

# *Evaluating Harkness with China's Growing Interest in Project-Based Learning Studies in High School*

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**Abstract:** As China advances its educational methods, it has incorporated innovative approaches into high school education, notably Project-Based Learning (PBL), which emphasizes hands-on learning experiences to improve academic performances among students. Another pedagogy, Harkness learning, shares similar educational goals with PBL, prompting discussions about their potential collaborative use in Chinese high school classrooms. This paper examines the feasibility of such implementation by exploring the origins, influences, and practical considerations of Harkness learning, introducing China's high school education system and discussing PBL implementation in China. The paper concludes that Harkness and PBL can potentially complement each other effectively, as Harkness specializes in refining academic abilities, while PBL aims to enhance general subject knowledge. As there is a relative scarcity of research material in this specific field, this literature review holds substantial importance for scholars who intend to conduct further research on the collaborative integration of Harkness and PBL, particularly within the context of implementation in China.

**Keywords:** Philosophy of Education, Pedagogy Harkness, Project-Base Learning, Chinese High School Education

## 1. Introduction

In the ever-evolving landscape of education, the quest for effective teaching methodologies continues to captivate educators and researchers alike. With so many other opportunities, Harkness teaching methodology stands out as an intriguing model that places students at the center of the learning process. Rooted in discussion-based learning and designed to foster independent thought and critical analysis, Harkness holds the potential to revolutionize the way education is approached, particularly within the context of China's growing interest in Project-Based Learning (PBL) within high schools.

Harkness teaching is a form of discussion-based learning that proves elusive to define precisely. Several goals of this pedagogy include “leading student-centered discussions in class, facilitating ways for students to make self-discoveries, helping them draw their own conclusions, teaching them how to consider all aspects of an argument, and enabling them to form their own opinions” [1]. The pedagogy received its name when philanthropist Edwards Harkness approached the then principal of Phillips Exeter Academy, Dr. Lewis Perry, in the 1920s. Harkness promised a generous donation if the school could devise an innovative teaching method distinct from conventional approaches. After a decade, the Harkness method was born. This method envisioned a classroom where students no

longer sat in rows of chairs, passively listening to lectures. Instead, it centered on the notion that students, armed with their relevant materials, would engage in discussions that incentivize self-learning. Here, teachers would function as learning guides rather than mere speakers [1].

This literature review will explain the Harkness teaching methodology, its underpinning theories, implementation considerations, and its potential use with China's burgeoning rise of interest in Project-Based Learning. Through an examination of existing literature, this review seeks to provide insights into how the integration of Harkness principles into Project-Based Learning initiatives could hold the key to reshaping China's high school education system.

### 1.1. Theories Influencing Harkness

There isn't a particularly extensive body of scholarly work in Harkness. On one hand, the Harkness method has only existed for a hundred years, and its applicability remains limited as it was exclusively designed for private boarding schools like Phillips Exeter Academy. Nevertheless, we can trace the ideologies of the philosophy of education that underlie some of the fundamental concepts of Harkness. After all, philosophers from earlier ages have long recognized the limitations of traditional lecture-based learning.

For instance, St. Augustine, who lived during the mid-4th to early-5th century, argued that ostensive learning merely serves as a reminder of what students already know through signs—conceivable language uttered by the teacher [2]. He categorized things into the sensible—knowledge that can be recalled through tentative learning—and the intelligible—information God directly inscribed into the human brain. Subsequent Enlightenment critiques then argued that such intelligible knowledge is transcribed by humans' cognitive nature of reasoning [2]. Of course, there are fallacies in Augustine's theory, but the self-acquiring nature of knowledge forms one of the foundations of Harkness. This concept entails the idea that teachers facilitate the self-inquiry of knowledge rather than directing it like pouring water into an empty cup.

