

Research on the Development of the Grade Point Average System in Higher Education—Re-understand the Connotation and Function of GPA

Wenxiu Zhang*

Beijing International Studies University, Beijing 100024, China

**Author to whom correspondence should be addressed.*

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Abstract: With the continuous advancement of the internationalization of higher education in China, the Grade Point Average (GPA) has become a primary indicator for evaluating academic performance in universities, playing a positive role in educational management. However, as it is closely tied to students' immediate interests, such as awards, exemptions from entrance exams for postgraduate recommendations, and domestic or international further education, certain new issues have emerged in its practical application. These problems have hindered the effective functioning of the GPA system, attracting widespread attention. This paper examines the origin, connotation, and theoretical assumptions of the GPA system, discusses its positive functions and existing challenges, and proposes recommendations for further improving academic evaluation.

Keywords: Point system; Grade point average (GPA); Academic evaluation; Educational management

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1. Introduction

The grade point system is a crucial teaching management mechanism in modern higher education, employing the Grade point average (GPA) to assess both the quality and quantity of student learning, the grade point system discussed in this paper refers to GPA in its broad sense. In recent years, with the ongoing reforms in higher education, GPA has been adopted by an increasing number of universities and has gradually become a core metric for evaluating students' academic performance and comprehensive competencies. However, certain issues have surfaced during its implementation, prompting scholars to reflect on the efficacy and limitations of GPA. Against this backdrop, a thorough exploration of the educational management logic of GPA, tracing its origins, connotation, and original design intent, is essential for clarifying its role as an educational management mechanism. Such an analysis holds significant importance for optimizing university teaching management and enhancing educational quality, thereby providing theoretical support for deepening the reform of higher education evaluation in China.

Given that the implementation of this system varies globally, particularly in terms of its effectiveness and associated challenges, this paper will focus on the context of China, even though similar issues and conditions may also be relevant in other educational systems.

2. The origin and development of GPA

2.1. The origin of GPA

The Grade Point Average (GPA) is a widely adopted academic evaluation system in higher education, functioning as a teaching management mechanism that converts raw course scores into grade points based on predefined rules^[1]. It originated in the United States. The emergence of GPA is closely tied to the development of the elective course system and the credit system. In the late 18th century, German educator Wilhelm von Humboldt actively advocated for academic freedom and individualized education, emphasizing that higher education should cultivate learners' independent character and creative abilities^[2]. Guided by this philosophy, he pioneered the elective course system at the University of Berlin, using it as a key vehicle to implement his educational ideals.

In 1825, the elective course system was experimentally introduced in the United States. By 1869, under the leadership of President Charles W. Eliot, Harvard University implemented a significant educational reform. Addressing the shortcomings of traditional education models that neglected individual differences, Eliot proposed a personalized cultivation approach, arguing that students vary significantly in aptitude, interests, and other aspects, and that a uniform teaching model would constrain their potential. To address this, he advocated for expanding students' course selection options, granting them autonomy to choose learning content based on their interests and abilities. However, due to the lack of a unified metric for comparing course progress and the varying quality of courses across departments, Harvard introduced an innovative evaluation mechanism by assigning credits to elective courses based on key parameters such as course difficulty and study hours. This innovation led to the establishment of the credit system.

Subsequently, credits were used to measure students' effective learning time, for example, the "quantity" of learning^[3]. The credit system provided students with a mechanism for autonomous course selection, requiring them to meet course standards to earn corresponding credits. This system ensured the validity of learning outcomes and became a crucial safeguard for achieving educational goals and competency development. However, a limitation of the credit system was its inability to reflect the "quality" of learning, only quantifying its "quantity".

In the early 20th century, with the expansion of the elective course system and the development of the educational testing movement in the U.S., universities needed a standardized method to evaluate interdisciplinary learning quality. To address the limitations of credits in assessing learning quality, some American institutions began introducing the concept of grade points to enhance the credit system. For instance, they adopted a four-point scale (4.0) to calculate academic performance, implemented a "letter grade system", A, B, C, D and F. Then, it was assigned quantitative values to each grade, for example, A = 4.0, forming the rudimentary structure of GPA. Thus, as a "supplementary" measure to "refine" the credit system, GPA emerged. Due to its relatively uniform and quantifiable nature, it was used to assess students' academic performance.

By the 1950s, the American Council on Education (ACE) promoted the standardization of GPA, establishing it as a core criterion for university admissions and scholarship evaluations. Over time, its influence expanded globally.

2.2. The development of GPA in China

In China, the GPA system was initially introduced by Boling Zhang at Nankai University in 1919, but its implementation was subsequently discontinued until its reintroduction into the higher education teaching and student academic evaluation system in 1985^[4]. Against the backdrop of China's ongoing higher education internationalization, the continuous expansion of international student enrollment has necessitated the gradual alignment of domestic universities' academic evaluation systems with international standards. To accommodate this developmental trend, numerous higher education institutions have adopted the GPA system. Currently, this internationally recognized academic assessment method has been comprehensively implemented within Chinese universities' teaching management systems, evolving from initial pilot explorations to a widely adopted core management mechanism that now constitutes an essential component of modern higher education administration systems.

