

Early Outcomes and Implementation Learnings of a Situational Judgment Test in Undergraduate Engineering Admissions: A Work-in-Progress Study

Alexander MacIntosh PhD, Acuity Insights

Alexander MacIntosh, Ph.D., is a Scientist and Senior Manager of Research Partnerships at Acuity Insights. He earned his Ph.D. in Biomedical Engineering, where his research centered on developing AI-driven health technologies and personalized rehabilitation tools for children with cerebral palsy. Over the past six years, Alex has focused on educational assessment, leading studies that apply statistical modeling, predictive analytics, and evaluation methods to improve admissions and curriculum practices in higher education.

In addition to his research leadership, Alex serves as Adjunct Faculty in the Applied Modelling and Quantitative Methods program at Trent University, where he mentors graduate students in applied statistics and research design. His work bridges engineering, data science, and education to advance evidence-informed, equitable decision-making in academic programs.

Patricia Lynne Guzzo, University of Western Ontario

Craig Miller, University of Western Ontario

Joshua B Moskowitz, Acuity Insights

Early Outcomes and Implementation Learnings of a Situational Judgment Test in Undergraduate Engineering Admissions: A Work-in-Progress Study

Abstract

This work-in-progress paper examines the early implementation of the Casper Situational Judgment Test (SJT) in undergraduate engineering admissions and explores its potential relationship to student success and engagement. Beginning in the 2024–25 admissions cycle, a large Canadian engineering faculty introduced Casper as a required non-cognitive assessment alongside traditional academic measures. This study reports implementation learnings from the first cycle of use and presents early outcome data from applicants and first-year entrants.

The project aims to address three intersecting research questions: (1) How do Casper registrations align with application patterns, including applicants who register but do not apply, and what insights can be drawn about applicant decision-making? (2) How does Casper relate to applicant acceptance rates and applicants' selection decisions? (3) What are the early associations between Casper scores and first-year outcomes, including academic performance, teamwork, and engagement in co-curricular activities?

Across the 2024–25 admissions cycle, 7,107 reservations were made, with 6,842 applicants completing the test. Internal consistency reliability was strong (Cronbach's $\alpha = 0.84$), aligning with accepted psychometric standards. Applicant acceptability was also favorable: average satisfaction with the test experience was 5.3/7, and 79% reported Casper allowed them to demonstrate their personal strengths. Applicant sentiment analysis revealed 32% positive and 52% neutral perceptions towards Casper through open response voluntary comments. These results mirror patterns observed in Canadian health sciences programs (where Casper has been used for the last decade), suggesting comparable perceptions of fairness and value across applicant groups.

The study's next phase will involve linking Casper scores with first-year academic, professionalism and communication engagement data, including performance in teamwork-focused courses and participation in student societies. These analyses will link student performance in the aspects that Casper probes for (e.g. social reasoning, empathy, and ethical judgment) to the progress of meaningful student outcomes in first year engineering education.

This work-in-progress study contributes to ongoing conversations about holistic and equitable engineering admissions by offering an early case study of SJT implementation. It also highlights methodological considerations and collaborative practices essential for building longitudinal evidence of predictive validity in admissions tools. Future work will extend this research with multi-year cohorts and explore implications for fairness in engineering pathways.

Introduction

Across accreditation frameworks, professional societies, and employer surveys, there is now broad agreement that engineers must be prepared not only for complex technical analysis but also for collaboration, ethical judgment, and engagement with the communities their work affects. Accrediting organizations such as ABET (Accreditation Board for Engineering and Technology) and the CEAB (Canadian Engineering Accreditation Board) have responded by embedding graduate attributes that include communication, teamwork, ethics, and lifelong learning into their frameworks, but research suggests that employer expectations still outpace curricular changes [1], [2].

A survey of new engineers from The Ontario Society of Professional Engineers' (OSPE) Benchmarking Report 2025 notes communication (42%), interdisciplinary collaboration (38%), advanced problem solving and critical thinking (38%), leadership (37%), and innovation and creative thinking (32%) are priority skills for success [3]. Similarly, job advertisements and employer surveys show that these non-technical skills are critical for employability and career advancement, often exceeding what is currently required by accrediting bodies or addressed in most curricula [4], [5].

