bring forward, this agency is capable. Only limiting factor is available data.

- As part of the aggregate, is it possible to have data on students and teachers in math/quantitative reasoning and in terms of who is leaving, who's staying and who's succeeding? Can we identify what students want? Can we see choices students make and understand choices in respect to quantitative reasoning? Sometimes teachers leave for greener pastures; it would be good to know their rationale so teacher preparation can include that as part of curriculum and pedagogy. Can we see a variation according to school districts? Students may be leaving districts to go to better ones; what is the impact on the break in their preparations.

- I wonder who is leaving and who is staying, what courses are working better, having an impact, and students then succeeding through the university level and long-term finding employment. Attendance, or chronic absenteeism, relates to interest in subject area. What courses seems most interesting and advantageous to students?

- Can we drill down on students who have not qualified for CSU admission based on the requirement and see that progress based on school districts? Can we look at minority students, migrant students so that when we have that data we can see progress or not?

- In data collection, ask students about their own understanding of math. This is a real opportunity to recreate education and engage students in math, or we can make the same mistakes again.

- Disaggregated data on transfer students and associate degree students.

Raising Awareness

- From a K-12 perspective, it will be very important to share with the districts and leadership of districts what the benefits are and reasoning behind embedding early quantitative reasoning in the curriculum. And not just isolated to math and science; how do we ensure it's embedded and part of learning for PK all the way through high school? What type of support is necessary for parents and caregivers helping students as they navigate different (virtual) learning environment?

**Discussion on Additional Areas of Concerns**

Teacher Quality, Capacity and/or Recruitment and Retention

- Requirement will impact students entering in 2027; those students are entering 6<sup>th</sup> grade right now. We can't wait for senior year for kids to get better at math. They need to be taught by teachers expert in the content, not just the strategy. We currently have teachers who don't have deep content knowledge.

- What allocations can be spent to incentivize teachers to stay in the school districts where we need them? Perhaps in form of deferrals, student debt or additional financial incentives. It doesn't make sense if we spent money to train excellent math teachers and then only have them move out of state.

- We have had loan programs previously; that is an exceptional idea. We also need to think about retention. How do we protect the investment we make in teachers? This requirement is not just about math; very broad range of quantitative reasoning courses.

- As we look to retaining teachers and incentivizing them to work in areas that are most vulnerable, it's important to look at recruiting students from the same area who are more likely to serve there. We find when we do that, we get better student and teacher retention. Teachers are invested in their community, and students see someone who looks like them, in the classroom.

- Success looks like preparing more teachers. We haven't seen yet what layoffs would look like for teachers as a result of COVID. It is important to have data that shows that we have the teachers to teach, and that those numbers haven't decreased in ways that won't allow us to support students. Success is also having an increased pipeline of STEM teachers of color, and understanding what courses actually translate into strong quantitative reasoning skills for students.

- We don't have sufficient teachers in the pipeline to fulfill math and science; but quantitative reasoning crosses many disciplines. We provide professional development for teachers in place; can we measure ROI on professional development provided within districts, particularly those in most need? Can we see students exiting ready and prepared to enter college?

- We need to encourage relevance of teaching, and make the profession more attractive to those who want to give back. It would help to fill the pipeline by giving students reasons to be engaged in quantitative reasoning and understand the relevance of that aspect of their education.

PK-12 Student Preparedness

- What is the goal that we're trying to reach for PK-12? What are the metrics to measure that? Eighty percent of Black and Latinx students are not meeting math requirements.

- Success is completing fourth year of math and to see increases in subgroups. State has a two year math requirement and one year Algebra. Very few have mandated four years. If we see an increase of successful completion and options beyond traditional Algebra 2 or PreCalc; different courses that meet requirement so that we're providing more options.

- Being clear about the non-negotiables on the PK-12 side regarding the gap that already exists.

- Many students still need developmental help when they arrive to the CSU. I'd like to see training of math teachers and embedding qualities of cognitive reasoning in other courses so that students will have the skills they need to succeed.

- What progress means to faculty is that we'll be able to see college readiness in students. Right now students who come in may be college ready, but not to our expectations. There is a quantitative reasoning narrative that it is just math – but computer science, law class, these are all part of quantitative reasoning.

Impact of COVID-19 Pandemic

- Where will student be in terms of learning loss due to COVID? What data will we have available to use, what role will learning loss play in this conversation? There is so much ambiguity and the implications six years from now are huge.

- Impact of COVID is that we're experiencing more teacher retirements; will we have staff to deliver this work? We have got to prepare more teachers in the pipeline.