

To: The Jeffco Board of Education

November 22, 2014

I am writing regarding the discussion about incorporating ACT results in the Board and Superintendent's goals, which you plan to finish at your next meeting.

I very strongly believe this is something you should do, because it will make a substantial contribution towards accelerating achievement improvement in Jeffco.

Let me explain why.

Jeffco Boards of Education have repeatedly committed themselves and the district to two over-arching goals: Every student will meet Colorado grade level standards every year, and will graduate career and college ready. In reality, the former goal – meeting grade level standards every year – is really just the means to the latter – graduating career and college ready – which is the result upon which parents and taxpayers will ultimately judge the value for money they have received from Jeffco schools.

It is helpful to start with some definitions to distinguish between terms that are often used interchangeably, which can be a source of confusion in discussions about college and career readiness. I have found the definitions used by the Educational Policy Improvement Center (EPIC) to be quite useful:

- *Work ready = Meets basic expectations regarding workplace behavior and demeanor*
- *Job ready = Possesses specific training necessary to begin a defined entry-level position*
- *Career ready = Possesses key content knowledge and key learning skills and techniques sufficient to begin studies in a career pathway [i.e., to begin the process of life-long learning that is critical to career success in today's world]*
- *College ready = Is prepared in the areas necessary to succeed in entry level general education courses [beyond high school]*

Are “college ready” and “career ready” the same thing?

EPIC concludes they are:

*“Research indicates that although specific content for postsecondary success varies by field of study, institution, and certificate or degree program, both college and career share many important elements of readiness. These include skills all students need to be ready for a variety of postsecondary learning environments, such as study skills, time-management skills, persistence, and ownership of learning. Postsecondary instructors at a wide range of two- and four-year institutions stress the importance of these skills across subject areas and programs. Additionally, students need to have a range of cognitive strategies to help them tackle complex tasks and apply content knowledge in novel and non-routine ways. The goal is for high school graduates to be both college ready and career ready, enabling them to pursue a range of opportunities.”*

The ACT organization has reached the same conclusion:

*“Results of a new ACT study provide empirical evidence that, whether planning to enter college or workforce training programs after graduation, high school students need to be educated to a comparable level of readiness in reading and mathematics. Graduates need this level of readiness if they are to succeed in college-level courses without remediation and to enter workforce training programs ready to learn job-specific skills.” – “Ready for College and Ready for Work: Same or Different?” by the ACT Organization*

From an accountability perspective, it is also clear that student scores on a range of college and career readiness assessments are very highly correlated, including correlations between the ACT and the military’s ASVAB assessment (see, “*ACT and General Cognitive Ability*” by Koenig, Frey, and Detterman) and between the ACT and the “Work Keys” assessment used by many companies for pre-employment screening (see, “*Ready for College and Ready for Work: Same or Different?*”). In fact, five states are now providing Work Keys assessments to all their high school students, which enable them to qualify for the ACT’s “National Career Readiness Certificate” (the states are Alaska, Illinois, Michigan, North

Dakota, and Wyoming).

In sum, it is clear that in today's economy, there is a very high degree of overlap between what it means to be "career" and "college" ready, which is reflected in the high correlations between the tests we use to assess these outcomes. For that reason, as a measure of the extent to which Jeffco has met its ultimate goal of every student graduating career and college ready, ACT results are a very valid and useful metric, not just for the 64% of Jeffco high school graduates who proceed directly to college, but also for their peers who go to directly to work or into the military after graduation.

Moreover, the ACT results provide Jeffco parents, taxpayers, Board members, and district leaders with a rich source of longitudinal and cross-sectional data that are extremely useful for performance comparisons and continuous learning.

In 2001, Colorado and Illinois were the first states to require all eleventh graders to take the ACT assessment, both as a means of encouraging more students to attend college, and as a universal assessment of the quality of the cumulative outcome produced by twelve years (K-11) of taxpayer investment in their education. Since then, this practice has gained momentum, and in 2015 eighteen states will require all eleventh graders to take the ACT.

With respect to the Common Core standards that are gradually being introduced in many states, the ACT organization was involved in their formulation, and the ACT test is closely aligned with them (earlier this year, the College Board announced that it will redesign the SAT to ensure that it also aligns with the Common Core standards). Finally, ACT results can be disaggregated by groups whose achievement results are very important to the Board and the public, including students eligible for free and reduced lunch, and students from different ethnic groups.

However, there is a critical issue with respect to the manner in which the Board sets goals related to ACT results, which I urge you to carefully consider.

Up to now, the district has presented ACT results in the form of averages, rather than in the form of the percent of students who have met or fallen below the ACT's benchmarks for college and career readiness. It is clear that the latter metric is much more closely related not only to the Board's

goal that every student graduate college and career ready, but also to most parents' and taxpayers' ultimate common sense metric for judging the value for money produced by our public schools.

Let me give you an example of what I mean. Which of the following two statements provides Board members, parents, and taxpayers with more information?

- *“On the 2014 ACT, the average score for Jeffco eleventh graders was 21.5 on reading, 21.2 on math, and 21.6 on science.”*
- *“On the 2014 ACT, 46% of Jeffco eleventh graders scored at or above the ACT’s minimum score for college and career readiness in reading, 47% scored at or above the benchmark in math, and 45% scored at or above the benchmark in science. For students eligible for free and reduced lunch, the percentages were 26% in reading, 23% in math, and 23% in science. For students not eligible for free and reduced lunch, they were 52% in reading, 55% in math, and 52% in science.”*

I think my point is clear; ACT scores should be reported in terms of the percent of students who fell short of the college and career readiness benchmark in different subject areas.