These findings highlight that questions of “fit” and “readiness” for engineering are deeply sociotechnical and directly relate to representation and public welfare. However, while non-technical attributes are central to how programs foster successful graduates, they are rarely central to how programs select their incoming students. Admissions policies determine who is invited into accredited pipelines and who has access to licensure. If engineering is a civic and value-laden practice, then admissions is a sociotechnical intervention that influences professional norms.

Outside of engineering, broader movements toward holistic review in admissions have sought to rebalance admissions toward a wider range of applicant characteristics while preserving fairness and operational feasibility [6]. Within this landscape, situational judgment tests (SJTs) have emerged as a promising tool. SJTs present applicants with short, realistic scenarios and ask them to construct or select effective responses. Rather than testing content knowledge, they are designed to probe constructs such as social reasoning, empathy, ethical judgment, and collaboration under ambiguity [7].

The Casper test is an SJT that has been used for selection by more than 500 programs and 1 million applicants since 2015, primarily in the health professions [8]. Casper delivers video and text-based scenarios and captures open-ended, constructed responses for standardized scoring. Casper has demonstrated evidence of good reliability (Cronbach's alpha range from $\alpha = 0.78$ to $\alpha = 0.87$) and emerging predictive validity for outcomes such as multiple mini-interview performance and workplace evaluation ratings [9], [10]. At the same time, any standardized assessment must be scrutinized for efficacy, usability and fairness. SJT developers explicitly advocate for diverse subject-matter expert input, iterative scenario review, and statistical analyses such as differential item functioning (DIF) to monitor for content fairness [11], [12]. The key question is not simply whether SJTs are psychometrically sound, but whether their constructs, scenarios, and scoring practices align with a vision of engineering that centers public welfare, fairness, and democratic responsibility [13].

The study offers the first exploration of Casper's use in a large undergraduate engineering admissions context and asks how such an intervention reshapes the sociotechnical formation of the incoming cohort. Specifically, we address three research questions: (1) How do Casper registrations align with application patterns, including applicants who register but do not apply, and what insights can be drawn about applicant decision-making? (2) How does Casper participation and performance relate to program selection decisions, when not used in the decision making process? (3) What are the early associations between Casper scores and first-year outcomes, including academic performance, teamwork, and engagement in co-curricular activities?

Methods

This is a quality assurance evaluation of a Faculty of Engineering's 2024–25 undergraduate admissions cycle at a large Canadian, CEAB-accredited institution. During this cycle, the Casper SJT was required for all Ontario Universities' Application Centre (OUAC) applicants, consistent with the public admissions guidance that lists Casper as a mandatory step in the application process [14]. However, Casper scores were not available to the admissions committee and were not used in selection decisions. Scores were collected for monitoring, evaluation, and future policy development.

Setting

The Program admits students directly from secondary school into a common first-year engineering program. Academic admission requirements include Grade 12 U-level courses in English, Chemistry, Physics, Advanced Functions, and Calculus and Vectors, plus one additional upper level course. Beginning with the 2024-25 admissions cycle, applicants are required to complete Casper as part of their application on one of ten available dates. Test bookings should be completed at least three days before the selected date, and that results are returned to the institution approximately three weeks after testing. Offers of admission began as early as November once supporting documents, including Casper results, are received.

Participants & Data

Data for the evaluation are drawn from three main sources: first, Acuity Insights (Casper developer) administrative data: test reservations, completion indicators, Casper scores and percentiles, and responses to the voluntary post-test satisfaction and demographic survey. Second, institutional admissions records: Program application data (application submission and completion flags, admissions academic average, offer status, and matriculation decisions). Finally, first-year academic and experiential records (forthcoming): term and year-end grade point average (GPA), course-level grades in required teamwork/professionalism courses, available peer and instructor evaluations of teamwork, participation in engineering co-curricular activities (e.g., student societies, design teams, leadership roles), and retention into second year.

Casper SJT

Casper is an online, open-response SJT consisting of video and text scenarios followed by open-ended responses designed to assess applicants' personal and professional skills, including communication, collaboration, social reasoning, empathy, and ethical judgment [15]. Responses are scored by trained human raters using standardized frames of reference guides, and scores are

aggregated across items and normalized relative to the relevant applicant pool within the test sitting [8]. Casper's post-test voluntary survey includes Likert-type items (1–7 scale) assessing perceived fairness, clarity of instructions, technical experience, and overall satisfaction, along with open-ended questions about test experience.

