Equitable Grading Practices in Physical Therapist Education: A Case Report

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Abstract

Objective. To optimize learning in physical therapist education, learners need opportunities to grow from their unique starting points. Traditional grading practices like A to F grades, zero grades, and grading on timeliness and professionalism hinder content mastery and accurate competency assessment. Grading should focus on mastery of skill and content, using summative assessments for final grades, a no-zero policy, and actionable feedback. Equitable grading supports learners from all backgrounds and identities and promotes academic success. This case study provides guidance and recommendations for implementing equitable grading practices in academic physical therapist programs.

Methods. Over a 2-year period, a doctor of physical therapy program began implementing 5 strategies to create more equitable grading practices: (1) eliminating zero grades, (2) allowing late assignment submissions without penalty, (3) using low-stakes formative assessments throughout the semester, (4) weighing end-of-course assessments more heavily than initial ones, and (5) offering a no-stakes anatomy prep course before matriculation.

Results. Outcomes from implementing equitable grading practices varied. Some learners felt increased stress from fewer points opportunities, while others appreciated the reduced anxiety from low-stakes assessments. Some saw multiple attempts for peers as unfair. Faculty faced higher workloads due to detailed feedback and remediation but believed it benefited learners. Median final grades improved in some courses, remained stable in others, and slightly decreased in one. Overall, the changes had minimal impact on most learners' grades but significantly improved outcomes and retention for struggling learners.

Conclusion. This case report documents the implementation of equitable grading practices in a Doctor of Physical Therapy program, offering valuable insights and recommendations for other institutions aiming to adopt similar practices.

Impact. Inequity in assessment widens the gap between learners entering professional programs. Equitable assessment practices level the playing field, enabling learners from diverse backgrounds and identities to succeed. Increased diversity benefits everyone, especially patients, by reducing health disparities for historically marginalized groups.

Keywords: Equity, Grading practices, Diversity, Assessment

Background and Purpose

The earliest forms of grading in the USA come from the early 19th century.[1] Grades began as individualized verbal or written communication local to an individual school, serving as an internal means of communication regarding learner knowledge and capability.[1,2] As American society grew, schools, employers, and other entities sought a simple and efficient means of evaluating, ranking, and sorting a broadening pool of candidates. Economic and industrial priorities took precedence over pedagogical ones, and intelligence quotient (IQ) testing and slotting processes were used to help determine appropriate trajectories for students based on what was assumed to be fixed, innate intelligence.[3] The A to F grading scale and the bell curve were metrics that aligned with those tools and processes. This process was much simpler and more efficient, but it was inherently limited, biased, and inequitable.[3]

Despite massive shifts in technology, society, and culture over the last century, current grading practices are still largely based on that 100-year-old A to F grading system. That grading scale and the bell curve fail to take into account that learners come from a variety of backgrounds; they have levels of privilege with different starting points in terms of academic preparedness and their ability to manage all the dynamics of being a graduate learner. Perhaps even more important, those elements are based on the disproven notion that learners' abilities and intelligence are fixed.[3] Current grading practices must change to account for different dynamics and starting points of all learners, so that grades are more reflective of knowledge and understanding rather than starting points and advantages.

The purpose of this case study is to provide guidance and recommendations on ways to implement equitable grading practices in an academic physical therapist program. Those recommendations also include guiding questions based on the experiences of one doctor of physical therapy (DPT) program's initial implementation of equitable grading practices.

Case Description

The College of Saint Mary DPT Program was launched in June 2020 at the height of the COVID-19 pandemic. The program duration is 31 months, and it utilizes a hybrid model. The program's vision is for its graduates to promote health equity by teaching them to be competent practitioners with skills to treat patients from diverse and medically underserved communities. The program was designed to be an inclusive learning environment to increase diversity in the physical therapist workforce and teach those from the dominant culture how to relate, communicate, and engage better with colleagues and patients from different cultural backgrounds. The College of Saint Mary DPT program recruited diverse educators; 73% of the core and 100% of the associated faculty identified as members of historically marginalized identities. Of the inaugural cohort of learners, 38% self-identified as members from historically marginalized groups. This paper contains frequent use of the terms diversity, historically marginalized, and minoritized. Operational definitions of those terms are included in Table 1.

