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PROMOTING ASSESSMENT FOR LEARNING

Affective Assessment: Incorporating Emotions into our Work for Social Justice

By J. Vincent Nix, Lamar University and Misty Song, Abilene Christian University

Abstract*:* Meaning-centered education (Kovbasyuk and Blessinger, 2013) is necessary in a world focused on standardization and suggests that student-learning might be enhanced by incorporating affective learning domain outcomes. Piaget observed, "at no level, at no state, even in the adult, can we find a behaviour or a state which is purely cognitive without affect nor a purely affective state without a cognitive element involved" (as cited in Clark & Fiske, 1982, p.130). Holistic learning should grant agency to students so that their professional identities are built on foundations that incorporate meaningful principles. Meaning-centered learning should enhance personal identities of students as they reinforce their existing knowledge-bases through continuous, conscious acquisition of knowledge across all learning domains. Social justice requires agency and agency requires voice. Creating, implementing, and assessing affective learning domain outcomes is an effective way to hear the voices of students as they learn. Infusing an online curriculum with affective learning domain outcomes and weekly formative assessment activities allowed instructors to monitor and reduce negative emotional responses associated with fear and anxiety—two of the most powerful emotions for catalyzing negative consequences on individuals' learning and productivity. Extended analysis promoted a deeper understanding of the roles that emotions play in online environments. Learning and behavior was positively influenced as these additional weekly exercises promoted meaning-centered collaboration with students while decreasing power distance between learners and instructors. Incorporating affective learning outcomes into student development outcomes was also explored.

Keywords: *Affective Domain; Affective Learning Domain; Emotions; Formative Assessment; MeaningCentered Learning; Online Learning.*

Nomenclature

- Affect: Conceived based on context and the extent of experiences. If a person subjectively experiences positive moods, that is said to be a positive affect. Affect has been classified by researchers into three categories, as either constructive, positive, or contrary (Arora & Sharma, 2018). *An example of an affective disorder is depression.*
- Assessment: the act of judging or deciding the amount, value, quality, or importance of student learning.
- Attitudes: reflections of a state of mind, or a disposition, or an affect.
- Emotions: Baumeister and Bushman (2007) conceptualized the experience of an emotion as "a subjective state, often accompanied by a bodily reaction (e.g., increased heart rate) and an evaluative response, to some event" (p. 61). Emotions include reactions and judgments as interactive core elements.
- Evaluations: judging the worth of a program or other entity (such as an academic course), or a person, based on a series of assessments. This research also utilized the construct of evaluation as understood by human resources development (HRD) professionals.
- Phenomenology: a type of inquiry based on the premise that reality is constructed by individuals and is *not collectively understood nor is it objectively agreed-upon*.
- Values: belief in constructs that motivate a person, or an organization to act accordingly. We generally see that values are reflected through individual or organizational behavior. For example, a budget would be an organizational *values document-or direct-evidence of organizational values.*

Introduction

Learning outcomes have been touted as the most critical aspect of educational effectiveness (NCHEMS, 2000). In August 2000 the *Competency standards project: Another approach to accreditation review* was published on the Council for Higher Education Accreditation's (CHEA) website. That paper described a project set up by the National Center for Higher Education Management systems (NCHEMS); they designed and tested an alternative approach to accreditation standards and review that placed a significant emphasis on student outcomes in an online (distance-delivery—was the terminology then) education setting. That project recommended various types of assessments, but stressed that "at the best practice level, assessments ought to go beyond simple, single-person judgments" and should involve multiple raters. The recommendations were for cognitive learning outcomes, based on "examination scores, performance assessments, and similar types of direct demonstrations." (NCHEMS, p. 10). Since then, learning outcomes have been critical components of accreditation. Accrediting agencies, and as a result, universities and colleges, have since adopted cognitive learning outcomes wholesale in their academic endeavors.

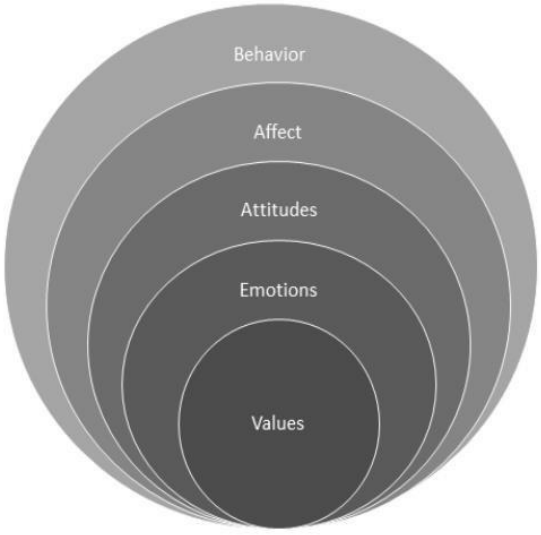
Advances in educational assessment and evaluation techniques have made it possible to measure everything that might be counted. Cognitive achievements are categorized and converted into countable groups. Assessment is a rapid-growth profession; writing learning outcomes has become a science. However, education (and educators) may have become obsessed with teaching explicitly for assessment of cognitive outcomes. An Internet search will yield numerous rubrics for measuring cognitive outcomes; relatively few (if any) are available for measuring affective learning outcomes. The National Institute of Learning Outcomes Assessment (NILOA) maintains a resource website of studentlearning-statement-outcome resources which has several external links. Among functional links on 5/27/2019, 100% referenced Bloom's Taxonomy and cognitive learning objectives. There were zero explicit statements advocating for implementing affective learning domain outcomes.

Spady (1994) claimed that cognitive learning outcomes were not appropriate gauges of values, beliefs, attitudes, or psychological states of mind. And even earlier than that, Piaget had observed that at no level and in no state, even in the adult, can we find a behavior or a state which is purely cognitive without affect, nor a purely affective state without a cognitive element. However, we have relied on cognitive learning outcomes primarily to assess learning despite numerous calls to action for including all learning domains. Over decades of research, education remains laser focused on cognitive learning outcomes.

The researchers developed a mental model to illustrate the relationship between variables of interest. Figure 1 demonstrates the relationships between elements that are critical to understand affective learning.

Figure 1

Mental model of the relationships between values, emotions, attitudes, affect, and behavior.



The researchers developed this mental model based on research and practical experience in management, leadership, and training. As managers of teams, we wanted better performance. As leaders, we were often responsible for influencing change. Many times, our students approach us having already established sets of cultural or familial values. Discrepancies in behavior expected oftentimes are due to values-conflicts. Emotions-research, attitudes-research, and behavior-research may help us better achieve both organizational goals and learning outcomes for training sessions, and then eventually, course learning outcomes. We share this mental model in the hope that our audience begins to understand the lenses through which we view the world.