Quantitative analysis

To address RQ1—how Casper registrations align with application patterns— we report: A. Counts and percentages at each stage (registration, offer, matriculation), B. The proportion of Casper registrants who never submit an engineering application and, conversely, applicants who submit without completing Casper.

For RQ2—How does Casper participation and performance relate to selection decisions, when not used in the selection process?—we fit logistic regression models with robust standard errors. The primary dependent variables are: Offer received (yes/no) among all engineering applicants, offer acceptance among those offered admission. Key independent variables include Casper score (standardized), with admission academic average as a covariate. Results are reported as odds ratios with 95% confidence intervals. Any observed relationships may reflect correlated applicant characteristics rather than the impact of Casper.

To address RQ3—What are the early associations between Casper scores and first-year outcomes, including academic performance, teamwork, and engagement in co-curricular activities?—we will use a combination of linear, logistic, and mixed-effects models among matriculated students. Results for RQ3 are pending completion of the first full academic year for the 2025 cohort, once first-year GPA, teamwork evaluations, professionalism ratings, co-curricular participation, and retention data become available.

Applicant perceptions and implementation analysis

Applicants' perceptions of Casper were assessed using items from the voluntary post-test survey administered immediately after test completion. Engineering applicant ratings were summarized descriptively and compared with historical satisfaction rates from Canadian undergraduate health science applicants using independent-samples t-tests for mean differences and chi-square tests for grouped response distributions. All analyses used two-tailed tests with $\alpha = .05$.

Open-ended application comments were analyzed using a RoBERTa-based transformer sentiment classifier combined with a retrieval-augmented few-shot guidance approach [16]. Thirty responses were manually labeled as Positive, Neutral, or Negative by two authors and used as a reference set. Semantic similarity retrieval (sentence embeddings with cosine similarity) was used to identify the most similar labeled examples for each new response, and their label distribution was compared with the RoBERTa model's class probabilities to generate the final label. Agreement between automated and human classifications was assessed using Cohen's κ . Multinomial logistic regression to assess whether sentiment classification was associated with Casper performance.

Results

RQ1

The engineering program received 8,673 applications, issued 3,780 offers, and enrolled 902 students into the Fall 2025 first-year cohort. This is a 2.1% increase year over year. A total of 7,107 registered to write Casper of which 6842 completed (96%). There were 1,831 applicants who applied but did not write Casper. Standardized Casper scores were normally distributed, with a mean raw score of 5.25/9 (SD =0.86). Table 1 shows voluntary survey demographic characteristics. Internal consistency reliability was good ($\alpha = 0.84$).

Table 1. Applicant Demographics

		N	%
Gender	Male	3466	67.5%
	Female	1296	25.2%
	Another gender	310	6.0%
	Not Answered	64	1.2%
Ethnicity	Asian	2465	48.0%
	White	1480	28.8%
	Middle Eastern or Northern African	440	8.6%
	Black or African American	253	4.9%
	Another ethnicity	278	5.4%
	Not Answered	220	4.3%
Household income	Less than \$50,000	390	7.6%
	\$50,000 to \$149,999	1494	29.1%
	More than \$150,000	773	15.1%
	Not Answered	2479	48.3%
Parent Ed	Less Than High School	156	3.0%
	High School / Some College	474	9.2%
	Associate & Bachelor's	1752	34.1%
	Graduate & Doctorate	1556	30.3%
	Professional Degree	184	3.6%
	Not Answered	1014	19.7%

Voluntary exit survey, post-Casper completed by 5136/6842 (75%).

Figure 1 shows cumulative applicant counts for submissions, offers, acceptances and Casper completions. Cumulative Casper registrations and completions closely tracked the growth in program applications over the cycle, with increases in Casper activity occurring after rises in

application volume. By January 2025, approximately 70% of total program applications and 50% of Casper applications had already been submitted, with Casper participation exhibiting a comparable mid-cycle accumulation pattern.