3. The connotation and core logic of GPA

GPA serves as a quantitative tool for academic assessment and a teaching management system complementary to the credit system. Its essence lies in transforming course grades into grade points through relatively standardized and uniform methods to evaluate student performance across different courses, thereby providing an objective measurement and assessment of learning outcomes. Fundamentally, it aims to communicate student learning information through objective evaluation and offer feedback, enabling students to understand their academic status and optimize learning strategies^[5]. Historical analysis reveals that GPA's emergence was predicated on grades being universally recognized as meaningful alphanumeric symbols carrying representational and symbolic significance in educational practice, with stakeholders acknowledging their validity^[6].

3.1. Educational measurement hypothesis

GPA quantifies learning outcomes. Based on the premise of a unilinear "grade-ability" relationship, it posits that course grades objectively and accurately reflect students' knowledge mastery and competency levels. Grade variations across all courses can be standardized through a uniform grade-point conversion scale for example, A = 4.0, B = 3.0, enabling cross-disciplinary, inter-instructor and trans-semester comparability.

3.2. Motivation hypothesis

GPA stimulates academic competition. The educational community generally believes that grades effectively motivate students. As an assessment tool, GPA functions as an incentive mechanism, encouraging greater academic effort. The grade-point differential creates a "reward-excellence, penalize-underperformance" effect, driving students to refine learning strategies.

3.3. Objectivity and fairness hypothesis

GPA standardizes evaluation criteria. Comparatively, GPA represents a fair and objective assessment metric. For students, the equivalency of grade-point values fosters a sense of fair competition and authentically reflects the value of their learning achievements. For institutional administration, GPA shifts the evaluation of learning quality from quantitative scores to qualitative assessment, providing clear benchmarks for academic competitions and educational planning. For employers, GPA offers an objective measure of academic proficiency, facilitating superior candidate selection.

3.4. Goal-attainment feedback hypothesis

GPA optimizes teaching management. It reflects the degree to which students achieve predetermined learning objectives. Instructors can diagnose teaching effectiveness through class GPA distributions such as identifying anomalous grading patterns where consistently high or low scores may indicate needed pedagogical adjustments or even curricular reforms.

4. The role of GPA in higher education management

4.1. Educational evaluation function: Enhancing assessment transparency and fairness

GPA's core advantage lies in its objectivity and standardization. By converting course grades into uniform grade points, it enables normalized evaluation of academic performance, providing comparable feedback for both teaching and learning. Students can conduct horizontal or longitudinal self-assessments through GPA to clarify their academic standing such as "developmental balance", while instructors gain insights into teaching effectiveness and learner characteristics, informing pedagogical adjustments and more targeted instructional interactions.

4.2. Resource allocation efficiency: Facilitating inter-institutional and global compatibility

GPA's international comparability makes it a "universal currency" for student mobility and credit recognition. As a tool for measuring and evaluating course performance, it promotes mutual adaptation of assessment and certification across institutions. Widely adopted globally, particularly in U.S. higher education, European universities frequently employ the "European Credit Transfer and Accumulation System" (ECTS) to convert national grading systems into GPA equivalents. This transparency and interoperability transform GPA into a "technical bridge" for educational recognition, enabling comprehensive cross-system comparisons of academic achievement.

4.3. Institutional incentive effect: Encouraging sustained learning and refined effort

GPA translates learning outcomes into visible, comparable "steps". Clear numerical targets prove more directive than abstract learning requirements, not only stimulating student motivation but also fostering greater course engagement. Through goal visibility and outcome controllability, it effectively activates learning drive.

4.4. Diagnostic and early-warning functions

Corresponding directly to academic performance, GPA serves to evaluate learning progress and effectiveness over time. Its numerical values enable timely identification of at-risk students, providing early warnings and alerts, thereby fulfilling diagnostic and monitoring functions.

5. Problems in the implementation of GPA

Any teaching management system has its applicable scope and contextual limitations. As an educational assessment tool, if its role is excessively amplified, GPA may deviate from its original design intent. Currently, in China, while the development and application of GPA have yielded positive outcomes, they have also triggered several issues that undermine the system's functionality, drawing criticism from scholars.

5.1. Functional alienation of assessment: Inducing learning alienation and utilitarian behavior

Historically, GPA emerged alongside the credit system as a tool to evaluate students' learning capabilities and knowledge levels. However, in China's higher education context, the boundaries of GPA's functions have expanded beyond its original purpose. Many universities now extend its use from academic evaluation to broader educational management, making it a core reference metric for student affairs.

