# Career and Technical Education Teachers' Perspectives of Evidence-Based Grading

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As education leans into competency-based assessment methods, Evidenced-Based Grading (EBG) presents as a potential effective option for Career and Technical Education (CTE) teachers. In this study we use a basic qualitative design to explore CTE teachers' perceptions of assessment, student growth, and implementation of an Evidenced-Based Grading system. Eight teachers in a Career-Tech Center in Michigan participated in the study, with each completing one semi-structured, in-depth interview about their perceptions of EBG, and data were analyzed following an inductive coding process with open and axial coding. Member checking, audit trails, and peer debriefs were utilized to enhance trustworthiness of findings. In this article we present themes that emerged from the in-depth interviews, as well as a discussion of implications for practice and recommendations for future research.

**Keywords:** evidence-based grading, assessment, career and technical education

## Introduction

The University of Wisconsin defines competency-based education as, "...about what you know and are able to do, not how long it takes you to master the course materials" (UW Flexible Option Team, 2019, para 3). As higher education starts to transition to competency-based models of education, high schools are starting to make the transition as well. With the passing of the Strengthening Career and Technical Education for the 21st Century Act (Perkins V), Career and Technical Education (CTE) funding in Michigan will be directly linked with completion of competencies by students in their respective CTE programs (Pyles, 2020). The idea of competency-based education is not new. In 1989, John Burke published a manual on competency-based education in relation to vocational education in the United Kingdom. Currently, rural high schools are

beginning to investigate standards-based grading as part of their visions for the future (Buckmiller et al., 2020). As we look forward to implementing these grading practices, it will be important to understand secondary educators' perspectives on competency-based grading.

Due to Michigan CTE adjustments, it is likely many CTE programs will transition into using competencies, which will provide career and technical education with an opportunity to pilot competency-based grading systems. Evidence-based grading (EBG) is one such competency-based education model. Evidenced-based grading was created as a model for how to grade and implement competency-based education into a high school setting (Stevenson High School, n.d.). The idea was to create a model of grading that showed a student's growth throughout a class by, in part, taking a mode of a student's grades rather than an average (Gobble et al., 2017). In short, in this system of grading, students are assessed on the core components of a class called a "standard" or "big idea" or "Essential Competency Area" (ECA). However, these "standards" or "big ideas" or "ECA's" are not what educators often think of as standards. They are not the state mandated items that an educator would have to teach in a course, but rather, they are things that can be assessed multiple times throughout the class and can be direct or indirect skills such as "professional communication" or "reasoning." These are then broken down further into comprehensive learning targets in which an instructor can measure the level of proficiency (Gobble et al., 2017). For example, a student may be assessed in the professional communication "standard" by looking at their ability to perform competencies such as, using accurate sources and information, speaking, and use of visual aids. Based on their performance of these competencies the student would then be given a proficiency level (e.g., a score of one to four or developing to mastered, with each representing a different proficiency level). At the end of the term, a student's competency level scores are then examined to determine the mode, rather than an average, for a standard. Taking a mode is thought to show the growth of a student and to provide a chance to reassess. Between assessments, students are provided feedback on how to improve by the teacher and the student can then reassess whenever they are prepared to do so.

The rural Career-Tech Center we selected participants from started learning about this practice in 2018 and a select group of teachers began to implement the practice in 2019. While it is early in adopting these practices, schools from all over the country are also implementing this system and are at different stages of implementation (Stevenson High School, n.d.). While there is a wealth of research on competency-based or standards-based grading, there are sparse studies focusing on the secondary level. Specifically, there is a dearth of research on EBG at the secondary level. With more secondary schools looking to adopt these practices, it is important to understand teachers' experiences with implementing a new evaluation system. As more secondary schools look to transition into a competency-based model of education, educators currently implementing can serve as an important resource for those looking to adjust their evaluation systems.

**Purpose and Research Question**. This study aims to explore teachers' perceptions of assessment, student growth, and implementation of an EBG system, and is driven by the following research question:

1. What are Career and Technical Education (CTE) teachers' perceptions of assessment, student growth, and implementation of an EBG system?

# Literature Review

Competency-based grading has increased in popularity as the downfalls of traditional grading systems have become more apparent, such as an over focus on grades (Fowler, 2018). An over focus on grading can harm the learning process by increasing the extrinsic nature of student motivation and increasing anxiety (Schinske & Tanner, 2014). Competency-based models have attempted to address these concerns and improve the educational experience of students by expanding the focus from grades to student growth and skill obtainment. While there is a dearth of research exploring competency-based models in AFNR education, one such study was done at the post-secondary level in agricultural education masters and doctoral programs where students were provided with competency-based models. Researchers provided graduate students in distance education with a self-assessment and used "competency-based behavioral anchors" (p. 25) to document student learning (Dooley & Lindner, 2002). It was reported that while students had variability in their competence levels at the beginning of the study, competency levels were both higher and similar for course concepts across gender and other student types at the end of the study (Dooley & Lindner, 2002).