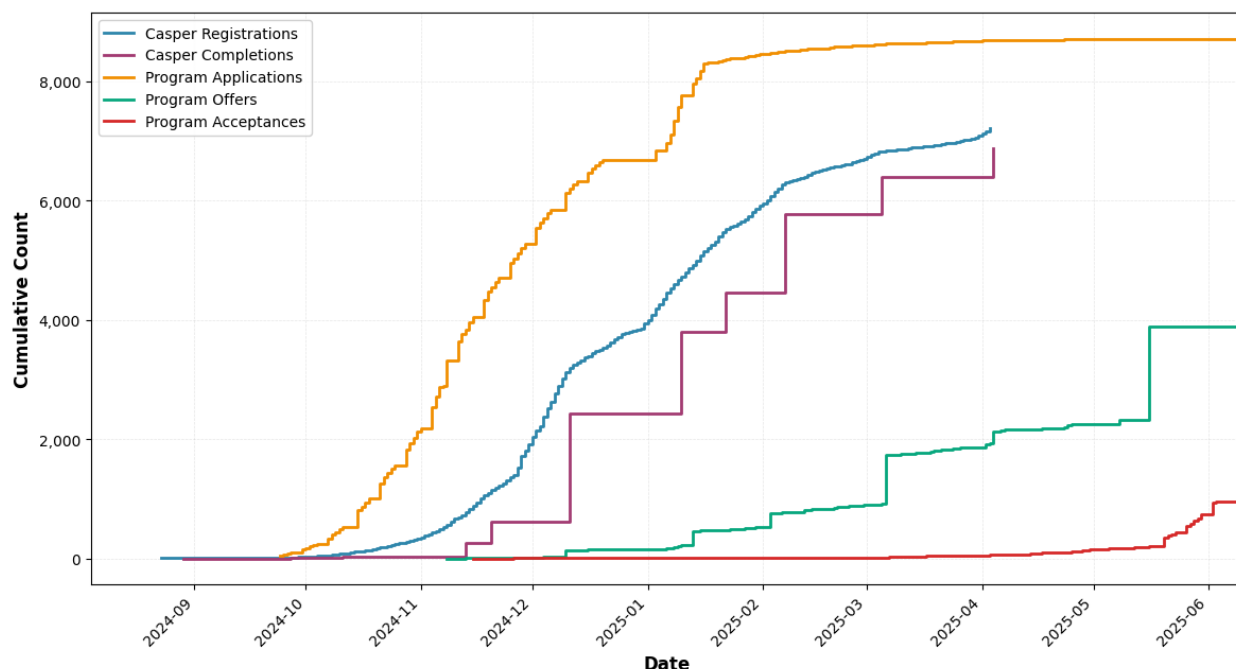


Figure 1. Cumulative Program and Casper registrations, completions, offers and acceptances from 2024-25 admissions cycle.

RQ2

Logistic regression models assessed whether higher Casper scores were associated with receiving an offer of admission after controlling for academic admission average (Table 3). Casper scores demonstrated a statistically significant association with higher Casper scores being more likely to accept an offer (OR = 1.88, 95% CI [1.39, 2.55], $p < .001$). Similarly, applicants who accepted an offer had higher Casper scores ($M = 0.58$, $SD = 0.25$) than applicants who did not receive an offer ($M = 0.23$, $SD = 0.29$). This difference was statistically significant, $t = 33.18$, $p < .001$ with a large effect (Cohen's $d = 1.21$).

Table 2. Logistic Regression offer acceptance

	B	SE	Wald χ^2	p	OR	95% CI
Intercept	-1.63	0.10	251.50	< .0001	0.20	[0.16, 0.24]
Admission Average (standardized percentile)	-0.52	0.04	157.64	< .0001	0.60	[0.55, 0.65]
Casper Score (standardized)	0.63	0.16	16.60	< .0001	1.88	[1.39, 2.55]

N = 3,726; 864 acceptances (23.2%). All predictors standardized ($M = 0$, $SD = 1$). OR = Odds Ratio.

Applicant perceptions and implementation analysis

Applicants' perceptions of Casper were neutral to moderately positive overall. The mean satisfaction score for the overall Casper test experience was 5.31 (SD = 1.27) on a 7-point scale among engineering applicants. This is similar compared with 5.33 (SD = 1.31) among applicants (N=11,872) to Canadian undergraduate health science programs ($t = -1.08$, $p = .28$).