The Issue

Currently, the Commission for Accreditation in Physical Therapy Education (CAPTE) does not have a standard of practice for grading policies. However, the CAPTE standards require program and institutional policies to align.[9] If differences exist, a statement is required explaining the discrepancy. The CAPTE standards clearly state that the policies, procedures, and practices must be equitable and applied uniformly regarding learners and their dismissal, retention, and progression through the program. Furthermore, in the authors' interpretation of the standards, the diversity of the learners must be promoted through retention practices. Thus, CAPTE standards support considering and adopting equitable updated grading practices. The framework contained in this case study explores an evidence-based approach for programs seeking to embrace more equitable and inclusive grading practices. The College of Saint Mary DPT program was able to implement these changes with minimal training in their quest to create a more supportive and equitable environment for their learners.

Significance of Equitable Grading Practices

Current grading practices have an impact that goes well beyond the classroom. Grades and GPAs are among the most critical societal metrics. They are tied to academic and social opportunities as gateways to scholarships and placement in better residencies, fellowships, and sometimes clinical placements. Better grades can help with letters of recommendation, awards, and accolades that open other doors of opportunity and advancement. Traditional A to F grading and the bell curve fail to consider the many elements, advantages, and experiences that each learner arrives with. The inequity of the systems increases substantially as the starting points between learners broaden.

There are inherently varying levels of innate ability in learners, but the factors tied to their success have much more to do with elements completely outside their control, such as who their parents are or where they live. Those factors, also known as social determinants, will dramatically impact the resources available to them regarding familial support and assistance, quiet study space, tutoring, and a safe, stable environment.[10] Incidentally, those same elements are responsible for much of the disparity in health outcomes in the historically marginalized and minoritized people who comprise much of the population that physical therapists serve.[11]

The learners most impacted by current grading practices are those with fewer initial advantages; those with historically marginalized and minoritized racial and ethnic identities are more likely to have greater academic difficulty and require more time to complete their DPT degree.[12] Traditional A to F grading tends to perpetuate the advantages that learners possess at matriculation. That is not to say that disadvantaged learners cannot be successful. Rather, the authors believe traditional A to F grading is not solely a merit-based system where equal effort will yield equal results. The way to address those inequities is through equitable grading practices, which help balance out the variable levels of privilege and different starting points for learners.

Proposed Solution

The faculty collectively agreed that it was vital to educate learners in an environment that valued clinical competency,

Table 1. Key Definitions

Key Term	Definition
Diversity	"Refers to the identities we carry. There are many kinds of diversity, based on race, gender, sexual orientation, class, age, country of origin, education, religion, geography, physical or cognitive abilities, or other characteristics."[4(p27)]
Historically marginalized	Refers to individuals or groups that "have been relegated to the lower or peripheral edge of society. Many groups were (and some continue to be) denied full participation in mainstream cultural, social, political, and economic activities."[5(p1)]
Minoritized	Refers to the marginalization or oppression of a group or individual because of biases stemming from societal and systemic inequities; this holds true even when the party in question is in the majority.[6–8]

diversity, and inclusiveness. Consequently, they were intentional in their efforts to develop and maintain an inclusive and welcoming learning environment to support learners, faculty, and staff. The program director and director of clinical education led the faculty through readings on culturally responsive teaching and learning practices and provided faculty-peer mentorship as needed. Through the first academic year of the program, the program director and director of clinical education facilitated discussions with faculty and learners to assess their experiences in the learning environment. Although faculty were learning and engaging in culturally responsive teaching and learning practices, an assessment of learners' progress and experiences revealed that the traditional grading practices being used were inequitable and they were not the best way to support learners.

In an effort to learn more about equitable teaching, learning, and grading practices, the Program Director researched and shared information from the works of Novak and Chardin,[13] Fritzgerald and Rice,[14] and Feldman.[3] That sparked many faculty discussions about the need to create a more equitable learning environment that would assess learners' full potential and align with the program's vision and mission. As a result of those numerous discussions, the faculty agreed that they needed to move away from traditional grading and begin implementing more equitable grading practices to best support their diverse community of learners.