Evolution of Learning Theories

Beginning with classical conditioning—think of the Pavlovian response and Thorndyke's connectionism—learning theories have incorporated more humanistic elements over time. In the early years, affective learning was not considered important, and even as late as 1987 Dr. Skinner said in an interview (Goleman, 1987) with the New York Times:

> *If I had it all to do again, I would still call the mind a black box; I would not use any of the new techniques for measuring information processing and the like. My point has always been that psychology should not look at the nervous system or so-called mind - just at behavior.*

Briefly, we present an overview of this evolution with salient points for each learning paradigm:

- Behaviorism is a worldview that assumes a learner is essentially passive, responding to environmental stimuli. The learner starts off as a blank slate and behavior is shaped through positive reinforcement or negative reinforcement.
- Cognitive psychology is generally credited to Piaget for his theory of cognitive development. Cognitive learning allows for learning to occur as a result of thoughts. We think about what we saw, and process that into building blocks. Complex learning is in essence, stacking the blocks.
- In the 1950s, Skinner's operant conditioning theory became popular among researchers. Operant conditioning claimed that we learn due to consequences of behavior (rewards/punishment).
- Bandura's social-cognitive theory influenced many from the 70s onward. He helped usher in a new era of cognitive psychology by introducing a theory of learning that focused more on social context than on rewards and punishment. His famous study, the "bobo doll", illustrated that behavior was learned through social interaction and that rewards or consequences didn't matter.

An evident trend demonstrates more focus on the intersectionality of personal, social, and cultural factors. Constructivism then, claims that each person has a different interpretation and construction of knowledge process. The learner is not a blank slate but brings past experiences and cultural factors to a situation. Learning is a complex phenomenon. There are different learning domains. Human learning is observed differently from animals learning in laboratories. A relatively new direction taken for learning theories known as critical constructivism (Kincheloe, 2004) contrasted with objectivist philosophies (think Aristotle or Locke) that claimed knowledge and reality are independent from human minds. In critical constructivism, dialogue is necessary to achieve mutual understanding. This framework attempts to destroy the asymmetric power relationships that reproduce the status quo.

- Critical constructivism encourages greater personal and social consciousness, helping to develop freedom of thought that recognizes authoritarian tendencies and connects knowledge to power.
- Critical constructivism motivates people to take constructive action, or to do repair work (or to de-construct).
- Critical constructivism theorizes that a connection between power and knowledge maintains a status quo wherein only certain groups and institutions can gain prominence and become sanctioned as proprietors of knowledge.
- Powerful groups and influential people maintain their knowledge construction legitimacy by continuously undermining alternative knowledge.

Meaning-centered education and meaning-centered learning taken together as a framework illustrate where we should strive to be operating at the evolutionary stages of a critical constructivist paradigm. In essence, we should take apart knowledge and see if it fits back together the same way. When we do that, are we seeing that it is benefiting only specific groups of people or only a few organizations? If we see that as the case, then further deconstruction and reconstruction work is necessary. Gredler (2009) claimed that in a justice-minded framework, learning theories should consider the intersection of personal, social, and cultural factors. Micro-and macro-level examinations are necessary to achieve

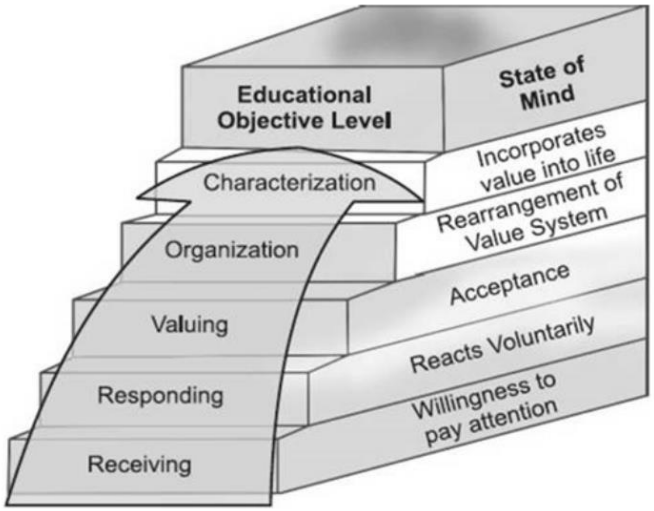
holistic learning—discrepancies exist within, and tensions subsist between, the classic theoretical foundations.

In their book, *Meaning-centered education: International perspectives and explorations in higher education* Kovbasyuk and Blessinger (2013) defined meaning-centered education (MCE) as philosophy or" an educational approach that facilitates the conscious integration of new learning with prior learning across all domains based on personal meanings about oneself in relation to the world" (p. 20). In the same volume they defined meaning-centered learning (MCL) as "a human centered approach that facilitates the holistic integration of all learning domains (affective, cognitive, social-cultural) through diverse life contexts, which motivates learners to apply meaning-based principles into their own life world" (p. 18). The authors stressed that MCL develops self-determined personalities, promotes self-evolution, enhances authors lives, and consists of multiple dimensions of meaningmaking including phenomenological, philosophical, psychological, and sociological. Nix, et al. (2015) combined the MCE-MCL framework with self-authorship (Pizzolato, 2003) and self-development transformation (Baxter Magolda, 2004) to develop a mentoring program for high school dropouts transitioning into college which incorporated affective learning domain outcomes in order to alter participants' states of minds as tactics to navigate barriers. Operating in a critical constructivist paradigm, the researchers gave the students agency to reconstruct (as much as was possible) their own realities. Each person was her or his own phenomenon.

Affective Learning

In the original Bloom, et al. (1956) framework the cognitive domain was described. Krathwohl, et al. (1964) later published the affective domain taxonomy. However, when affective learning is mentioned in the literature, researchers generally have lumped all five of the taxonomy levels together or only evaluated the second and third levels of the affective learning domain taxonomy. Additionally, when affective domain measures are utilized, those are generally masked as cognitive self-report measures that represent an affect for the course (or training session) or an affect for the instructor (or trainer). Rather than reflecting how much students enjoy the subject matter or enjoy the instructors; affective learning goals should represent internalized values that mediate behavior over extended periods of time. Figure 2 illustrates the affective learning domain and its objectives.

Figure 2



The Affective Learning Domain.

Image from open-source textbook at https://ebrary.net/2967/management/basic_levels_learning_domains_learning

Additionally, affect was often viewed as a hindrance to learning, and was researched and described in literature for years as something that should be controlled for or eliminated. Edward DeBono's "Six Thinking Hat" model (DeBono, 1985) illustrates that remarkably well. In that model, he used different colors of hats to represent different modes of thinking. He used red hats for affective thinking. The model portrayed red hats as emotional folks, unbridled by reason. We also see other 'thinking theories' embedding affective learning into cognitive verbiage. For example, one that many student affairs veteran folx will remember is Perry's (1970) theory about college students' intellectual and ethical development; that framework begs for some affective learning love, but it isn't to be found. Dembo and Seli (2013) stated that from a cognitive standpoint, motivation was "how an individual's internal state (i.e., his or her goals, beliefs, perceptions, and emotions) influences behavior" (p. 2). In annual reviews as faculty members, many of us are forced to decide whether affective responses have undue influence on course ratings, or that the outcomes were of little value because they were due to affective factors *rather than* cognitive learning.

Primarily our focus is on beginning to imagine what it means to incorporate affective learning outcomes (ALOs) alongside cognitive learning outcomes (CLOs) into our classrooms, extracurricular student development programs, and our assessment efforts. At the base affective learning objective level, learners must be willing (and able—so we must consider accessibility here too) to pay attention, and once that is occurring, then learners are able to receive the information that we (as instructors/managers/leaders/trainers) are attempting to transmit. At the pinnacle learning objective level, there is a vastly different goal for learners. In the familiar cognitive learning taxonomy, the top levels represent mental tasks; contrast that to the affective learning taxonomy where the goal is a state of mind, or an affect. The researchers advocate for cognitive learning domain outcomes for training and development sessions of students. For example, if we desire tutors to become certified, we may have training sessions focused on becoming active listeners and working with adult learners. Our cognitive learning outcomes might be:

- Apply active listening skills during the tutoring sessions, or
- Understand and apply adult learning theories.