Research in broader post-secondary education has also explored other models of competency-based grading, such as mastery-oriented assessment. A key foundation of mastery assessment is evaluating students' learning relative to previously established learning goals, instead of other student performance (Lalley & Gentile, 2009). Findings from this literature base include data supporting low- and high-SES students performing similarly and closing the achievement gap when students understand the purpose of assessments and are not evaluated against each other (Smeding et al., 2013). Highlighting the nature of competency-based models of assessment to be more intrinsically focused for students, Hjelmstad and Baisley (2020) implemented mastery assessment with mechanics, utilizing redundancy of skill performance to indicate students had reached mastery. The authors reported the mastery assessment was impactful, with student conversations about grading being "more focused on authentic learning issues than they were with the traditional system" (p. 16). Further, mastery assessment situates learners in a place to learn from assessments and reduces anxiety. In a two-year study exploring mastery-based testing, researchers reported no statistically significant difference between mastery-based and traditional students enrolled in a calculus II course for the number of course concepts mastered; however, mastery-based students reported they were less anxious for tests and in-class assessments helped their understanding of course topics (Harsy & Hoofnagle, 2020).

The rare studies that have explored competency-based education in secondary settings have focused on different groups and settings, including a study positing competency-based education "increased teacher and student engagement and an increase in the academic rigor of the program" (Sullivan & Downey, 2015, p. 4), while a study funded by the Bill & Melinda Gates foundation showed challenges in implementation and similar student experiences across different study locations (Steele et al., 2014). Student perceptions of a standards-based grading system have been investigated with results suggesting students had some positive change in perception of feedback and the opportunity to reassess with the new system (Tripp, 2018). The research, however, has not covered secondary teachers' perspectives on EBG in relation to their assessments, student growth, and implementation of the model. Given the perceived benefits of competency-based models, and the beneficial outcomes reported from studies at the post-secondary level (Dooley & Lindner, 2002; Hjelmstad & Baisley, 2020; Smeding et al., 2013) and secondary level (Sullivan & Downey, 2015; Tripp, 2018), more research is needed exploring the secondary teachers' perspectives of EBG in their instruction.

**Subjectivity Statement.** All members of the research team engaged in this study are part of the Agriculture, Food, and Natural Resources (AFNR) Education field, while the lead researcher is a current secondary AFNR Educator actively implementing the Evidence-Based Grading system. We recognize that many educators are looking for new ways to assess their students to show student growth and learning in preparation for post-secondary and career placement options. As such, we believe CTE should be a leader for new educational practices. Additionally, our research team has extensive experience in collecting and analyzing qualitative data.

## Methods

This descriptive qualitative study followed a basic qualitative design (Merriam, 2002). Merriam (2002) contended basic qualitative approaches are "probably the most common form of qualitative research found in education" (p. 38) and include seeking to understand participant viewpoints through an inductive process with "researcher as instrument" (p. 6). To fit this design, the researcher utilized semi-structured, in-depth interviews with each teacher-participant. Semi-structured interviews allow for flexibility in the interview process, while allowing for participants' views to be expressed (Flick, 2009). Interviews were conducted from May to June 2021, until saturation was reached, resulting in eight secondary teachers who have implemented EBG in their classroom participating in the study. For each interview, teacher-participants were emailed the interview protocol at least one week in advance of their interview. All eight educators worked at one Career-Tech Center in Michigan, with each having been employed there for at least three years. Two career paths were represented within the group of eight teacher-participants: (a) traditionally certified (i.e., completers of a teacher preparation program), and (b) alternatively certified (i.e., lateral entry teachers with a degree not in teacher preparation).