When asked whether having Casper as a requirement made them more or less likely to apply, engineering applicants responded neutrally (4.10 (SD = 1.47), compared to health science applicants: 4.34 (SD = 1.51), ($t = -9.86$, $p < .001$).

Most applicants (79%) felt that Casper allowed them to demonstrate their strengths moderately to extremely well (4-7 on a 7-point scale). This difference was also not statistically significant compared to health science applicants (N=11,114) ($\chi^2(1) = 1.41$, $p = .24$).

Sentiment Analysis

A total of 1,573 applicant comments were included in the sentiment analysis. The distribution of sentiment was: Positive: 32.3% (n = 508), Neutral: 52.9% (n = 816), Negative: 15.8% (n = 249). Table 3 shows representative anonymized excerpts. Model-generated sentiment showed 77% agreement with human ratings in the validation set (Cohen's $\kappa = 0.64$), indicating good consistency between automated and human-coded classifications.

Table 3. Representative Anonymized Applicant Comments

Automated Sentiment	Illustrative Applicant Comment (Anonymized)
Positive	"The video scenarios made the questions more personal instead of only reading a text."
Positive	"Some of the scenarios made me do deep reflection and think more carefully about my decisions."
Neutral	"Some [were] challenging questions as I have not encountered them before and it is hard to answer and think on the spot at the same time."
Neutral	"The fake resume scenario is really a tricky one, quite challenging."
Negative	"The time limit cut me off many times before I was able to finish my responses."
Negative	"The video questions were challenging because the timer made me nervous while responding."

A multinomial logistic regression examining whether Casper score predicted feedback sentiment using "Neutral" as the reference group. The regression results indicated that Casper z-score significantly differentiated Neutral from Positive sentiment feedback, such that applicants with higher z-scores were associated with increased odds of leaving Positive sentiment feedback as compared to Neutral, (OR = 1.28, 95% CI [1.14, 1.45], $p < .001$). In contrast, Casper z-score did not significantly differentiate Neutral from Negative sentiment feedback, (OR = 0.92, 95% CI [0.80, 1.07], $p = .289$).

Discussion

These early results suggest that Casper can be implemented in undergraduate engineering admissions at scale with high completion rates, good reliability, and generally neutral-to-positive applicant perceptions. Completion and application timing patterns indicate that requiring Casper

did not suppress applications and was operationally manageable. Modest associations between Casper scores and offer acceptance—despite scores not being used in decisions—suggest that the assessment captures applicant characteristics not fully reflected in academic metrics. These findings support the role of using SJTs as one component of a broader review process aimed at interpersonal, ethical, and communication-related attributes, aligned association and employer values.

Embedding an SJT into admissions signals that engineering is a sociotechnical profession requiring communication, empathy, and ethical reasoning—echoing Pierrakos’ work on professional formation [13]. Casper scenarios require applicants to engage with ambiguity, conflicting values, and interpersonal reasoning, reinforcing that engineering practice involves more than technical problem solving. In this way, Casper shifts admissions toward recognizing broader attributes around accountability and just participation in engineering pathways.

Functionally, practical pathways for implementing Casper alongside academic evaluations for undergraduate engineering may include integrating Casper as a mission-aligned, weighted component of holistic review. This approach benefits from documented incremental validity, transparent weighting, and monitoring for differential item functioning and fairness to ensure that across the applicant population existing subgroup differences are not amplified [6]. Casper can serve as a trigger for supplemental human review and as a post-matriculation diagnostic to identify students for targeted developmental supports. This approach reduces reliance on a single score and facilitates involvement across the education support continuum.

The logistic models showed a significant relationship between Casper performance and admissions outcome after adjusting for academic performance. The observed association, a one standard deviation increase in Casper scores linked to higher odds of offer acceptance ($OR = 1.88$), indicates Casper captured applicant variance relevant to selection in this cycle. Since scores were collected for evaluation only and not used in the criteria explicitly, the finding is descriptive rather than causal. Programs should operationalize Casper for selection following an explicit validation program. This would include tests of incremental predictive validity linking Casper to first-year academic and teamwork/professionalism outcomes and operational simulations of weighting or rubric rules to understand impacts on offer lists and subgroup representation.