However, when structuring diversity and inclusivity development sessions we may encounter problematic issues. Traditional cognitive learning outcomes might read

- Trainees understand the definitions of diversity and inclusivity, and
- Students recognize the significance of inclusivity and diversity.

The researchers have received feedback from students after such training sessions as "I still have no idea how to work with students who are so different from me" or " I don't know how to start the conversation, but I totally understand that diversity is so important". In essence, there was mental and cognitive recognition and understanding, but there was no change in students' states of mind.
As an online instructor one hopes that that a majority of students incorporate the new material into their professional practices. In doctoral courses the researcher added an affective learning outcome to accompany four cognitive learning outcomes. The researchers wanted to know over a series of courses how students might be incorporating new constructs and frameworks into their professional practices—generating evidence to indicate that students are meeting the affective course learning outcomes. There is no instrument. Qualitative (textual) analysis of the students' data is the methodology necessary for this work. The researchers hope to make the case that the benefit of doing this outweighs the costs (additional time/labor) incurred.

Now briefly, to reiterate before we go further, current practice for assessing cognitive learning outcomes does not account for Krathwohl, et al.'s (1964) dimension of affective learning called *characterization of internal values or value sets.* In order to do this, we must shift assessment efforts to include a series of events after the initial learning event occurred. Here we are contrasting mental ability, with an affect.

Emotions

Baumeister and Bushman (2007) conceptualized the experience of an emotion as "a subjective state, often accompanied by a bodily reaction (e.g., increased heart rate) and an evaluative response, to some event" (p. 61). Emotions include reactions and judgments as interactive core elements. Emotions research recognized that behavior stems from attitudes, which are formed from values (Izard, 2010). Research focusing on what happens between values-adoption and attitude-formation has settled on the most powerful emotions, in terms of the consequences that each emotion may have on an individual's productivity (Ortony & Turner, 1990) or propensity to learn. Fredrickson (2000) identified three positive emotions that promote survival. While the strongest five emotions may (and do) change positions dependent on the research field, over decades of research there is nearly consensus that no more than 13 emotions are powerful enough at dictating attitude formation (and resulting behavior) for extended periods of time; facial response recognition research corroborates the understanding (Jack, Garrod, & Schyns, 2014) that any one of up to 11 emotions may have positive or negative effects on learning and behavior. A clear dichotomy of positive and negative emotions has emerged. Over longer periods of time, repeated exposure to conditions that elicit these emotions have lasting and significant effects on attitude formation and may dictate behavior. Among the positive emotions, joy, satisfaction, and contentment have the greatest impact on behavior. Emotions which are the most detrimental to behavior are anxiety, fear, and confusion. Immordino-Yang and Damasio (2007)

suggested that emotions are attached to learning in the classroom and become part of how the acquired information is retrieved thereafter.

Research Setting

The newest course in an educational leadership doctoral (Ed. D.) curriculum *Strategic Planning for Resource Allocation* was designed for change agents in organizations or students that might want to engage in consulting work. The course was constructed according to Quality Matters standards and approved by Quality Matters certified raters. The one affective learning outcome for the course was stated as:

- characterize organizations through analyses of strategic plans.

For evidence of this affective learning outcome researchers wanted students to characterize themselves or their organizations based on the constructs with which they are becoming familiar in the course. In order to assess this affective learning outcome, we implemented weekly formative assessments vis-a-vis Kirkpatrick's (1994) level-one and level-two evaluations. This evaluation framework was recommended by Simonson, et al. (2015) for use in distance education. The researchers have experience working in human resource development and are intimately familiar with the four levels of evaluation. In short, we evaluated training programs based on this framework, for well over 20 years. Level-one evaluations measure reaction to the learning event, course materials, and the perceived likeability or effectiveness of the trainer. It is an indirect measure. Level-two evaluations explore deeper and offer direct evidence of learning. Listed below are the levels:

1. Did they like it? (reaction)
2. Did they learn it? (learning)
3. Will they use it? (transfer)
4. Will it matter? (results)
5. Return on investment (ROI) is sometimes considered a “5th level”.

Likert-type prompts with a scale of 1 (strongly disagree) to 4 (strongly agree) were used to collect self-reported student satisfaction data. Five prompts were labeled as follows:

- The learning activities were effective.
- Instructions were clear and easy to follow.
- I learned something I hadn't known before this week.
- The learning activities were engaging.
- I struggled with comprehension for this week's learning activities.

The primary rationale for including weekly formative assessments in the course was so that instructors could improve the course after a summative evaluation of weekly ratings. This was the first time the course had been introduced into the curriculum. Researchers developed the course based on experience and research. The course was designed with the idea that students would want to become change agents, either as executives or consultants. Schneider and Preckel (2017) conducted a systematic review of previous meta-analyses investigating 105 correlates of achievement that were associated with student success in higher education. They concluded that three variables, social interaction, meaningful learning, and assessment were significant predictors of learner achievement. Assessment practices are crucial for any significant shifts in university teaching structure but in particular when educational practices may be shifting; during such times an assessment system should be robust, and include all elements of the course. "Teachers with high-achieving students invest time and effort in designing the microstructure of their courses, establishing clear learning goals, and employing feedback practices" (Schneider and Preckel, 2017, p. 565). Gatignon, et al. (2002) demonstrated that regarding the need to assess reactions to change, instructors should implement formative assessment as a practice. Data from these items were analyzed using the Minitab statistical analysis program.

The purpose for level-two evaluations was so that instructors would be able to reinforce specific learning topics if students self-reported they hadn't mastered the topics. Each weekly online face-toface meeting that followed, was based on the students' "muddiest points" solicited from the level-two prompts. Salmon (2013) posited that students can become directors of their own learning as well as facilitating learning for others in the group at the fifth (and highest stage—development) of learning following her model. The purposes for learning activities should be "centered on participants gaining self-insight through reflecting and making judgments about their newly acquired knowledge" (p. 34). The level-two evaluation prompt asked students to reflect on the most interesting or most useful constructs from the course learning activities, if there were no muddy points. The level-two evaluation prompt asked students to write a minimum of one sentence and a maximum of one paragraph. The text was coded and analyzed by the two researchers using RQDA and MAXQDA.