Specifically, GPA data are widely applied in non-academic scenarios such as postgraduate recommendation eligibility, scholarship allocation, and employment referrals. This cross-domain application has led to GPA being misconstrued as an absolute measure of students' comprehensive abilities. When academic evaluation becomes overly tied to extrinsic incentives, students may prioritize achieving high scores over maximizing genuine learning outcomes^[7], shifting their focus from knowledge acquisition to GPA optimization. This instrumental rationality displaces the value rationality of education, creating two forms of alienation. First is the distorted assessment validity, where some students strategically select low-workload courses to inflate their GPAs, where high scores reflect course selection tactics rather than true academic effort or capability. Next is the deformed learning ecology, as the academic competition degenerates into irrational, metric-driven rivalry. Thus, in order to compete and score for high GPAs, students exploit elective freedom to calculate grade trade-offs instrumentally, reducing learning to a byproduct of GPA accumulation^[8].

This creates a paradox where GPA transforms from an assessment tool into an end goal, dictating learning behaviors and causing educational alienation^[9]. Such mechanisms fail to accurately measure real academic achievement and distort the teaching-learning dynamic, ultimately derailing the educational process.

5.2. Weakened diagnostic and early-warning functions

As a core system for measuring learning outcomes, GPA should ideally monitor academic quality and diagnose learning progress, serving as a reference for self-management and skill development. However, in practice, its diagnostic and feedback functions have significantly weakened, while its selective role has intensified, turning it into a competitive mechanism for identifying "high achievers". Research indicates that compared to its focus on top performers, GPA systems often neglect academically struggling students, even undermining their potential for improvement^[10]. This imbalance disproportionately prioritizes a minority of high-ranked students while failing to provide adequate support or early warnings for those in the middle or lower tiers^[14].

5.3. Narrowed evaluation dimensions

GPA's overemphasis on ranking and selection in practice renders it inadequate for assessing critical competencies such as critical thinking, innovation, communication, collaboration, practical skills, social responsibility, emotional attitudes, and aesthetic literacy, all essential for students' future development. This transforms GPA into an "evaluation hegemony", trapping students in a cycle of "learning for GPA" at the expense of holistic growth. Educational goals become hijacked by instrumental rationality, compromising talent cultivation quality. Moreover, as students compete for marginal GPA advantages to employment opportunities, score differentiation diminishes to decimal places, forcing rankings to rely on excessively precise calculations. Such practices strip GPA of its authentic educational purpose, compelling students to obsess over microscopic ranking distinctions while neglecting meaningful learning experiences^[11].

6. Reflections and recommendations

The GPA system, originating during the Industrial Revolution, bears distinct characteristics of industrial-era management. Historically conceived as an assessment tool to measure academic quality, its theoretical foundations reflect this original intent. However, in the current era where artificial intelligence and other technologies are transforming education, industrial-age evaluation standards have become increasingly inadequate for meeting talent cultivation needs in the intelligent era, necessitating a paradigm shift in educational management philosophy and methods^[12]. Re-examine GPA's core values is a must to reconsider its functions, innovate evaluation concepts, and develop new assessment paradigms to promote its healthy development.

6.1. From “screening logic” to “growth logic”: Establishing a diversified developmental evaluation system

Currently, GPA systems adhere to “screening logic” in many universities, employing standardized testing and uniform metrics to stratify students. This approach overlooks learner diversity and developmental potential. We recommend supplementing GPA with additional evaluation dimensions that integrate quantitative and qualitative measures, focusing not just on scores but also on individual student characteristics to create an assessment ecosystem supporting differentiated development. Institutions should gradually optimize GPA-centered evaluation mechanisms by appropriately reducing its weighting in various assessments, positioning GPA as a limited and reasonable screening tool.

Simultaneously, they should maintain a fundamental orientation toward diversified development, incorporating multidimensional indicators including academic achievement, moral character, practical skills, and physical-mental literacy to establish a comprehensive, balanced evaluation system that effectively guides students coordinated development in moral, intellectual, physical, aesthetic, and labor education^[13].

6.2. From “summative judgment” to “processual navigation”, constructing a dynamic assessment system

Universities should establish stable systems and platforms enabling students to promptly access their GPAs after each semester or academic year and deeply understand the academic significance these metrics convey. Educational administrators should provide academic warnings to lower-performing students, identify learning challenges, help students address problems promptly, adjust learning approaches, and utilize semester-by-semester GPA tracking to monitor academic progress and provide targeted growth recommendations. This transforms GPA from a static outcome measure into a dynamic tool supporting continuous improvement^[13].

7. Conclusion

As a crucial higher education management system, GPA serves multiple functions including facilitating students' personalized development, enhancing teaching quality, and optimizing the allocation of educational resources. Its educational management logic is student-centered, providing robust support for institutional teaching administration through dynamic evaluation, multidimensional assessment, and incentive-constraint mechanisms. However, implementation has revealed several issues, including excessive attribution of non-educational functions to GPA, students' utilitarian pursuit of grade points, weakened diagnostic and warning capabilities, and narrowed evaluation dimensions^[15].

To address these challenges, universities should implement corresponding measures to refocus on education's fundamental purpose, guide students in establishing proper learning perspectives, optimize academic evaluation

mechanisms, and promote transformational shifts in educational paradigms. These steps will enable GPA to fully realize its positive role as an academic assessment tool and advance the high-quality development of higher education.

Disclosure statement

The author declares no conflict of interest.

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