Interpretation of applicant perception data warrants discussion. Scores near the midpoint of the satisfaction scale suggest that Casper was neither a strong deterrent nor an incentive for application; for a required, high-stakes assessment, such neutrality may reflect acceptable legitimacy rather than indifference. Because admissions assessments are intended to be challenging, comments describing difficulty or cognitive effort were classified as neutral rather than negative, as these features align with the purpose of situational judgment tests. Accordingly, survey ratings and open-ended feedback are best interpreted as indicators of acceptability and perceived fairness, rather than consumer-style satisfaction [17]. It is worth noting that there was an association between higher casper scores and positive feedback. These results suggest that stronger performance on Casper may have positively impacted applicants’ opinion of the test, whereas negative performance did not give applicants a negative opinion of the test.

Operationally, test delivery, accommodations, and communication workflows functioned adequately and would benefit from earlier applicant guidance and coordinated scheduling. A key

structural factor is the Central Registrar's control over timing, weighting, and release of data, which impacts how Casper scores could be integrated into decision-making. Future implementation options include: (1) weighted within holistic review; or (2) used as a trigger for supplemental review and support flagging. Each pathway entails tradeoffs in fairness, transparency, operational complexity, and alignment with institutional values.

Limitations

Findings reflect a single admissions cycle in which Casper was required but not operationalized in decision-making. As such, observed associations between Casper scores and admissions outcomes are descriptive and may be influenced by unmeasured confounding factors such as applicants' familiarity with SJTs. The absence of first-year outcomes at this stage limits our ability to evaluate predictive validity specific to this engineering program. In addition, demographic data available for fairness analyses are constrained by voluntary self-report practices, which adds bias to data related to race, ethnicity, and socioeconomic indicators.

The current study has yet to examine the degree of performance differences among admissions metrics across demographic groups. Prior research indicates that Casper tends to produce smaller demographic differences than traditional knowledge-based admissions metrics, such as GPA and standardized knowledge tests, with effect sizes that are typically negligible to moderate across demographic groups in Canada. For instance, gender differences on Casper are generally small, with women tending to score slightly higher than men [8]. It is unknown the degree to which this finding generalizes in the Canadian engineering population.

Conclusion

This WIP study demonstrates that Casper can be feasibly integrated into a large undergraduate engineering admissions process towards assessing valued sociotechnical attributes with respect to completion rates, test-reliability, and applicant acceptability. The full value of including Casper in admissions is not yet realized for this study since it was required but not used in decision-making and early predictive validity outcomes are pending. Continued monitoring, governance, and longitudinal validation will be critical as the institution evaluates whether and how to incorporate Casper into future holistic review models.

Disclosures

AI-assisted tools (ChatGPT) were used to support text editing and refinement; all analysis, interpretation, and substantive contributions were made by the authors. AM and JM are a salaried employee and Scientist at Acuity Insights Inc., which develops the Casper SJT. Their compensation is not related to the results of this study, and they hold no equity or performance-based incentives from the company. All other authors report no conflicts of interest relevant to this work. No specific funding was received for this study. Acuity Insights did not provide dedicated research funding for this project, and no external financial support was obtained.