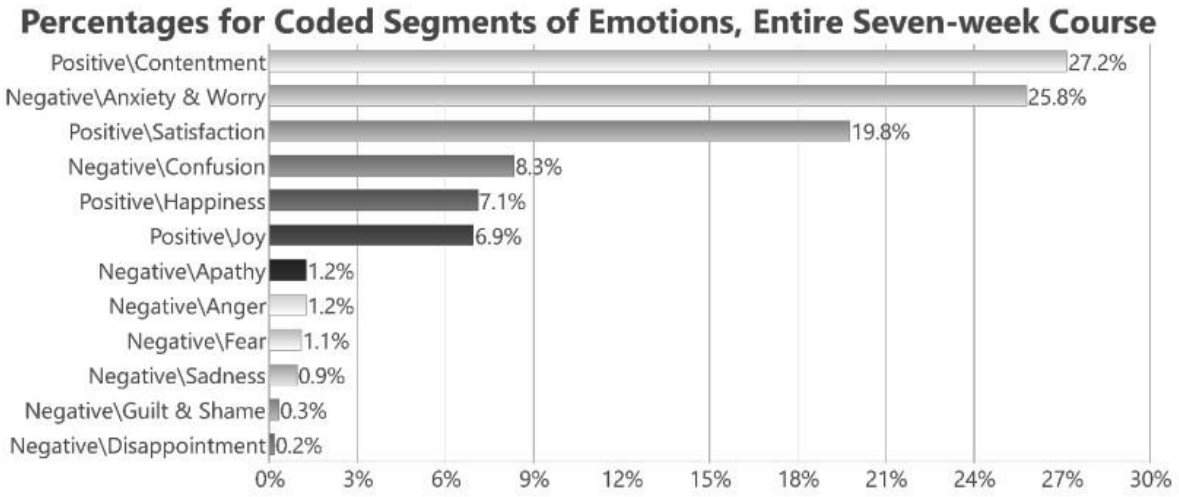
Results

Twelve emotions were recognized and coded within textual responses during the seven-week course. Eight primary emotions were evident after data was coded: Anger (AN), Apathy (AP), Anxiety-worry (AW), Confusion (CF), Contentment (CN), Happiness (H), Joy (J), and Satisfaction (S). While there may have been more than one emotion coded in each student response, the primary (in terms of frequency) emotion was chosen from each response. For example, one student's comment

may have been coded with different segments of text for confusion, satisfaction, and contentment. In that case, the first emotion coded was chosen. In other cases, there may have been several segments in one response coded for the same emotion. In those cases, the most frequent emotion was chosen as the primary emotion to code for that student's response. Secondary and tertiary emotions were coded but after reviewing the data, researchers decided to only utilize the primary emotion in the final analysis of data. Figure 3 illustrates the frequencies of each emotion and the number of text segments that indicated the affective learning outcome had been achieved. These coded segments include all emotions that were coded.

Figure 3

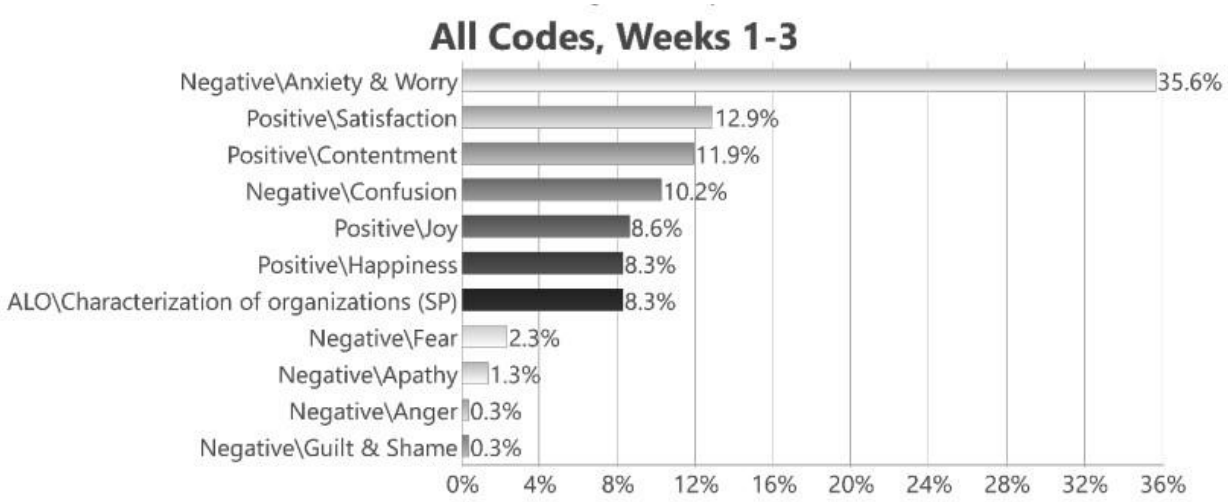
*Percentages of all emotions coded over the entire seven-week course***.**



In week one, the evidence for the ALO was illustrated in less than 10% of the students' coded comments. Surveying the emotions expressed in those student-responses, we saw that while there were some positive emotions that would contribute to and serve as catalysts for learning, the salient emotion was anxiety/worry. That meant roughly 23% of the students' coded responses indicated that students were potentially having their learning stunted. Instructors were monitoring this new course through weekly formative assessments; Schneider and Preckel (2017) found that formative assessment is particularly helpful when educational practices are changing. We wondered how students would accept and adapt to this sort of content. Some of the other instructors had said that this course—the level of rigor in this course—was perhaps higher than many of these students would expect. The course was one of the final three or four courses that students would take before writing their dissertations. They had already been through a year and a half of coursework, and suddenly the curriculum was changed—we added a new course, and perhaps it may have had a somewhat higher level of rigor. Undeniably the new course introduced constructs with which students weren't familiar; 70% had claimed during a poll taken at the first virtual-course meeting that they had never had opportunities to "do" strategic planning in their careers. Only 15% said they were confident enough to develop or lead development of a strategic plan in the initial meeting. Analysis of week two data was much the same. We were coding negative emotions that we knew were likely barriers to learning. The two course leaders decided to be sure that we would keep a close watch on next week's data. In week three we saw evidence for the course affective learning outcome, but also, researchers coded for fear.

Also, in week three, 60% of the text segments coded evidenced anxiety and worry. Figure 4 summarizes the coded data for weeks one to three.

Figure 4



Coded textual data from reflective posts, weeks one through three.

Instructors held a meeting with other faculty members who were teaching in our principal certification (master's) program. We had a meeting with K12 Texas leaders (87% of the students in this cohort were K12 practitioners). The K12 "experts" said, "The course is good, the students need to know this material". However, as instructors, we were concerned that they (the students) would not know it, based on the formative assessment data. Over a third of the text codes indicated that students were anxious or worried. Overall, the survey results were indicative of learning, however, since the anxietyworry numbers were so high, instructors were concerned. The two course leaders decided to be sure that we would keep close watch on next week's data.

At that point course instructors met again. The burning question was, are we able to be flexible here? There was recognition that what the course was designed to achieve might not be what was best for the audience. As one instructor said (paraphrased), maybe what we wanted is not what we can achieve. Collectively, instructors acted quickly. Waiting until the end of the term would be too costly for student learning. There was strong evidence that perhaps one-third of the students were not learning. There were 17 students that provided the week-to-week comments that were most concerning. Pragmatically, that meant over 2/3 of the students were learning. Deeper analysis revealed negative comments could be coded into three themes of complaints.