Later, other Enlightenment philosophers also contributed ideologies that parallel some of the focal points of Harkness. Locke's *Thoughts Concerning Education* proposed the importance of the environment in shaping a person's malleable educational future. Jean-Jacques Rousseau's *Emile* emphasized nature in education, sensory experience, and the individuality of a person, which aligns with the self-acquiring theme of Harkness. Kant focused on stages of education and highlighted the development of rational thinking in education. While these philosophies of education had a significant impact on the field, they won't be the focus of this review due to their limited length. However, one philosopher left a profound impact on the pedagogy of Harkness like no other philosopher did: John Dewey.

Dewey's philosophy of education stems from his democratic ideals. While that is important, I wish not to delve into the topic extensively. Instead, I would like to concentrate on the educational ideologies he offered, which carry his spirit of democratic education. Like Augustine, Dewey believed in a dualistic approach to the body and mind of humans. The "mind is considered separate from the body, whose activity is viewed as an alien influence on how the mind learns" [3]. The danger of conventional schooling lies in the risk of isolating how we learn from what we learn. Dewey argued that conventional schooling largely centers on the "mindless use of rote methods and mechanical routines" [3], which obstruct the values of genuine growth—growth in all aspects such as "skills and power, knowledge and appreciation, value and thought" [3]. This is something that conventional vocational-focused education cannot achieve. Dewey's holistic approach to growth and critique is closely relevant to the goals of Harkness, which aims to foster similar growth in students. As Brookfield and Preskill describe in their book, *Discussion as a Way of Teaching: Tools and Techniques for Democratic Classrooms*, some of the benefits of discussion-based learning, such as

“diversity of perspectives... intellectual agility... respect... clear communication... skills for synthesis and integration,” overlap significantly with Dewey's definition of growth [4].

Another influential idea is perhaps Dewey's emphasis on the pattern of scientific inquiry, which differentiates itself from the scientific knowledge that a student receives from their teacher. This scientific method focuses on exploring rationale and inquiry, corresponding to the academic interest and critical thinking that Harkness aims to develop in students. Dewey's goal in his ideal liberal civilization is this “authority of scientific method” [3].

Surprisingly, Dewey's standard of a good teacher also largely represents the role a teacher pursues in Harkness. Dewey underscores intellectual competence, which is standard by nature, but he equally emphasizes the importance of a teacher's patience in providing good teaching. This is a crucial aspect of Harkness, as this student-discussion-based pedagogy will often encounter challenges such as eliciting student curiosity, navigating "freezing" conversations, and more, as presented in the later section of this review. Other teacher values that Dewey underscores are also important for a successful Harkness classroom, such as knowledge of the student, the ability to sympathize, and a vision of intellectual enthusiasm and detachment that will provoke a passion for excellence [3].

The Brazilian philosopher Paulo Freire also has important educational philosophies that resonate well with Dewey's. Freire's experiences growing up in poverty shaped his views and ideologies. His pedagogy of the oppressed is centered around the Neo-Marxist Theory from the Frankfurt School. Due to these influences, Freire's ideologies are much more political and radical, inheriting the Marxist notion of imbalances in power dynamics within a classroom. Freire's significance in Third World education lies in the fact that there are still limited models of progressive education available, making John Dewey's approach hardly accessible in these areas. As Hederman commented in his work, he found that education in Kenya was still “colonial,” with students adhering to a strict, oppressive method of learning, even involving correct greeting formulas for teachers[5].

Freire distinguishes between education and propaganda, with the latter being something he believed was widespread worldwide. Education involves teaching people and allowing them to discover things independently, while propaganda dictates what people are forced to see [5]. As Freire states in "Pedagogy of The Oppressed" [6], “(oppressors) must mythicize the world... the oppressors develop a series of methods precluding any presentation of the world as a problem and showing it as a fixed entity, as something given—something to which men, as spectators, must adapt.” Although this review acknowledges that Freire's educational arguments have a radical nature for discussion, there is merit in examining their influences. Without overly politicizing the matter, there are many areas where the educational dynamic is characterized by an imbalanced power structure in the classroom, where students are mere recipients of information rather than thinkers who delve into the bigger picture, such as in China. The scenario Freire describes is precisely the status quo that Harkness aims to address, aligning with its goal of transforming students from passive observers into individuals equipped with critical thinking skills.