References

- [1] “Canadian Engineering Accreditation Board (CEAB),” Faculty of Applied Science & Engineering. Accessed: Dec. 09, 2025. [Online]. Available: <https://www.engineering.utoronto.ca/about/canadian-engineering-accreditation-board-ceab/>
- [2] ABET. Engineering Accreditation Commission, “Criteria for Accrediting Engineering Programs: Effective for Reviews during the 2025-2026 Accreditation Cycle,” ABET, Baltimore, MD, Oct. 2024. [Online]. Available: https://www.abet.org/wp-content/uploads/2024/11/2025-2026_EAC_Criteria.pdf
- [3] Ontario Society of Professional Engineers, “Benchmarking Report 2025: Pivotal Moment: Forging Ontario’s Engineering Future,” Ontario Society of Professional Engineers, Ontario, Canada, 2025. [Online]. Available: <https://ospe.on.ca/the-profession/publications/benchmarking-report>
- [4] R. Graham and T. Porterfield, “Preparing Today’s Engineering Graduate: An Empirical Study of Professional Skills Required by Employers,” presented at the 2018 ASEE Annual Conference & Exposition, Jun. 2018. Accessed: Dec. 09, 2025. [Online]. Available: <https://peer.asee.org/preparing-today-s-engineering-graduate-an-empirical-study-of-professional-skills-required-by-employers>
- [5] M. Hirudayaraj, R. Baker, F. Baker, and M. Eastman, “Soft Skills for Entry-Level Engineers: What Employers Want,” *Educ. Sci.*, vol. 11, no. 10, p. 641, Oct. 2021, doi: 10.3390/educsci11100641.
- [6] A. L. Coleman and J. L. Keith, “Understanding Holistic Review in Higher Education Admissions,” The College Board, 2018.
- [7] F. Patterson, L. Zibarras, and V. Ashworth, “Situational judgement tests in medical education and training: Research, theory and practice: AMEE Guide No. 100,” *Med. Teach.*, vol. 38, no. 1, pp. 3–17, Jan. 2016, doi: 10.3109/0142159X.2015.1072619.
- [8] Acuity Insights, “Acuity Insights Casper Technical Manual,” Acuity Insights, 2024. [Online]. Available: <https://acuityinsights.com/resource/casper-technical-manual/>
- [9] M. R. Roberts, Cecilia Brito Alves, F. Chen, and C. R. St Jean, “Associations between an open-response situational judgment test and performance on OSCEs and fieldwork: implications for admissions decisions and matriculant diversity in an occupational therapy program,” *BMC Med. Educ.*, vol. 24, p. 1, 2024, doi: 10.1186/s12909-024-06071-0.
- [10] C. Robb *et al.*, “Examining the Predictive Validity of an Open-Response Situational Judgment Test with Typed-Response and Video-Response Items,” *Educ. Assess.*, vol. 0, no. 0, pp. 1–11, Oct. 2025, doi: 10.1080/10627197.2025.2576228.
- [11] R. E. Ployhart and W. I. MacKenzie Jr., “Situational judgment tests: A critical review and agenda for the future,” in *APA handbook of industrial and organizational psychology, Vol 2: Selecting and developing members for the organization*, in APA handbooks in psychology®, Washington, DC, US: American Psychological Association, 2011, pp. 237–252. doi: 10.1037/12170-008.
- [12] J. A. Weekley and R. E. Polyhart, “An Introduction to Situational Judgment Testing,” in *Situational judgment tests: Theory, measurement, and application*, in SIOP organizational series. , Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers, 2006, pp. 1–10.
- [13] O. Pierrakos, A. Yeaman, K. Luthy, and M. Gentile, “Moral and Civic Virtues in Engineering: Reimagining Engineering Ethics to Cultivate Virtuous Engineers,” in *2023*

- IEEE Frontiers in Education Conference (FIE)*, Oct. 2023, pp. 1–3. doi: 10.1109/FIE58773.2023.10342968.
- [14] “Apply Now.” Accessed: Jan. 14, 2026. [Online]. Available: <https://www.eng.uwo.ca/future-students/apply-now/index.html>
- [15] M. Z. Iqbal, R. Ivan, C. Robb, and J. Derby, “Evaluating factors that impact scoring an open response situational judgment test: a mixed methods approach,” *Front. Med.*, vol. 11, Jan. 2025, doi: 10.3389/fmed.2024.1525156.
- [16] W. Zhong, D. Tang, J. Wang, J. Yin, and N. Duan, “UserAdapter: Few-Shot User Learning in Sentiment Analysis,” in *Findings of the Association for Computational Linguistics: ACL-IJCNLP 2021*, C. Zong, F. Xia, W. Li, and R. Navigli, Eds., Online: Association for Computational Linguistics, Aug. 2021, pp. 1484–1488. doi: 10.18653/v1/2021.findings-acl.129.
- [17] A. Berni and Y. Borgiaanni, “An experimental study on familiarity, contextual factors and representation forms in human-product interaction,” *Int. J. Des. Creat. Innov.*, vol. 13, no. 3, pp. 159–193, Jul. 2025, doi: 10.1080/21650349.2025.2476488.