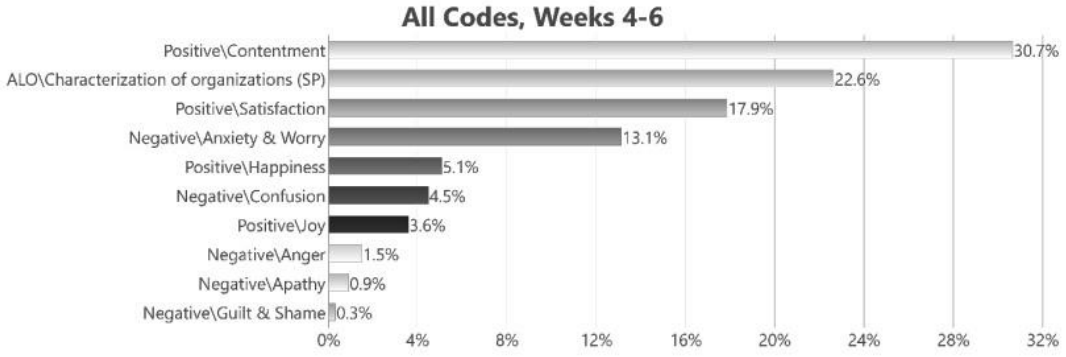
- Distaste for anything math-related
- Distaste for anything business related
- Irrelevant for careers

K12 Administrators in TX are generally not in charge of strategic planning; those plans are developed centrally in all but the largest urban school districts. Local leaders are faced with implementation plans, or campus improvement plans. The course instructors looked for ways to integrate the course material and embed linkage to those responsibilities. Instructors learned this from reading the formative assessment feedback.

In week four, almost a quarter of the students gave evidence of the affective learning outcome being met. They were characterizing their organizations and themselves in terms of the strategic planning constructs we had covered for the first three weeks. Also, contentment was the number one emotion that we saw. As reviewed in earlier research, contentment is a powerful positive emotion; it may be the most powerful emotion to enrich learning. Contentment, as opposed to satisfaction, is long-lasting and heartfelt. Contentment reflects self-efficacy and self-esteem; satisfaction is fleeting, and temporary.

Contentment is deep, long lasting and involves self-efficacy and self-esteem. So, contentment is the absolute best emotion that we want to see. In week five, 23% of the coded comments evidenced affective learning outcomes. Over one-third of the comments evidenced contentment. Students believed (phenomenological aspect of inquiry) that they understood it; they believed that they could do it, so anxiety and worry dropped down to under 15% of the codes for the first time. In week six, contentment was the strongest emotion demonstrated. Figure 5 illustrates the complete shift in coded data. We eliminated week seven's data from this report (and the presentation) due to the codes being focused on comments and emotions regarding the course culminating project.

Figure 5 Summary and



Coded textual data from reflective posts, weeks four through six.

Conclusion

Incorporating affective learning outcomes along with cognitive learning outcomes recognizes that higher education instructors and student development professionals are not just concerned with the development of skills. Collectively, higher education should strive to change students' behavior. Developing states of mind that will catapult students forward in their careers should be of primary concern. Developing states of mind that places humanity at the forefront of society's values is also critical now. States of mind are not solely cognitive constructs. Duckworth, et al. (2007) found that grit, a non-cognitive trait, accounted for up to 4% of the variance in success outcomes. Non-cognitive constructs have been sorely ignored in most higher education institutions for at least the past 20 years.

By incorporating MCE-MCL we can be more flexible. But we must be willing to give up the power that instructors, managers, and leaders typically wield over students. Reframing our methodologies as instructors requires a commitment to change. The MCE-MCL framework

> *...minimizes unnecessary and arbitrary power distance between students and instructors because it rests on validity and merit claims, not on unquestioned power and privilege claims" (*p 19, Kovbasyuk and Blessinger, 2013).

Operating within the MCE-MCL framework agrees with the National Institute of Learning Outcomes Assessment (Montenegro and Jankowski, 2020) *Principles of Equity-Minded Assessment* also as it incorporates meaningful student involvement with context specific approaches and responses. Coding for affective learning outcomes and other elements with an affect such as emotions and attitudes provides assessment data based on multiple sources of evidence as recommended by Hutchings, et al. (2015). Contentment is the emotion that is most associated with higher-level affective learning. The literature to which the report refers has recognized that contentment is a deeper, secure understanding within oneself that learning has occurred, that one is competent to handle the issues at hand. Subsequently, characterization is possible. Several students demonstrated the contentment enough through learning from the course to characterize their respective organizations. This comment is representative of the evidence in favor of affective learning outcome achievement:

> *Fortunately, I did not have any muddy points this week. However, based on my readings and online research concerning dashboards and balanced scorecards, I came to the conclusion the* (sic) *my district's strategic plan heat map does not fully meet the description of a dashboard or scorecard. While the key objectives, proposed time frame for accomplishment, and primary contacts for each objective are noted, the evaluation process lacks fidelity. For example, the heat map was last updated in February 2019 with little discussion being held amongst* (sic) *campus and district leaders, other personnel, or the School Board members about the accomplished objectives or the posted information.* (student-response, week_five_sp, Column: 36 | Row: 22)

While this research has focused on assessment of learning in an online classroom, affective learning is beneficial for student development outcomes. An additional ongoing effort as yet formally assessed is occurring in a tutoring setting. During the sudden reaction by universities and colleges to COVID-19 many student services that were traditionally offered face-to-face were moved online, in some instances nearly overnight. These are excellent times to incorporate affective learning outcomes into our assessment practices.

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About the Authors

Dr. J. Vincent Nix is an Assistant Professor of Educational Leadership at Lamar University. He can be reached at jnix2@lamar.edu.

Lan Misty Song is a full-time student in the Organizational Leadership in Higher education program at Abilene Christine University. She can be reached at lms15a@acu.edu

Assessment of High-Impact Initiatives & General Education at a Diverse Institution

By Reem Jaafar and Milena Cuéllar, LaGuardia Community College

Abstract: LaGuardia Community College is an urban, open-admission two-year college in Queens New York, serving a diverse population of approximately 20,000 degree-seeking students. Our work is driven by our mission to educate and graduate one of the most diverse student populations to shape a rapidly evolving society. In this paper we discuss the evolution of assessment of learning as practice to better measure impact to equity and ultimately better serve our students. As it is common in higher education, our metrics focus generally on retention and graduation rates, but not on equity and inclusion. Since our college serves a diverse student population, we tend to generalize that any benefits will be reaped equally by all demographics. Given strong evidence of equitable access—highlighted by the success of several high-impact initiatives—we recognize the challenges of assessing equity, inclusion and diversity in meaningful ways. We highlight several successful high-impact initiatives namely, Supplemental

Instruction and developmental math reform, among others at the College. The current unsettling COVID-19 pandemic circumstances raise important concerns around equity. We end this paper with an open reflection on the metrics that are specifically targeted towards equity across all divisions, particularly from the asset-based framework and the challenges we face to improve our equity and inclusion assessment practice at the institutional level.

Who We Are and What Do We Assess?

LaGuardia Community College is an urban campus part of the City University of New York; it has a unique population of students. We are a large institution of 18,533 degree-seeking students and a large faculty body of 400 full time faculty and 700 adjunct faculty. The College serves a large and diverse body of students that hail from 158 countries and speak 89 native languages. The student body consists of 23% Asian, 17% Black, 48% Hispanic, and 12% white. 58% of students are less than 23 years old, 26% are between 23 and 29, and 16% are over 30 (LaGuardia Community College Institutional Profile 2020, 2020). One of the core values of LaGuardia Community College is diversity. The metric often used for diversity is the proportion of under-represented minorities (URM). URM are comprised of Hispanics, Blacks (NonHispanic) and Native Americans. Accordingly, LaGuardia's URM in Fall 2020 was 65% of the student body.

The URM for Queens County, according to the US Census in 2016, was 49% of the total population. Nationally, the URM enrollment at degree-granting postsecondary institutions was 43% in Fall 2016. The Hispanic student enrollment at LaGuardia in Fall 2020 was 48% of the student population. Nationally, the Hispanic enrollment was 18% in 2016 (LaGuardia Community College Institutional Profile 2020, 2020).

