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Candle Impact Score: A Novel Metric for Assessing University Marginal Impact in Global Higher Education

Sohail Iqbal

sohail.iqbal@seecs.edu.pk

National University of Sciences and Technology (NUST)

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Abstract

Higher education institutions vary dramatically in their transformative potential depending on national context. This paper introduces the Candle Impact Score (CIS), a simple yet powerful metric that quantifies the marginal difference a university makes. This is analogous to lighting a candle in a dark room versus an already lit one. Using only two well-established parameters viz QS World University Rankings position and National Adult Illiteracy Rate. The CIS prioritizes one leading university per country (highest-ranked in top 500) and rewards impact in underserved regions. Results show that NUST Islamabad emerges in top 10 list, while elite institutions like University of Toronto rank modestly due to low baseline darkness. The model offers a policy-relevant lens for prioritizing higher-education investment to make the world a better place.

1. Introduction

The value of a university is not absolute; it is contextual. A top-ranked institution in a highly literate, wealthy nation adds marginal gain like lighting an extra candle in daylight, while the same university in a low-literacy, fragile state can ignite systemic change. This paper formalizes this intuition as the “candle analogy” and proposes the Candle Impact Score (CIS) to rank universities by their real-world difference. Notice that according to United Nations’ SDG-4 Quality Education is a must thing for all the citizens of this global village, available not far from their home.

We limit analysis to the top 500 QS-ranked universities (2026 edition), selecting only the highest-ranked institution per country to avoid double-counting and reflect national leadership. The metric uses two accessible parameters: QS rank (global prestige proxy) and adult illiteracy rate (darkness proxy). The goal is a transparent, interpretable, and reproducible tool that highlights where higher education investment yields maximum marginal return, particularly in South Asia, Africa, and fragile states such as Afghanistan.

2. Methodology

The Candle Impact Score is defined as:

$$CIS = \left(\frac{Illiteracy\ Rate\ (\%)}{QS\ Rank}\right) \times 100$$

Where:

- QS Rank is the university’s position in the QS World University Rankings 2026 (1 = best).

- Illiteracy Rate (%) is the national adult (15+) illiteracy rate, sourced from UNESCO and World Bank estimates (2023–2025). Candle will be more impactful in darkness with higher illiteracy rate.

To avoid over-representation, only the highest-ranked university from each country within the top 500 is included. Lower-ranked institutions from the same nation are excluded, simulating the “first-candle” effect, as subsequent ones add little extra light.

Data was drawn from: QS World University Rankings 2026 (full top-500 list) [1] and UNESCO Institute for Statistics (UIS) literacy data [2].

The formula is deliberately simple, based on two famous parameters. No logarithms, no weights to tweak. We ensure it is reproducible by policymakers without advanced tools.

3. Findings

When applied to country-leading universities in the top 500 QS 2026, the CIS yields the following top 10:

CIS-Rank	University	Country	QS-Rank	Illiteracy %	CIS
1	Massachusetts Institute of Tech (MIT)	USA	1	1	100.0
2	Imperial College London	UK	2	1	50.0
3	National University of Singapore (NUS)	Singapore	8	2	25.0
4	Peking University	China	14	3	21.4
5	IIT Delhi	India	123	25	20.3
6	ETH Zurich	Switzerland	7	1	14.3
7	NUST Islamabad	Pakistan	371	37	10.0
8	University of Cape Town	Sout Africa	171	15	8.8
9	University of Melbourne	Australia	19	1	5.3
10	University of Toronto	Canada	25	1	4.0

MIT is the expected lead, followed Imperial college at rank 2. Unexpectedly NUS from Singapore comes at rank 3 mainly due to efforts of their government. NUST Islamabad comes at rank 7 in the world due to its strong QS position combined with Pakistan’s persistent illiteracy challenge, contributing better than university of Toronto in Canada. Cambridge university has not made to the list, over-shadowed by Imperial. Peking University and IIT Delhi punch above weight thanks to high ranks in moderately dark contexts, eventually serving their nations at their best.

4. Discussion

The CIS reveals a counterintuitive truth: prestige alone does not equal impact. MIT's perfect rank yields only 1.0 is great but while NUST's mid-tier rank in a 37%-illiterate nation delivers a significate value. This supports the candle analogy: darkness amplifies light. Notice that if any university from Afghanistan enters into the list of top 500 in QS rating, it will definitely be a great source of country development and will appear in the above list of top 10 due to its illiteracy rate of 60% that we consider darkness (worse than poverty).

Limitations include reliance on national averages (regional disparities ignored) and static illiteracy data. Yet its simplicity famous two inputs in one equation makes it ideal for advocacy. Globally, donors could use CIS to target fragile states where one university could shift trajectories.

5. Conclusion

The Candle Impact Score reframes university value from prestige to marginal contribution. By rewarding darkness and leadership, it places NUS Singapore at 3rd world's most impactful candle, proving that context surpasses rank. This metric can guide investment, policy, and institutional strategy toward regions where higher education still burns brightest.

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- universityrankilliteracydata.xlsx