Teacher-participants were asked a series of 13 questions during each interview. Questions focused on EBG, with topics including assessment, student growth, and implementation. An example question from the assessment topic included, "Describe a typical assessment in your class." Next, an example question focused on student growth included, "How, if at all, have you observed EBG influence student engagement?" Lastly, an example question from the implementation topic was, "Describe some possible hurdles you may have encountered while implementing EBG." Interviews were recorded using two devices to ensure accuracy and success and were then transcribed verbatim by a third-party service. Using the verbatim transcriptions, data were analyzed following an inductive coding process with open and axial coding. First, quotes were pulled out of each interview and organized into codes based on similarity of topic discussed among them. Next, codes were further refined by another research team member before grouping them into categories. Finally, categories were then organized into the major themes that arose from the data. To increase credibility and confirmability, member checks, auditing, and peer debriefings were performed (Flick, 2009; Guba, 1981). Member checks were completed by the lead researcher and included emailing each teacher-participant their transcript of the interview to ensure it represented their thoughts accurately. Additionally, key findings from the study were sent to two teacher-participants to seek their input, thus increasing trustworthiness of findings (Flick, 2009). Additionally, auditing and peer debriefings were completed with another research team member periodically during the coding process to increase credibility (Guba, 1981).

# Results

Two themes emerged from this study cross cutting the three areas our research question identified: *It's okay to not be okay* and *reframing practice*. The first theme, *it's okay to not be okay,* came from the idea that failure was an acceptable portion of EBG for both the students and the teachers. Students are expected to not fully understand concepts at first and then know it is okay to try again. Secondly, it was also acceptable for teachers to not fully understand a new approach to grading and assessment at first and need time to fully understand how to operationalize and implement it. *Reframing practice* explores how teacher-participants expressed the need to adjust their teaching practices and how those adjustments impacted students. See Table 1 for a complete list of themes, categories, and codes.

**Table 1**

*Summary of Themes, Categories, and Codes*

| Theme | Sub-Theme | Category | Code |
|---|---|---|---|
| It's okay to not be okay | | Learning-oriented Assessment | Mastery |
| | | | Fair |
| | | | Flaws of traditional grading |
| | | | Feedback |

| | | | Reassessment |
|---|---|---|---|
| | | Prepare for failure | Perfection can't happen |
| | | | Satisfaction/Feeling of completing |
| | | | Adjusting |
| | | | Admin support |
| Reframing practice | Changes by teacher | EBG requires a shift in practice | Teaching practice |
| | | | Fits into what we're doing |
| | | | Paradigm shift |
| | | | Teacher understanding of grading system |
| | | Shifting instructor demands | Implementation time |
| | | | Front loading |
| | | | Creation time requirements |
| | | | Juggling |
| | | Skill-based assessment | Evidence collection |
| | | | Presenting new topics |
| | | | Assessment |
| | | | Performance-based |
| | | | Streamlined grading |
| | Outcomes for student | Student ownership | Students tracking grades |
| | | | Understanding where they need to be |
| | | | Student Understanding of content |
| | | | Student understanding and reflection |
| | | | Reflection |
| | | | Reflection practices |
| | | Enhanced student interactions | Peer-to-peer engagement |
| | | | Student engagement |
| | | | Student growth |
| | | | Areas of growth |
| | | | Connections in learning |
| | | | Student motivation |

Informing the areas of perceptions of assessment and implementation is the *it's okay to not be okay* theme, where we explore the categories learning-oriented assessment and prepare for failure. Learning-oriented assessment highlights how EBG assessments focus on a student's ability to learn rather than just rote memorization of content, creating a structured environment where failure becomes an opportunity to improve. One teacher

summarized this idea perfectly with the following quote, "And, um, with the system, it's, it's feedback and it's learning and it's trying again, and that's how learning happens." Additionally, teacher-participants discussed how EBG helps create a fair assessment, with an emblematic comment being "this is the most fair and the most ethical grading system that exists. If I have to give a kid a grade, I want it to be this." Reinforcing fairness, teacher-participants also commented on the level of feedback EBG encourages them to provide, "daily we give feedback…either verbal or written."

Along the same lines, teacher-participants also considered how EBG may provide their students with opportunities traditional grading systems do not, with one teacher suggesting EBG may help some students find success who otherwise would not, "this system gives kids who haven't been successful in a traditional grading practice a chance to be successful." It was also contended that EBG encourages students to work on all aspects of the curriculum, since their grades do not average out as they would in a traditional grading system,

> They were not doing some of the work [in the traditional grading system], knowing that they could get it to average out …. they would definitely game it out and 'well I'll do really good [at] what I like to do so that it averages out [with] what I don't like to do.'

The other category discussed within the *It's okay to not be okay* theme is prepare for failure, which focuses on how educators using this system should be prepared to struggle implementing these concepts at first, but it will be okay to try again. In the following quote one instructor explains how their feelings of needing perfection were a struggle for implementation,

> There are a few times just, again, I kinda mentioned that perfectionist kinda anal-retentive stuff that it makes it really hard for me to let go of, because I feel like I'm supposed to have it all together because otherwise how can they?