In terms of financial recourses, our students live through particularly challenging circumstances: 74.2% of them have an annual income of less than $25,000 a year, and 65% percent of the student body

receives some form or financial aid. As a response, LaGuardia Community College had been ranked fifth in the economic mobility ranking for US two-year colleges (Fast Facts, 2020).
Historically, as is common nationwide, the majority of formative assessment practices at the College have focused on general education assessment of the College's core competencies. Nonetheless, our assessment strategies need to reflect the needs of our diverse College Community. Recently, the

College has pivoted to formative assessment of Administrative and Educational Service (AES) units, as well as Program Learning Outcomes (PLOs) (Assessment at LaGuardia, 2020). Across LaGuardia, our driving force is our mission and we conduct our operations according to our motto to "dare to do more." These efforts are highlighted by initiatives aimed at supporting learning by providing equitable access through the alignment of Academic and Student Affairs.

In 2019, the campus community participated in designing a five-year Strategic Plan. One of the five themes that emerged was to "Build Inclusive Community to Achieve the College Mission" (College Mission, 2020). Discussions by faculty, students and staff focused on the need to examine what diversity means in our unique context, and how to best support faculty, staff and students. The College Community also recommended developing strategies that use our diversity as a resource for learning. While our mission and strategic plan reinforce building an inclusive community, assessment data have not focused specifically on that angle. Our metrics focus generally on retention and graduation rates, a common practice in higher education. Given strong evidence of equitable access—highlighted by the success of several high-impact initiatives—we recognize the challenges of assessing equity, inclusion and diversity in meaningful ways. The current unsettling COVID-19 pandemic circumstances raise important concerns around equity. We share models and data, and reflect: how can we better assess equity to better serve our students?

This paper provides examples that support evidence of students' success, which includes developmental math reforms, supplemental instruction (SI), and advising. We will highlight the success of these initiatives, including an increase in pass rates for co-requisite courses comparted with traditional math sequences and the impact of graduation rates on students' participants in our SI program. We discuss how those metrics may be improved to become specifically targeted towards equity across all divisions, particularly from the asset-based framework (Ddamulira, 2019; Ladson-Billings, 2006), and the limitations and challenges of this approach.

High-Impact "Equitable" Initiatives

Across LaGuardia, there are initiatives aimed at supporting learning by providing equitable access through the alignment of Academic and Student Affairs. High-impact practices support students holistically: even though the ultimate measure of success is graduation rate, a variety of support services help students persist through challenges. The College has been reducing systemic obstacles students face: for example, placement policies reduced the number of students taking pre-algebra (Frequently Asked Questions OAA19-01: CUNY Developmental Education Policy Changes, 2019), and the alignment of Academic and Student Affairs provided students with consistent information and experiential learning opportunities to enhance their undergraduate experience. All these high-impact initiatives are designed to support learning, equitable access, comprehensive rules, and alignments across divisions. A large part of the success of any high impact initiatives actually depends on the joint effort of these two major divisions. Because our institution is diverse, we tend to believe that our

measures and assessments of all of these initiatives will speak to equity by proxy. Although this could be an indirect way of assessing equity, it makes sense to find stronger metrics to assess equity and tackle equity deficits in more direct ways. We may have direct assessments of equity and diversity which these are often conducted silos, and our purpose it to align some of the existing metrics that we use and how it could better inform our assessment off equity at a diverse institution such as ours.

The most common metrics that are used for assessment are designed to measure performance and its dimensions: completion, transfer rate, graduation rate, success rates, access though the measure of enrollment, and progression via the measure of credit accumulation, credit completion, retention and persistence rates, etc. A comprehensive list of metrics used in postsecondary education assessment was developed by the Gates Foundation in collaboration with the Institute for Higher education policy and the Integrated Postsecondary Education Data System (Janice & Voight, 2016).

We would like to extend our assessment practices to actually measure equity through these types of commonly used metrics by disaggregating them into key student characteristics such as preparation at entry, economic status, age, race/ethnicity, financial aid status, etc. These disaggregates are critical to promoting and enhancing equity in higher education and constitute the equity metrics to make our assessment practice explicit about equity. Disaggregation by equity dimensions will allow us to view those already completed performance assessments through the lens of equity.

Supplemental Instruction Program

One example of a student support system is Supplemental Instruction (SI) by a peer mentor (Arendale, 1994; LaGuardia Community College, 2020). While the SI program at the College is over a generation old, peer mentoring programs have expanded over the past several years, namely programs aimed at helping students with advisement and the use of various technological and digital tools such as ePortfolios (Peer Programs). The SI program, also known as the Academic Peer Instruction (API) program, is an academic support peer program where student leaders audit a class, establish rapport with the students, and provide out-of-class voluntary tutoring sessions (LaGuardia Community College, 2020). The API program aims to pair high-performing students with students enrolled in high-risk courses and through this collaboration foster independent learning. However, our College serves an urban student body and first-generation college students; 65% of students receive financial aid and 56% of students are foreign born. To better address students' needs, the peer model needed modification to provide other forms of support for students. While traditional training has focused on principles of collaborative learning, a modified model incorporated a growth mindset, and helping students identify other resources available on campus including Student Technology Peer, and a Peer Advisor. With the changes of Spring 2020, the program pivoted to a distance-learning format. During the process, we learned that the distance learning format works well, because tutors were provided constant mentoring. They were able to consistently assist their students because of increased flexibility in scheduling.

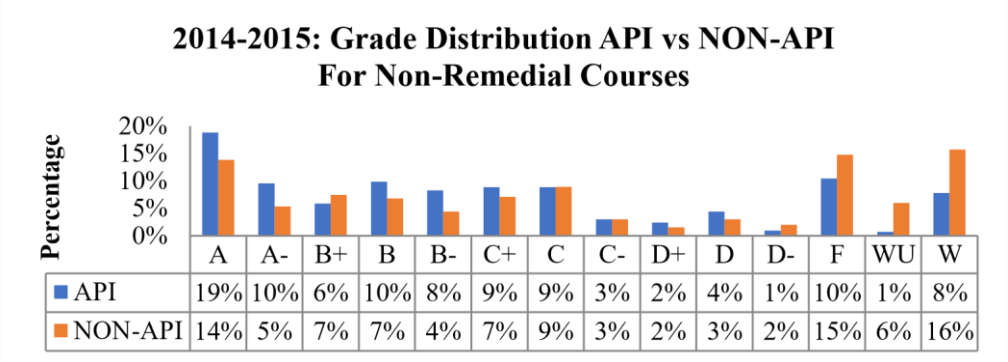
Below we present sample data to describe some measure of success and we discuss its limitations in informing us about equity. In 2014-2015, we analyzed a sample of 838 API-participating students vs 959 non-API participating students in credit level courses. Data showed that API students receive higher grades, and lower withdrawal rates (Figure 1). Moreover, the compounding effects of attending is

clearly demonstrated. The more sessions students attend, the higher the pass rate is (Figure 2). The matching characteristics between the API sample and the control sample were:

1. Enrolled in the same course,
2. Enrolled in that course in the same semester and session,
3. Had the same enrollment intensity for that semester (full-time/part-time),
4. Had the same range of cumulative GPA,
5. Had the same range of credits earned,
6. Had the same level of unsatisfied developmental course need,
7. Had the same gender, and
8. Had the same enrollment status (first-time, new transfer, continuing and re-admit).