The authors believe that the most equitable forms of grading do not include any version of the traditional A to F grading scale. They believe equitable grading is centered on competency-based education, where learners are assessed based on specific knowledge, skills, and elements. A learner has either met the standard, showing sufficient mastery of content or skill, or they have not. Competency-based education and assessment are idealistic and fundamentally different from traditional A to F grading, making it challenging to implement at most institutions.

However, the authors implemented more equitable grading practices within the traditional A to F scale with relative ease and speed. The authors feel there are 3 outcomes necessary to create equitable grading and assessment. The assessment process must: (a) produce grades that are mathematically accurate and reflective of academic performance; (b) produce grades that are objective and bias-resistant; and (c) be motivating for learners.[3] When using traditional grading practices in the past, the authors noticed instances where learners had demonstrated mastery of content, but their final grades did not reflect as much. Conversely, there were also instances where learners lacked mastery of content, but their final grade suggested a higher level of mastery than demonstrated. Those discrepancies were problematic and may be seen with the traditional A to F grading scale.

Leveling the Playing Field

Before learners attend classes or receive any grades, the College of Saint Mary DPT program takes steps to address some of the disparity in starting points with an anatomy prep course prior to matriculation. Three modules cover anatomical terms/directions, joint structure, and key musculature of shoulder and knee joints. The course aims to provide a touch point for learners who may enter the program with less exposure and familiarity with anatomical terms and content. Although there are almost certainly learners with less exposure to other content areas, anatomy was chosen due to its foundational importance in physical therapist education and relevance in nearly every course. The authors believe that providing a no-stakes prep course will smooth the initial transition into graduate-level anatomy and all the other courses that feature grades. Although small, the preparatory course provides an important first step in creating more equitable grading practices.

Mathematically Accurate

Accuracy is perhaps the most important aspect of equitable grading. Traditional A to F grading paradigms are cumulative; all points and assignments from the semester are averaged into a final grade.[3] However, learners may get low initial grades or submit late assignments and then show mastery of content at the end of the semester. That process results in a grade that does not account for learners' different starting points and abilities. When a learner performs poorly on a graded assignment or assessment or fails to turn it in, that devastates their grade. Learners are held accountable for turning in assignments or performing below standards on assessments, but lower grades, especially zeroes, make it mathematically difficult to finish with a strong grade. The authors eliminated the zero grade and established a minimum floor grade of 50%, which helps learners maintain the mathematical ability to recover and raise their grades.[3] Because traditional grading averages all grades together, a single zero grade will dramatically lower a final grade even if that zero is an outlier for that student. The zero grade does not reflect accurate academic achievement and greatly reduces the learner's ability to obtain a higher grade mathematically.

Consider 2 learners in a first-semester DPT anatomy course. The first is more academically privileged and begins the semester with a strong understanding of the content. The second learner is from a less privileged starting point, has not yet been exposed to the content, and lacks strong study skills and habits. The first learner will likely score higher on initial assessments and potentially improve or stay the same over the semester. The second learner will likely score lower on the initial assessments and may improve or stay the same, just like the other learner. Even with the same level of mastery at the

end of the semester, the first learner will have a higher final grade due to the advantage they had at the start. This minor difference between the 2 learners becomes magnified in the context of the traditional A to F grading used in virtually every class. That dynamic will play out multiple times throughout their DPT program.

Learners must be clear of the objectives from the start, and they must receive ample opportunities for practice, self-assessment, and feedback throughout the semester. Learners are permitted to resubmit assignments for regrading so they can use them to assess their understanding, and there is no point or grade penalty. Assignments assess knowledge or skill, not the ability to submit work on time. In the words of Feldman, "grade the work, not the timing of the work."[3] Late submissions are permitted and graded to assess learners' knowledge and provide feedback. There are alternative means to address learners who have difficulty submitting assignments on time. Homework, projects, and even quizzes serve as practice opportunities where learners are expected to make mistakes. Those opportunities serve as scaffolding providing practice and feedback throughout the semester to help prepare learners for summative assessment at the end of the course.

The last change to make grades more mathematically accurate is to weigh assessments at the end of the course more than those at the beginning. That allows space for learners to learn and grow without being punished for their lack of understanding at the start of a semester and allows their final grade to accurately represent their mastery and understanding of the content.