A final critical issue is the level at which ACT-based achievement results should be reported. Should it only be at the aggregated district level?

I have frequently made the point that the right answer to the often asked question, “Which achievement metric is best?” is “For what purpose?” If I am asked to compare the performance of classroom teachers or schools, then I am going to look at median growth percentiles, which are a relative (not absolute) performance metric that takes into account where a student started when they came into a classroom or school. For example, a class of students at Evergreen High School and one at Jefferson High School can have the same median growth percentiles even though their TCAP scale scores and the percent scoring proficient or advanced is very different. Moreover, and this is a critical and an often overlooked point, if the 50<sup>th</sup> growth percentile does not correspond to an absolute increase in TCAP scale score that is equal to or greater than the increase in the “cut score” for proficiency, then it is possible to have a median growth percentile well above 50 yet still see a decline in the percent of students scoring

proficient or advanced. Why? Because median growth percentile is a measure of relative achievement performance, while percent proficient is a measure of absolute achievement performance.

At the classroom and school levels, I believe median growth percentile is generally the appropriate metric to use. However, at the Articulation Area and District levels, which capture overall system performance, I believe it makes more sense to focus on absolute rather than relative metrics, not only because district level goals are absolute (e.g., every student shall graduate career and college ready), but also because at these levels leaders have much more scope for adjusting the many factors that contribute to student achievement performance between kindergarten and grade 11.

This is very similar to the point that a coalition of organizations led by A+ Denver recently made in its letter to the Denver Board of Education (however, they also highlighted the need at the school level to strike a better balance between the weight given to relative metrics like Median Growth Percentile, and absolute metrics like the percent of students at or above a given TCAP or CMAS score, in order to avoid achievement problems being allowed to grow worse over time, while getting handed on from elementary to middle and then to high schools).

I believe that for too long, Jeffco has made an important error in focusing solely on school and district level metrics, and saying nothing about articulation area results. Speaking as both a school SAC chair and as a member of Jeffco's DAC, it is clear to me that the level of collaboration and coordination within our seventeen articulation areas is a critical driver of our students' ACT college and career readiness outcomes. A key challenge for district leadership and for the Board is how to increase intra-articulation area collaboration and coordination from their currently very low levels. Some very encouraging steps in this direction have already been taken, such as the establishment of the Achievement Director organization (though there is an argument for better aligning it with Articulation Areas), and this year's effort to strengthen coordination between school SACs and the District DAC by encouraging joint meetings of Articulation Area principals and SACs. But much more can and should be done.

An obvious way to further incentivize better collaboration and coordination between all schools in an Articulation Area would be to annually report ACT college and career readiness results at the Articulation Area as well as the

District level, and to make it clear that they represent the cumulative performance of the Articulation Area, and not just the high school within it. While many of our high school teams are very strong, it is wildly unrealistic for anybody to expect these professionals to make up in four years for the cumulative achievement deficits that were build up during students' passage from kindergarten through eighth grade.

Let me also pre-empt an inevitable objection that will be raised to reporting Articulation Area ACT college and career readiness results: "they aren't statistically reliable because of mobility into and out of the Area." I have two responses to this.

The first is philosophical, and is grounded in the difference between frequentist and Bayesian statistics. The former is the world of academic journal articles, where "p" values rule the day, and the underlying data generating process is assumed to be constant. In contrast, Bayesian statistics assumes that the underlying data generating process is constantly changing, and focuses on the extent to which new information changes one's prior assessment. Because real world leaders usually deal with constantly changing social systems – like k-12 school systems – they have no choice but to be, as I like to say, "practical Bayesians."

Student mobility into and out of an Articulation Area (or a district, for that matter) is a case in point. While it certainly reduces the chance that a frequentist statistician will ever produce an article that will be accepted by an academic journal, that does not relieve real world K-12 leaders of the need to make decisions every day that affect student achievement results, or, in making those decisions, does it allow a leader to disregard information that comes from metrics that a frequentist finds imperfect.

The second objection is that, in achieving their goals, we expect Jeffco's leaders – just like leaders in other public, private, and non-profit organizations -- to find ways to overcome the challenges they face, like mobility rates and noisy metrics. Nobody ever said that having every Jeffco student graduate career and college ready was going to be an easy goal to achieve. Yet we expect Jeffco's leaders – at all levels of the organization – to constantly experiment and continuously learn and improve in order to identify curricula, instructional methods, technology, social and emotional student supports, and processes for recruiting, developing, and evaluating professionals, and other drivers of superior achievement results that together will constantly move us closer to our college and career readiness

goal.

Showing how far we are from achieving that goal – at both the District and Articulation Area levels -- cannot help but further energize and focus the collective effort of the entire Jeffco's team, and in so doing raise the probability that we will steadily improve our results against our college and career readiness goal. In contrast, goals without metrics are at best meaningless, and at worst a breeding ground for cynicism and other organizational pathologies that ultimately lead to failure.

In sum, for the reasons described in this letter, I urge you to set measurable achievement goals that are based on the percentage of Jeffco eleventh graders who reach or exceed the ACT's college and career readiness benchmarks.

Very truly yours,

Tom Coyne  
Golden, CO  
Chair, Wheat Ridge High School Accountability Committee  
Member, Jefferson County Schools District Accountability Committee