Figure 1

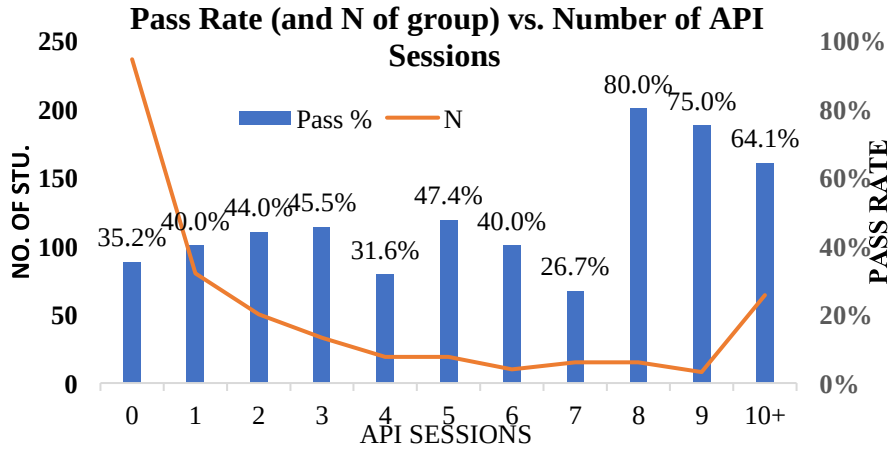
Grade distribution of API vs non-API students



	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F	WU	W
API	19%	10%	6%	10%	8%	9%	9%	3%	2%	4%	1%	10%	1%	8%
NON-API	14%	5%	7%	7%	4%	7%	9%	3%	2%	3%	2%	15%	6%	16%

Figure 2

Pass rates as a function of the number of sessions



Similarly, in 2016-2017, data collected in credit level STEM courses showed higher pass rates for credit level STEM courses for the same matching characteristics as before.

Table 1

Pass Rates

All Courses	API 3 visits or more	Non-API	Difference	Sig. (P<.05)
Number of Students	388	1,938		
Pass Rates	86.3%	81.7%	4.7%	P=.08
Average G.P.A	2.52	2.41	0.11	No
G.P.A Standard Deviation	1.51	1.30		

In Computer science courses, the API program helped students earn a grade of B or better (this Data is from 2017-2018).

Table 2

Pass Rates for Introduction to Computer Science

Pass Rates	94% (API)	58% (Non-API)
B Grade or Higher	54% (API)	30% (Non-API)

While the data is not a random design study, but one of self-selection, data indicate that the program is helping students. However, the metrics we employ do not provide any information on equity. This is particularly relevant in the virtual space where accessibility issues compound on other equity-related issues. Students who voluntarily take advantage of opportunities provided to them may be more motivated, have more time to devote to their studies and take college more seriously. It is very difficult to factor out these effects on overall student performance. The success of the program as described doesn't reveal any information on equity.

Developmental Mathematics Reform – Guided Mathematics Pathways

At LaGuardia we have identified the entry point of the students in the math sequence to be a key element at the start-up of our students' academic journey. Mathematics placement has a highly predictive value of students' future success. From Fall 2013 to Fall 2017 at LaGuardia Community College, an average of 71% of incoming students were placed in developmental mathematics, with 61% of these students completing their developmental mathematics in one semester and only 37% of students placed into the lower level courses completing developmental mathematics courses in one year. Out of the successful students who completed remediation, only 13% acquired college credit in one year and less than 35% did so after one year or more. Our graduation rate was around 27%. At best, students who place into a traditional developmental mathematics course face a long path to degree completion and most are never able to earn the necessary math credits to complete their degree (Bailey, Jeong, & Cho, 2010). This crisis in mathematics remediation, which affects not only our college, led to widespread conversation and innovation around developmental mathematics reform. Nation-wide, 60 to 70% of community college students needed at least one developmental mathematics course, out of which about 80% never completed their developmental mathematics

education (Jaggars & Stacey, 2014). Responding to this long-standing crisis in our math remediation approach, our faculty have brought transformative change to scale via the math corequisite project (Idirissi, Cuellar & Funk, 2018). Co-requisite courses allow students placed in developmental mathematics to complete developmental education and earn college mathematics credit in a single term. This project involved transforming a fixed mathematics sequence into separate guided pathways for STEM and non-STEM students.

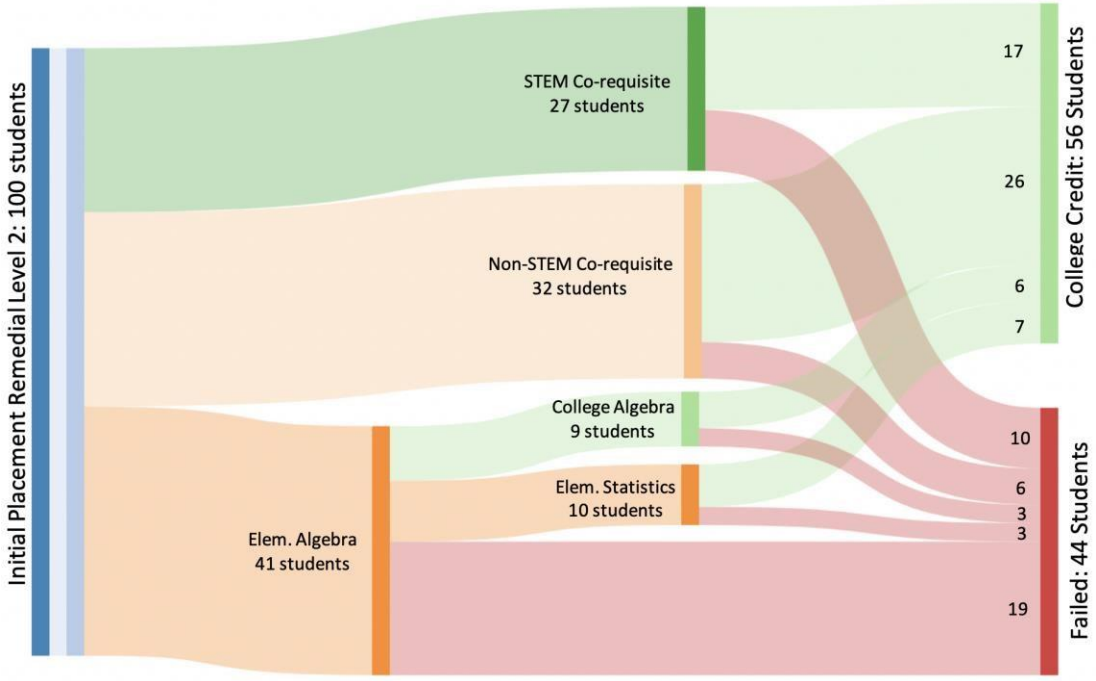
This reform exemplifies how the transformation of the mathematics sequence into guided pathways reduced achievement gaps for our students, and increased gateway completion, academic momentum, retention and graduation rates. Note that the developmental mathematics reform was scaled up at LaGuardia before CUNY-wide change placement practices from placement exams to a mathematics placement index (Frequently Asked Questions OAA-19-01: CUNY Developmental Education Policy Changes, 2019), a key factor in students' success in higher education (Barnett et al. 2018).