Resistant to Bias

The second change in creating more equitable grading and assessment focuses on minimizing components that are subjective and susceptible to bias. There are 2 major types of assessment, summative and formative. Summative assessments are used more at the end of a course to gauge macro-level mastery of content measured against a standard.[15] Formative assessments take place throughout the semester to provide ongoing feedback to teachers and learners to help both groups identify strengths and weaknesses that they can use to make changes in their respective roles.[15,16] Grades are based largely on summative assessments at the end of a course. Formative assessments like homework, quizzes, and group projects comprise a small part of a grade, which is meant to be a metric of academic achievement.[3] Formative assessments are useful tools for learners to practice concepts, work on retrieval, and determine their level of understanding.[17] Learners complete formative tasks to practice applying concepts and solve sample problems like case studies. Rather than a grade, learners receive immediate feedback that is specific and actionable to help them progress toward previously outlined standards and objectives.

Elements such as professionalism and participation are subjective components that are often included in a learner's overall grade. Professionalism is a broad concept that is typically assessed via several specific elements such as punctuality, communication, attire, and timeliness of work. It is not a simple checkbox or binary concept, but rather a consistent demonstration of adherence to the American Physical Therapy Association's core values of accountability, altruism, collaboration, compassion and caring, duty, excellence, inclusion, integrity, and social responsibility.[18] While professionalism is important to the practice of physical therapy, most

assessments of it are limited and they are an invalid measure of a learner's knowledge. A better way to assess professionalism is by examining overall behavior and how it reflects one's core values and ethics. That more inclusive lens allows for a much broader assessment and interpretation that is less subject to bias.

Participation is the level of involvement, actions, and collaboration a learner exhibits during a synchronous or in-class activity. Participation and professionalism are highly susceptible to individual biases and are largely a judgment call based on sensibilities, preferences, and perceptions.[3] These components represent something other than a learner's mastery of course content. Developing professional skills is important and is better assessed using feedback and coaching rather than as a component of a learner's overall grade.

The same holds true for interpersonal skills and the ability to communicate and connect with people. The ability to interact with others in a way that maintains their humanity and dignity is vital in developing a skilled and compassionate physical therapist. While somewhat difficult to assess, it is just as important to minimize systemic and individual biases in assessing interpersonal skills, professionalism, and participation as it is in coursework. Eliminating the grades associated with those elements and non-essential assignments helps minimize both individual and systemic bias. Learners are coached and mentored on ways to work in groups, how to submit assignments on time, and other aspects of professionalism, but those pieces do not factor into their course grades. When those components are included in a grade, the grade becomes a concoction of multiple unrelated things that fail to provide information on any aspect of a learner's knowledge.[3]

Motivating

When learners are intrinsically motivated, it helps them master and understand content through practice and engagement[19], which is further optimized through grit, or the "passion and perseverance for long-term goals."[20(p1087)] Intrinsic motivation is essential in adult learners, and it is superior for achievement and learning when compared to extrinsic motivation.[19,21] Bomia et al[22] state that intrinsic motivation "also known as self-motivation, refers to influences that originate from within a person which cause a person to act or learn." When a learner is self-motivated, they may go above and beyond the course requirements which can assist learning even in the absence of external motivation and in the face of obstacles and challenges.[22] It leads to better creativity and more complex thinking.

As previously mentioned, it is important to establish clear outcomes and goals at the beginning of the course. This provides learners with a target to strive for; throughout the semester, instructors provide frequent and meaningful feedback so learners can measure themselves against those metrics. In instances featuring psychomotor skills like a special test or dynamic processes like a patient interview, using a learner from a previous cohort can provide a powerful example of peer modeling. Learners are more engaged, less fearful, and better able to connect with and comprehend content when demonstrated by someone similar to them, especially when it occurs in a positive context.[23] When learners can see a peer execute and explain what they are working toward, it makes it easier for them to visualize themselves accomplishing the same thing.[23]

Another means to improve learner motivation is to limit assignments and coursework solely to items that are meaningful and helpful to learning. Outside of summative assessments, if an assignment or assessment does not provide an opportunity for relevant practice and feedback, it is not required.