Another major highlight of this category was that each of the teacher-participants expressed the idea they don't feel satisfied and are still seeking growth. Several teacher-participants captured this idea perfectly when they said "I have not arrived. And I don't think I ever will, but I'm trying," "I just feel like we still have a lot of work to do," and "I don't think it's quite there yet." They felt like there was more they could or should do to improve their practice, even in year three of implementation.

The second theme, *reframing practice*, informs the areas of interest student growth and implementation, and comes with two sub themes: changes by teacher and outcomes for student. Changes by teacher focuses on the changes in practice by teachers and their adjustment in thinking, and the outcomes for student highlight how the student learning experience is adjusted by teacher implementation of EBG. The changes by teacher subtheme included three categories: EBG requires a shift in practice, shifting instructor demands, and skill-based assessments.

When exploring the changes by teacher sub theme, a prominent idea is EBG requires a shift in practice by the implementing teacher regarding how their classrooms should run and what students need to do. For instance, one teacher-participant stated succinctly "it altered how, um, I ran the class for the most part." An adjustment to grading was also mentioned, as another teacher-participant suggested shifting away from

worksheet-based assessment, "I think also using this method changed how I gave assignments because I did have a lot more, like, worksheet type things before and then figured out that that wasn't really the best way to teach…" Alongside these changes in practice was the idea some adjustments were subtle tweaks to practices already used, as one teacher-participant highlighted, "it wasn't a lot of reinventing the wheel" and another suggested "assessments is actually not that much different. The assessment part of it, um, I just took it from a point-based system…and transferred it over into the…criteria component."

While adjusting practice was discussed in different avenues, a universal idea was the need for educators to shift their way of thinking about teaching and assessment and their practice. Paradigm shifting was stated simply by one teacher-participant, "my biggest hurdle was just my own brain," and they continued on to later discuss the concept of letter grades being entrenched, "Getting over this concept of not a letter grade, it's all I've known for 45 years." Another teacher-participant saw EBG as a step away from punitive grading, "me being able to recognize that grades are not about punishing and sorting…they're about accurately describing what [students] can do." Once the shift happened, a few teacher-participants expressed assessment has never made more sense to them, "I just still feel like it is truly the one and only grading system that has ever made sense [out of all the others we have tried]."

With this new lens for education, the time teacher-participants previously spent in the old system shifted to new responsibilities, as explored in the category shifting instructor demands. Specifically, teacher-participants discussed how EBG requires potentially more forethought before implementing it with students, whether from a course perspective or a unit perspective. An emblematic idea was frontloading, "What you were going to present to students and how we were going to track it. Uh, that was probably the biggest piece because once you got your framework in place then the rest of it starts to fall." This forethought piece required time investment, whether in the day-to-day, like updating documents, "It's making sure those [EBG] sheets are ready. Are they updated? Because we were constantly updating the scoring and the wording and the verbiage," or in the programmatic planning level, "did a lot of work over the past couple of summers…trying to design learning targets and big ideas that fit our program." Finally, some of these shifting demands can result in a feeling of juggling early on in attempting to implement EBG,

> the only downfall…as [students are] working in the process that we've just launched a week or so before, they've got a lot of questions. So you're bouncing around and trying to answer questions, support the, the students, and then doing assessments at the same time.

One of the reasons for these shifting instructor demands is the idea of a skill-based assessment. Assessments focus on a student's ability to perform a skill or task, shifting the focus away from grading excess materials and allowing teachers to have more time to put into their assessments, as discussed by one teacher-participant "not like regurgitating information related to the learning target, um, not filling in the blank or assessing their ability to memorize something, but actually assess their performance on whatever skill." Teacher-participants also discussed more opportunities to collect

evidence of student learning, "you can do so much evidence without even realizing you're gathering evidence." There are potentially more opportunities to gather evidence because grading is a bit more streamlined, as one emblematic thought was,

> I feel like you, I don't know, I don't know if I wanna say I grade less… it's not that I'm not checking the stuff, but I'm just doing it in person and it's not hauling a stack of stuff home.

Another teacher-participant highlighted how they conduct assessments and turn them into learning opportunities for students,

> So I let them just do all the talking and showing I will ask questions. And then when we're done with the assessment, it does give me a chance to, like, 'Hey, you did this really well, but you forgot about this and this and something like that.' So it actually, it's twofold. It, it helps close up some gaps in, in their understanding of the process. And, and obviously you're getting that assessment out of the thing too.