## **1.2. Considerations of Harkness**

### **1.2.1.Pre-Class Considerations**

Several prerequisite standards should be considered by both students and teachers before engaging in Harkness learning. As defined previously, the Harkness study focuses on students; thus, student participation and preparation are crucial for the success of Harkness discussions. Materials then become important in cultivating the academic attention necessary for the ensuing discussions during class time. Therefore, to facilitate productive discussions, teachers practicing Harkness should strive to find controversial materials that introduce different viewpoints on the same event to students. While textbooks are a great way to provide context, they can be too dry for later discussions.

Therefore, interesting supplemental texts are crucial in provoking independent and critical thinking even before the class [1]. To illustrate, a primary source reflecting Martin Luther King and Malcolm X's ideologies on the social rights movement would be an excellent supplemental text, offering diverse perspectives and inviting students to analyze and compare the differences.

Another important consideration for teachers is to maintain a holistic perspective, recognizing that questions will not necessarily be definitively answered during the discussion. The purpose of a Harkness classroom is not to solve or ascertain the truth of a particular topic but rather to help students develop their questions, enabling them to think independently toward solutions and fostering the growth of independent thinking. While teachers must certainly be well-versed in the course material and knowledgeable enough to facilitate such development, it's also encouraged for teachers to include questions that prompt students to think. In other words, teachers should pose ambiguous questions that don't have a clear endpoint for discussion [1]. For instance, an effective question in a history class could be, "If you had the opportunity to prevent Truman from bombing Hiroshima and Nagasaki, would you do it?" instead of a simple factual question like "When were Hiroshima and Nagasaki bombed?" The latter type of question would likely only "elicit a one- or two-word response" [1].

### 1.2.2. In-Class Considerations

A Harkness classroom is an unpredictable one [1]. As the pedagogy can only achieve success with student engagement, silence is the greatest enemy of Harkness. However, there should be different responses from the teacher to silence in various stages of Harkness time.

The most awkward phase for Harkness is when the class begins in silence, a situation familiar to many teachers attempting to implement Harkness. In such instances, it may be beneficial to inquire about the difficulties students are facing. These could range from a lack of interest in the planned discussion topics, struggles with comprehending the reading materials, or simply feeling disengaged or misinformed by the provided content [1]. If students express any of these concerns, it might be wise to revisit the prerequisite preparations before fully diving into Harkness discussions.

Yet, periods of silence can arise at any point during the class. Students might be deeply engaged for the first twenty minutes, only to remain silent for the next twenty. Many teachers might be tempted to revert to traditional lecture-based teaching to fill the silence, but this approach would negate the goals Harkness aims to achieve. Rather than taking over the discussion, teachers should concentrate on understanding the cause of the silence. As recommended by Smith and Foley [1], "allow the class to sit in silence for about thirty seconds. If nothing occurs, the teacher can then pose the question, 'Why this silence?'... The class can collectively explore the reasons behind the silence."

### 1.3. Field Study of Harkness

Two field studies examined the effects of implementing Harkness in the classroom. The first study was conducted at The Manchester Grammar School in England, where the school introduced Harkness in History classrooms at two different levels: AS and A Level. The AS level focused on the Civil Rights movement and Foreign Policy in America, while the A level covered the Cold War. Harkness discussions occurred at least once weekly, followed by teacher summaries of the class outcomes. Additionally, the study evaluated student performance in exam-based essay questions after implementing Harkness [7].

Another study compared the effects of Harkness in Advanced Placement Calculus classrooms—a unique angle since there's limited research on the impact of Harkness in STEM-based classrooms. In a more informal approach, teachers documented their experiences and adapted Harkness to suit the STEM environment.

The results from The Manchester Grammar School study were predominantly positive. Teachers noted that students were reading at a higher level than usual due to the reading habits they developed through Harkness practices. When Harkness was employed to conclude topics, students displayed greater engagement and offered more constructive and critical arguments due to their increased familiarity with the text. The study also highlighted improvements in students' writing skills, as reported by the teachers [7].