Grading practices also impact motivation. Suppose a learner misses an assignment or performs poorly early in the semester. That can greatly hamper their motivation, as it becomes evident that they have little mathematical chance of achieving a high grade.[21] Despite what many educators think, giving learners low scores and zeroes does not motivate them; it has the opposite effect.[3,21] The perceived versus real effects of submitting late work are similar to that of a zero grade. Learner motivation decreases as their grade situation becomes more grim, regardless of their understanding of the content.[21] By allowing the learner to submit the work late, their level of understanding can still be gauged. While offering the ability to submit work late does provide flexibility to learners, it can also create a new challenge when they fall behind and missing assignments accumulate. This is another area where support is needed beyond a change in policy and practice. It is beneficial to provide coaching or work with learners to develop a learning plan or contract to assist them in improving accountability to help them meet course expectations.

Outcomes

Equity is a simple concept, but it is difficult to implement. The changes described in this case study were piloted over several years in multiple courses and cohorts to create grading practices that were equitable for all learners. Anonymous qualitative data were collected from learners via surveys regarding their impressions of the changes in grading practices; those impressions are summarized below.

Some learners were initially uncomfortable with the changes and disliked the lack of opportunities for points; they said it increased feelings of stress and pressure. Other learners appreciated the space and opportunity to be assessed on concepts without stakes before the end of the semester. They said the lack of initial stakes decreased their stress and anxiety. Others felt it was unfair that their classmates were given additional opportunities to earn the same grade as them when they only needed one attempt at the assessment.

For the faculty, additional work was required to provide feedback to learners on formative assessments rather than just a grade. Extra time was also needed to curate learner-specific remediation processes. Despite these significant additional demands, the faculty's sentiment was that it was worth it for the learners. In some courses, the median final grades improved. In others, they stayed about the same, and in one instance they decreased slightly. For most learners, these practices did not move the needle much in terms of their final grade, but for others, the changes resulted in much higher grades than they would have earned otherwise. The result was improved retention of learners who have historically struggled.

Moving Forward

There are many benefits of equitable grading that can improve the learning experience for faculty and learners. However, there are perceived challenges to implementation that must be addressed. Overall, faculty report 4 main concerns with changes to grading practices (Tab. 2): (1) a decrease in learner motivation; (2) a decreased ability to academically differentiate learners; (3) insufficient time or training to implement changes in grading; and (4) the perception of decreased rigor in academic programs that use equitable grading practices.

Meanwhile, learners shared concerns and uncertainty regarding the ways that different grading practices might impact their academic standing and classroom experience (Tab. 3). Grades and the practices surrounding them are a tremendous part of personal identity both for learners and faculty, so their concerns are understandable given the role of grades as the sole currency in education. However, those concerns may be misplaced given what available evidence shows (Tabs. 2 and 3).

The authors have several suggestions for implementing more equitable grading practices:

1) Generate buy-in and understanding on the part of faculty.
2) Explain any changes and their rationale to learners at the start of the program to help them understand the differences; these strategies were a major change for faculty and the same was true for learners.
3) Maintain continuous communication with learners emphasizing that the changes are meant to create a better learning experience.
4) Prepare the faculty for an increased workload. Providing feedback and creating processes and assessments for retakes and remediations is time- and labor-intensive.
5) Provide flexibility in the implementation of these strategies. These changes will look different in different types of classes, so faculty need autonomy in their respective courses.

Programs considering the implementation of equitable grading practices should examine their current practices and ask questions to understand what their grading systems are portraying. To start the conversation, the authors created a (non-exhaustive) list of questions that will help programs investigate what their current grading systems are and the beliefs surrounding them:

- Do your program's grading practices represent the axiology and ontology of the instruction?
- Where do the beliefs about grading stem from? Are they based on current evidence?
- Do your current grading standards reflect achievement of learning outcomes, or something else (teaching effectiveness, institutional evaluations, etc)?
- Does your program focus more on sorting learners into categories and tiers like the bell curve, or does it focus more on helping every learner achieve the learning outcomes of each course?
- How does the use of traditional A to F grading practices prepare learners for National Physical Therapy Examination licensure exam which is pass or fail?

Exploring the answers to those questions and examining the evidence supporting equitable grading can help launch DPT programs into a new era where learners and faculty can cocreate what it means to learn.