Outcomes for student is the other sub-theme in the *reframing practice* theme, and focuses on the idea of how EBG impacts students and informs the interest area of student growth. Teacher-participants discussed two areas related to outcomes for student that were represented with categories: student ownership and enhanced student interactions. Teacher-participants perceived students took more ownership in the learning process by understanding what they need to do to improve on a task or skill and then better reflected on their learning to improve. In an emblematic statement of ownership, one teacher-participant said their students have never had this much ownership in the learning process, "more ownership than they've had than any, than any of my students have ever had, in all, you know, 30 years that I've been around," with another teacher-participant adding it was their biggest success with EBG, "the biggest success is just the independence."

This ownership manifested into better learning in the eyes of teacher-participants, as one suggested the reflection process is helping content comprehension, "It's made them reflect more on their work so that the next time they do complete that skill, they know where they went wrong." This sentiment was expressed more directly by another teacher-participant, who said "if I have to ask them, okay, well what did you do wrong? They can tell me now." Another teacher-participant echoed a similar idea, but focusing more on students' appreciation for learning, "I just think my students have a greater understanding. They have a greater appreciation for learning in general, greater competency."

In the second category in the outcomes for student sub-theme, teacher-participants also suggested they experienced enhanced student interactions through peer-to-peer engagement as well as increased engagement and motivation from students for learning. One teacher-participant described students engaging each other in discussions not usually heard at school,

> it was really fun because then I would sit down and to listen to these kids, they're just talking math, they don't do that normally in a math class, in a regular math class, they're not interacting a ton, talking math with another person.

Another idea posited by teacher-participants was students being more willing to assist one another, as one described students just jumping in, "I've seen a lot more I, I guess um, what's that called when they just uh, start helping other people." This idea for a willingness to work together is relatable to another idea posited by teacher-participants, that students are growth focused. One teacher-participant highlighted "They had more chances to make mistakes and learn from their mistakes" while another suggested now students ask, "Can I practice that again?"

## Discussion and Recommendations

Evidenced-based grading is not a completely new concept, but rather a refreshed idea on how to implement a competency-based learning model into the classroom. Findings in the present study support previous research that positions competency-based learning as an effective tool within the classroom (Dooley & Lindner, 2002; Sullivan & Downey, 2015; Tripp, 2018). However, findings also suggest with its adoption will come some challenges (Steele et al., 2014). While this research was not intended to test a specific theory, the findings do suggest congruence with the Model of Teacher Change (MTC) (Guskey, 2002). In the MTC, teachers don't experience a change in beliefs or attitudes about teaching merely by learning about, or implementing, a new method of teaching, rather they must see changes in student learning outcomes before adjusting their own views of teaching. While the present study only utilized one round of interviews with each occurring one to three years after teacher-participants started implementing EBG, it certainly is not a stretch to interpret teacher-participants' feelings as having seen positive student outcomes potentially attributable to EBG – thus allowing for a change in teacher attitudes (e.g., the multitude of comments suggesting EBG is a superior assessment method than other traditional assessment methods).

While it can be concluded that teacher-participants in this study expressed an appreciation for EBG and saw the benefits that it has for both them and their students, there are factors that may enable better success with EBG. Noteworthy, a supportive administration and a requisite willingness to learn by the teacher were underscored as critical elements to the successful implementation of EBG. Specifically, findings regarding EBG success suggest EBG is an effective tool for teachers to increase student proficiency within their courses, especially when considering students' willingness to learn from errors and being willing to take ownership of the learning process. This is done in part by providing students with the opportunity to show what they have learned in a manner that allows teachers to assess them exactly where they are at on any given day – this also leads to additional flexibility in how and when teachers are grading their students.

Recommendations for practice include suggesting CTE teachers and secondary schools that have not yet implemented a competency-based model consider implementing one – but with the understanding there will be challenges. Teachers must adjust to the possibility of struggles initially, but with administrative support and support of other teachers it can be an effective model for student learning and engagement. One of the potential challenges for teachers is the shift in what is expected of them before and during

instruction. However, meeting this shift in expectations may result in more effective instructional experiences with students.

Recommendations for further research would include expanding the research into more contexts, such as different schools and/or teachers at different implementation intervals. This study was a glimpse into one school's adoption of the practice, therefore incorporation of other schools into future studies would add richness to the understanding of teacher perceptions of EBG. Interviewing teachers at other schools may provide insight into the EBG model as a whole and provide for a better idea of what this model of education can do. Finally, interviewing students engaging in an EBG assessment model may also provide valuable insight. For example, how does EBG impact student perceptions of failure in learning contexts? Student data could help provide needed insight into assessment and learning experiences.

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