However, there were issues with classroom dynamics, where certain students contributed less due to inadequate preparation or introverted tendencies that led them to observe rather than participate. The Manchester Grammar School devised innovative approaches inspired by the Harkness concept to motivate students further. For instance, "Chairman" lessons involved selecting a student to introduce a problem for class discussion. "Thesis Statement" classes followed a similar ideology, emphasizing creating a thesis before a writing assignment. "Harkness Pairs" was implemented in larger classrooms, where students assessed each other's performance in discussions and collaboratively sought improvement [7]. In conclusion, the study highly praised Harkness for its problem-solving capacity within discussions and its potential to foster personal growth in students.

The other study encountered more significant challenges initially when attempting to implement the method. The calculus teacher, Quentin Donnellan, faced a group of disinterested high school students who simply wanted to leave the classroom as soon as possible. Despite Donnellan's careful planning of his Harkness approach, the students did not engage with excitement. Instead, most students remained silent, with a few attempting unsuccessfully to initiate discussions. As Donnellan recounted his students' words, "In math, you're either right or wrong [8]. It was evident that students initially did not appreciate the discussion-based Harkness method, which seemed more suitable for humanities courses on the surface.

Consequently, Donnellan shifted his focus towards emphasizing problem-solving steps rather than the correctness of math problems. He introduced five stages of discussion in his calculus classroom: "exposition, problem statement, road map, solution, and extension" [8]. The exposition aimed at building foundational knowledge on a problem, with students discussing all relevant details without starting to solve the problem. The problem statement addressed the objective of the problem, while the road map required students to outline their solution steps before implementing them [8]. Donnellan argued that this method compelled students to abandon the habit of seeking answers immediately and fostered rational thinking when approaching mathematical problems. Once students grasped the process they needed to follow, discussions sparked interest. Students built upon observations and discovered approaches to issues that proved more effective. They began to feel more competent in tackling challenging questions as they developed the ability to apply math-solving skills to various scenarios rather than just seeking answers [8]. This method was also applied in an English class, yielding similar positive outcomes by enhancing students' learning abilities without focusing solely on finding answers.

As both field studies demonstrate, Harkness is exceedingly beneficial in fostering personal growth in students' academic capacities, such as independent thinking, writing, and reading, among others. Nevertheless, the method has limitations, with some critics questioning whether students would be sufficiently self-motivated to replicate the successes witnessed at The Manchester Grammar School or in Donnellan's classroom. Indeed, further research is needed to explore the applicability of Harkness, as there are limited comparable studies in this field. For example, what would be the effects of implementing Harkness in different educational settings, such as in Third World countries or in nations with distinct educational philosophies, like China? These gaps highlight the necessity for additional research. In light of such gaps, this study will endeavor to connect the education status quo in China with a Harkness perspective in the subsequent discussion and theoretically assess the connection with the Chinese education system and the growing interest in Project-Based Learning.

## 2. The Status Quo of Chinese High School Education

Chinese education has never been devoid of liberal influences. Many scholars assert that among all Western educators, Dewey had the most significant impact on the progression of Chinese education. However, Dewey's legacy faced consistent challenges in China, where native education philosophies rooted in Confucianism and Marxism prevailed. Moreover, subsequent political ideals further impeded the dissemination of Dewey's educational philosophy [9].

The current Chinese education system commences with a nine-year compulsory education aimed at reducing illiteracy rates within Chinese society. After this compulsory phase, students typically undergo a Chinese high school education. This phase encompasses various types of high schools, including General High School (Regular Senior High School, Advanced Senior High School, Twelve-Year Integrated School), Adult High schools, General Secondary Vocational Schools, Adult Secondary Vocational School, Vocational High Schools, Technical School, or Vocational School [10]. Each of these institutions serves a distinct purpose, aligned with the types of human resources required by Chinese society—echoing Mill's Utilitarianism ideals of education. For the context of this discussion concerning Harkness, our focus will be on Senior High Schools in China.