Conclusion

The traditional A to F grading system used in physical therapist education features elements that may be perceived as biased and may not be reflective of the most contemporary

Table 2. Faculty Perceived Barriers Vs Evidence for Implementing Equitable Grading

Perceived Barriers	Evidence in the Literature
Learning increases when a grade is given because: • Bad grades motivate learners to try harder[3,19,23–26] • Grades motivate learners to participate in class[22,23,25,27] • Grades motivate learners to complete their homework[3]	Bad grades promote withdrawal from learning— learners feel like the class doesn't matter, or they feel helpless to improve.[19,25,27] Bad grades negatively impact future academic success and motivation.[24,28–30] Learners striving for grades show behaviors of gamification, leading to less emphasis on learning.[24,27] Including a grade along with descriptive feedback still resulted in decreased future learning performance compared to descriptive feedback alone.[28] Learners show decreased engagement with descriptive feedback when a grade is given first.[29–31] Participation points create room for bias, especially against learners of color and lower social economic status.[3] Learners show more engagement with classroom participation and homework when the experience is meaningful to them (intrinsically motivated) rather than for a grade (extrinsically motivated).[3,24,25,27]
Grades help institutions evaluate and sort candidates for additional training or hiring purposes[29,31]	Bell curves should not apply to teaching as they represent random chance and assume that intelligence is distributed in a normal distribution (which is false).[3,27] Grading practices should promote learners reaching the learning outcomes, not promote sorting of learners.[3,25,27,30] Grade hacks and/or grade inflation that occurs with curving, participation points, and counting homework points into the final grade is a false representation of learners' knowledge.[3,27,30] Having clear standards to meet learning outcomes without grade hacks/inflation will improve interrater reliability and improve transparency,[3,24] making grades more reliable and valid.[3,27]
Faculty do not have the time, expertise, or support to implement a change in grading practices[15,32–34]	Only few faculty members have formal training on grading practices, relying on previous personal experience and institutional norms instead of best practices.[3,32,34] Faculty who switched to standards-based grading reported an initial increase in time on the front end of the class; however, they noted grading was easier and more time efficient, learners were more active in the learning, and the responsibility to earn a grade shifted toward the learner.[32,34]
Programs with equitable grading are academically less rigorous[3,27,35]	Equitable grading requires careful planning by faculty to outline course learning outcomes and standards to achieve them, thereby increasing rigor as grades are solely based on reaching the standard.[3,21,27,32,34]

Table 3. Learners' Perceived Barriers vs Evidence for Implementing Equitable Grading

Perceived Barriers	Evidence in the Literature
Feeling uncertainty and discomfort with a change in grading practices[15,27,32]	Learners report increased ownership of the learning experience.[34] Learners like the transparency, descriptive feedback, and opportunities to improve.[3,26,27] Learners report decreased stress, which promotes a healthier and more engaging learning environment.[26,30,33,35–37] Learners report more time for reflection and deeper learning when descriptive feedback was given without grades.[28,31] A team atmosphere was created instead of a competition between classmates.[28,31] There were more opportunities for learners to weave in their interests with focus shifted toward learning rather than grades.[3,24,31]

pedagogic practices. That system also does not support competency assessments. Competency assessments aim to identify learners' ability to demonstrate knowledge or perform a skill relative to an established standard. If institutions truly wish to improve diversity and inclusion in physical therapist education, now is the time to reassess and question the utility of antiquated grading systems that discriminate against historically marginalized and minoritized learners. Therefore, faculty must be willing to challenge their assumptions by looking at the evidence that questions traditional grading practices. Additionally, programs should be encouraged to improve grading practices based on CAPTE standards promoting equitable and inclusive grading.[9]

Equitable grading practices directly reflect the call for inclusive grading by being resistant to bias, mathematically accurate, and motivating for all learners.[3,38] The benefits of inclusive grading may be plentiful, including attracting a more diverse pool of learners into physical therapist programs, increasing learner success once matriculated, and eventually diversifying the physical therapist workforce both in the clinical and academic settings. Diversity and inclusion in physical therapy are vital to address health disparities,[4,6,7,39,40] and grading for equity is an important key in unlocking this urgent initiative.

Author Contributions

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