The enterprise of implementing the guided pathways at LaGuardia happened in a timeline expanding from Spring 2013 to the present and entailed a strong collaboration of both academic and students' affairs down to the individual level, not only involving faculty and staff but also departmental up to executive administration (see Figures 1 and 2 of Idrissi, Cuellar, & Funk, 2018). The three guided mathematics pathways are composed of three co-requisite courses, each targeting a particular set of majors and programs. These three new co-requisite courses were implemented on a staggered schedule so that we could learn and refine our implementation at scale as we identified the needs at all levels, including curriculum, professional development, research office data and communication, advising, program and course requirement alignment, etc, to name just a few contributing parts to the reform process.

After five years of implementing the first two courses in the new guided pathways, our new mathematics course sequence contributed along with other initiatives to improve outcomes for our students across the board to increase our five-year graduation rate up to 32% in 2017. It contributed to the speed and volume of credit accumulation for students deemed not college ready or placed in developmental mathematics.

Figure 3

Pipeline of 100 students placed at upper level remedial (elementary algebra) level to acquire college level through the traditional or guided pathway. Traditional pathway starts with the Elementary Algebra course while the guided pathway with any of the co-requisite courses. Averages are calculated for Fall 2016 to Spring 2018.



Reading Figure 3 from left to right, we can visualize the progress of 100 students placed in developmental education toward college credit completion, depending on their path. Their path is defined by being enrolled in the new guided pathways (STEM and non-STEM co-requisite courses) or the traditional sequence of developmental mathematics courses (elementary algebra plus a college course requirement). Out of the 100, only 13 acquired college credit in the traditional path compared to 53 students who acquired college credit and completed their developmental mathematics requirement in only one term. Just by looking at Figure 3, we can see that the introduction of the guided pathways increased the chances to acquire college credit by a student deemed not college ready by about three times in half the time.

In general, these co-requisite courses benefit populations that are traditionally misrepresented and deemed more frequently as not-college ready, as it is the case for Hispanic and Black students enrolling in college-mathematics classes for the first time. The courses enrolled a proportion of Hispanic (47%) and Black (21%) students that is similar to our institutional profile, therefore providing us the opportunity to address equity in higher education at a local scale. Success rates for these students is equal to or higher than the overall success rates during the period between Spring 2015 to Fall 2018. What brings everything together in a diverse institution with an equity goal is the productive alignment of student and academic affairs to implement successful initiatives. And by success we mean that the outcomes are positive for all students in the college. Collaborations Across High-Impact Initiatives

The SI program closely worked with the math department during the implementation of the co-requisite math courses. As detailed in this paper, mathematics reforms have eliminated barriers preventing students from progressing towards degree completion (Idrissi et al., 2018). API leaders worked with math faculty to help students in co-requisite courses. Leaders also attended faculty training in the implementation phase of those courses. The results of this effort resulted in higher pass rates for those attending API sessions: in a controlled experiment from 2015-2018, results analyzed by the office of Institutional Research and Assessment show that for the co-requisite non-STEM math courses at LaGuardia, the pass rates for students who attend ten sessions or more a semester is 96%, compared to 77% to those who did not attend. Clearly, attending weekly out-of-class sessions has a tremendous effect on course completion. In this course, students across sections took a common online midterm and a written department final exam. This ensured little variability in grading standards. Additionally, research showed that the "STEM corequisite course presents higher variability in pass rates by racial/ ethnicity group the non-STEM corequisite course arguably due to the higher volume of emotional and cognitive pedagogical components immersed in the Carnegie Math Pathways curriculum," in comparison to the more traditional curriculum of the STEM co-requisite course (Idrissi et al., 2018).

Limitations to Measure Equity: How to better produce assessment with a focus on equity?

The data presented about the API program did not include any breakdown by demographics, but one can sense from the non-STEM co-requisite course results that several factors come into play in determining success. Data on advisement provided by the College show that retention rates are higher for students who receive advisement from faculty and staff. In the spirit of aligning and streamlining efforts, the API training has focused on training their leaders to provide referral points to students, especially at pivotal moments during the semester. API(?) leaders are not professional advisors, but they do encourage students to contact their advisors to seek guidance. We are not sure, however, which demographic variables to track in order to predict who might need more help. Some unconventional metrics may include success rates by parenting status and age group, in addition to gender. Internet access is another metric that needs to be factored in the presence of the distance learning environment. The College provided devices to students in need, in an effort to eliminate inequity in device access, and assessment of this measure is currently underway. Those metrics may better highlight areas that the College and the program need to address. Addressing these areas may involve different departments and divisions, but given our alignment of divisions at the College, we can collaborate to address issues that prevent students from succeeding.

Advisement data itself provides retention and graduation metrics by cohort, without accounting for demographics. Most often first-generation students need to juggle multiple responsibilities, both personal or job related. The breakdown of results needs to account for work-status, parenting status, and a breakdown by ethnicity to start addressing gaps in achievements. For instance, while certain cultures emphasize the importance of group work, others do not. Yet research backs the success of students who work in groups, specifically first-generation college students (see for example Treisman, 1992). A profile of students may aid faculty in identifying approaches that may be new to students but would be beneficial to their retention. In our opinion, a comprehensive and informative assessment of high impact initiatives with the lens of equity could be only achieved by combining the following ingredients:

(1) eliminating systemic barriers to students' opportunities to access and success in mathematics and their general education as it has been presented in this paper.
(2) actively working across divisions to change institutional cultures and mindsets of faculty and higher education staff toward identifying and fostering student assets and student strengths instead of looking from a deficit perspective at students' background and skills upon arrival at our institutions.

At many institutions, including LaGuardia, disaggregating assessment results to understand equity gaps is one of the main challenges (Charles A. Dana Center, 2020). Professional development is needed to recognize success gaps in our student populations. Understanding these gaps will help change current assumption that some students may lack the ability to succeed. Using our disaggregated assessment results will help us to engage diverse audiences and voices in conversations regarding success and improvement. How we talk about our students and their success can have a major impact on how we think about improving achievement gaps (Ddamulira, 2019). We would like to start to shift how we frame our data to change how to improve student success.

To assess disparities of achievement, disaggregated data must be used to inform better practice by putting inequities in education in the proper context to reveal disparities and achievement gaps. Contextualization of achievement gaps are not necessarily reflective of natural abilities of our students; on the contrary, we would like to frame this contextualization as providing opportunities to succeed.

The change of the institutional culture we would like to see when assessing equity will have to view those disparities revealed by data disaggregation, e.g. achievement gaps, as a societal education debt (LadsonBillings, 2006), not gaps. The concept of education debt instead of gap acknowledges the intergenerational denial of equity for access to quality resources for marginalized and minoritized communities, in contrast to the intergenerational investment of resources with non-marginalized communities.

There is no "one size fits all" solution. Institutions need to identify student success metrics that can be measured and acted upon, and disseminate the information to the wider College Community in equitable ways. This will help pave the way to a more equity-minded assessment in higher education.

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About the Authors

Dr. Reem Jaafar is Professor & Co-Director, of Academic Peer Instruction (API) in the Department of Mathematics, Engineering and Computer Science at LaGuardia Community College. She can be reached at rjaafar@lagcc.cuny.edu.

Dr. Milena Cuéllar is Professor of Mathematics at LaGuardia Community College. She can be reached at mcuellar@lagcc.cuny.edu.