Given the immense population, China grapples with limited educational resources. A mere 44 percent of secondary school graduates manage to secure entry into Senior High Schools, with others enrolling in vocational schools offering vocational education instead of general education [11]. Another crucial aspect to consider is the suppression of individualism among Chinese students. In China, teachers are often regarded as the exclusive sources of knowledge, merely providing information. Furthermore, when students seriously misbehave, they must engage in self-criticism before the class or even the entire school [11]. While this method may serve as a form of caution, it overlooks individual characteristics. It is worth noting that such a mindset extends to other facets of student life, including China's GaoKao assessment, which mandates students to complete tests in Chinese, Math, English, Social Science, and Science.

The aims of high school education can be distilled into three primary objectives: preparation for higher education, preparation for future careers, and preparation for societal engagement [12]. Senior high schools focus on equipping students with the specialized knowledge necessary for college education and their chosen fields. On the other hand, vocational high schools train individuals who do not plan to pursue further education in college. Both types of schools emphasize developing students' social skills, which are invaluable for real-life interactions. Nonetheless, a recurring theme within Chinese education is the scarcity of senior-level education opportunities. For China's socioeconomic structure to function effectively, a substantial pool of human resources is required to cover all levels of employment [12].

## 3. Project-Based Learning

Project-Based Learning (PBL) is an inquiry-based learning approach wherein students actively construct knowledge and seek potential solutions through projects. At the same time, the teacher assumes the role of a facilitator in guiding this inquiry [13]. Does this sound familiar? It closely aligns with the ideology that underpins Harkness as well. The cornerstone of this learning approach is the question, and these questions should be well-defined academic queries [14]. PBL is often described as a teaching method that captures students' interest in a particular field but also aids them in constructing a knowledge system through the progressive development of knowledge within the project itself [13].

Initially applied within the sciences, PBL involved students in designing experiments to enhance their comprehension. However, recent educational advancements have expanded its scope to encompass humanities courses, where students foster understanding through more accessible avenues

such as presentations, essays, and other projects. Regardless of the field, the design of a project is pivotal for the success of PBL, as it plays a crucial role in motivating students' learning and facilitating their achievements. The teacher should clearly outline guidelines for such projects to ensure the knowledge acquisition objective is met.

One challenge in executing effective Project-Based Learning is the deficiency in students' social skills. Achilles & Hoover discovered that their implementation of PBL faltered due to students' profound distrust of each other and inability to collaborate effectively based on mutual interests in a topic[14]. Much like in Harkness, such an intricate pedagogy can introduce uncertainties into the classroom, including potential gaps in the coverage of certain test materials [15]. However, the advantages of Project-Based Learning are difficult to overlook. Compared with Lecture-Based Learning, PBL boasts superior knowledge retention, better performance in testing, and a more satisfying learning experience overall [15]. Consequently, Project-Based Learning seems poised for a receptive market in China, where these benefits align significantly with the objectives of the Chinese Senior High School system.

### **3.1. Implementation in China**

Project-based learning has gained significant traction in China in recent years. For instance, Sun discussed the viability of implementing Project-Based Learning in Geology courses, suggesting its application at specific stages where the posed questions are suitable[16]. As an example, he highlighted Chapter 3, Lesson 4, which explores the ways soil forms. Sun proposed that this lesson lends itself well to Project-Based Learning, given the ubiquity of soil. Teachers can orchestrate a class where students gather soil samples, analyze their composition, and discuss the elements present—an approach that makes the class more engaging and relevant to real-life scenarios.

In another instance, Project-Based Learning was incorporated into a Chemistry course with a focus on Electrolytes. The teacher emphasized the conductive characteristic of electrolytes and posed the question of whether conductivity strength correlates with ions. Students were then provided with a designed experiment involving various chemical solutions undergoing ionic reactions. They were tasked with recording their observations and data. As students witnessed the sedimentation of ions, they found it easier to formulate Ionic responses due to the visual insights gained from the experiment [17].

Furthermore, Project-Based Learning proves exceptionally effective in fostering interdisciplinary studies that amalgamate the strengths of multiple fields. For instance, Project-Based Learning can amalgamate the burgeoning technology of 3D printing with the traditional architecture of Traditional Chinese Culture. By leveraging 3D printing, students can better comprehend architectural structures like the "precisely fitted tenon willow" and the "One-time fitted Bridge." They can use software to calculate and visualize the final product's design. This integration of a 3D tool enhances the interpretability of the learning experience [18].

### **3.2. Harkness and Project-Based Learning**

While the two learning methods share similar approaches, such as encouraging students to acquire knowledge independently rather than being presented with it, there are differences between them. Harkness, as previously mentioned, aims to cultivate skills that can benefit a student throughout their academic journey. On the other hand, Project-Based Learning often serves as a tool for students to gain a better understanding of specific topics, which is the prevalent use of this method in China. Nonetheless, enhancements in academic abilities are typically more advantageous than a mere expansion of knowledge. Harkness can complement Project-Based Learning by introducing its

benefits in nurturing academic habits, a dimension often overlooked in the current Chinese high school education.

It's important to account for cultural influences on habits when assessing the impacts of these methodologies. Learning cultures vary worldwide; scholars have noted that Eastern cultures emphasize collectivism, focusing on the group's well-being, while Western cultures prioritize individualism, emphasizing personal concerns [19]. While collectivism can be valuable in various contexts, it might not be conducive to a student-centered setting where effective learning thrives on active student engagement, questioning, and challenging others' viewpoints [19]. However, this challenge can be addressed by fostering a new habit of assertiveness. In theory, this shift can enhance the effectiveness of Project-Based Learning and contribute to personal development in terms of academic abilities rather than mere knowledge acquisition.

Considering the scarcity of research materials on Harkness and the absence of assessments of Project-Based Learning within China's distinctive education system, conducting research in this area holds significant importance. The findings from this study could potentially lead to revolutionary changes in China's high school educational approach, impacting millions of future high school students. This constitutes the overarching purpose and aim of this research.

#### 4. Conclusion

In conclusion, the literature review has looked at the Harkness teaching methodology, its underlying theories, considerations, and its potential alignment with China's growing interest in Project-Based Learning (PBL) within high schools. The literature has highlighted Harkness as a student-centered pedagogy that encourages active participation, critical thinking, and the cultivation of independent learning skills. The method's emphasis on discussion-based learning, the exploration of multiple perspectives, and the nurturing of individual growth aligns with the educational goals of fostering analytical thinking and holistic development. The theoretical frameworks of philosophers like Dewey and Freire have contributed significantly to the shaping of Harkness, emphasizing the importance of experiential learning, rational inquiry, and the liberation of students' critical consciousness.

The literature has also underscored the challenges and considerations of implementing Harkness in classrooms. Pre-class preparation, the role of the teacher as a facilitator, and the need for engaging materials have been identified as crucial factors for successful Harkness discussions. The review also delved into the dynamics of the Harkness classroom, offering insights into addressing moments of silence and fostering a collaborative learning environment. Furthermore, the review examined two field studies that explored the application of the Harkness methodology in different contexts. These studies demonstrated the positive impact of Harkness on enhancing students' engagement, critical thinking skills, and overall academic performance.

Later, the review discussed China's current high school education landscape, emphasizing the prevalence of traditional instructional methods and the emerging interest in Project-Based Learning to promote deeper learning experiences. By looking at three examples of Project-Based Learning implementation in China, the review shows how China's high school education system implements the method in its teachings.

Last, the review discussed the possibility of incorporating elements of Harkness into Project-Based Learning initiatives and the future avenues of the research. It highlights the benefits that it can potentially bring to China's education: fostering both knowledge acquisition and the development of essential life skills, which are integral to preparing students for the demands of a rapidly changing world.

To conclude, with future research coming ahead, Harkness can potentially change the education approach in China. Today, as China seeks to revolutionize educational practices with innovative

approaches, the integration of student-centered pedagogies like Harkness could contribute to the cultivation of a well-rounded education system that would shape China at its best.

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