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Exploring Quality Of Life (QOL) Awareness and Understanding of Civil Engineering (CE) Students and Alumni using a CE-QOL Curriculum Framework

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ABSTRACT

BACKGROUND & CONTEXT

Quality of Life (QOL) reflects the overall well-being of individuals and communities across physical, mental, emotional, and social dimensions. Despite civil engineering's vital contributions to QOL, there is limited research exploring the connection between civil engineering and QOL. Emphasizing this relationship within civil engineering education is essential to advance both understanding and practical applications.

PURPOSE OR GOAL

This study investigates the awareness and understanding of Civil Engineering (CE) students and alumni from De La Salle University regarding the discipline's contribution to improving QOL. Anchored in the CE-QOL Curriculum Framework, which highlights five critical facets—Infrastructure Development, Water and Sanitation, Disaster Resilience, Environmental Sustainability, and Climate Change Adaptation—the research assesses how effectively these themes are integrated into the civil engineering curriculum.

APPROACH OR METHODOLOGY

Through a structured survey guided by Constructive Alignment, the study evaluates the perceptions of the students and alumni on the BSCE curriculum content on QOL, course delivery, and real-world applicability.

OUTCOMES

Findings reveal the curriculum's strengths in raising awareness of civil engineering's societal impacts and alignment with the CE-QOL framework. Alumni provided insights into how well their education prepared them to apply QOL principles in their careers, while current students highlighted areas where the curriculum could better integrate practical, real-world applications.

CONCLUSIONS

This research underscores the importance of incorporating QOL themes into civil engineering education. Recommendations focus on enhancing curriculum content, delivery methods, and practical experiences to better prepare graduates for addressing societal challenges and improving community well-being through sustainable engineering practices.

KEYWORDS

Quality of Life; Civil Engineering; Curriculum.

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Introduction

Quality of Life (QOL), as defined by the World Health Organization ((WHOQOL 1998), refers to “an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.” Expanding on this definition, QOL is a comprehensive concept that encompasses the overall well-being of individuals and communities, incorporating physical, material, social, developmental, emotional, and environmental well-being (Figure 1). It is influenced by a wide range of factors, including health, education, income, the environment, safety, relationships, cultural enrichment, and access to resources and opportunities.

Assessment instruments are designed to evaluate the quality of life (QOL) of individuals and communities. These instruments typically contain specific questions that assess various QOL domains, using quantitative and qualitative metrics. One notable example is the WHOQOL (1998), which consists of 100 assessment questions covering six QOL domains and specific facets related to quality of life. Assessment of QOL of an individual or even a community is complicated and dynamic because the various facets of the QOL domains are influenced and received or transferred to an individual or community based on the interaction of three key elements: (a) objective life conditions, (b) subjective well-being and (c) personal values and aspirations (Felce and Perry 1995).

Instead of measuring the QOL of an individual or community, this study aims to explore instead the appraisal of the contribution of the stakeholders to QOL. The QOL of a person or community is realized only if there are inputs to the various QOL domains as shown in a QOL Contributor/Provider-Receiver Model in Figure 1. QOL is a multifaceted concept that varies in focus depending on the discipline and spatial level of analysis. The QOL Contributor/Provider which is introduced in the model represents the various institutions and stakeholders including the professions that influence QOL. Each profession or discipline has specialized outputs or products or services that can be aligned to various QOL facets and domains. This will be shown in the next section for the Civil Engineering profession.

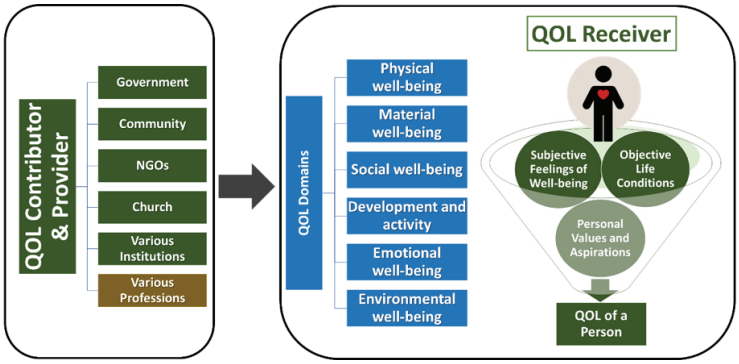


Figure 1: QOL provider-receiver model

Civil Engineering and Quality of Life

QOL in the context of civil engineering involves enhancing community living standards through the strategic design, implementation, and maintenance of infrastructure and services. Recognizing the vital role and responsibility of civil engineers in improving QOL, efforts are underway to strengthen this focus. Globally, the impact of civil engineering on QOL is well-recognized. Hill (2024) emphasizes the pivotal role of civil engineering in enhancing QOL, stating, “*Civil engineering significantly enhances our quality of life by providing the infrastructure needed for everyday activities. Imagine a world without clean drinking water, reliable electricity, or safe transportation networks—these are all made possible by the work of civil engineers*.”

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In the Philippines, the civil engineering community is advocating for the passage of Senate Bill 1467 and a corresponding House bill to enact a new Philippine Building Act. This proposed legislation aims to establish enhanced standards for building and construction, addressing critical QOL concerns such as: (a) Safeguarding lives and protecting people from injury, (b) Ensuring public health and well-being, (c) Protecting property from physical damage, (d) Minimizing disaster risks, (e) Promoting sustainability, and (f) Mitigating negative environmental, economic, and social impacts. Civil engineering also directly addresses several of the United Nations Sustainable Development Goals (SDGs) by driving the development of infrastructure, managing natural and built resources, and advancing sustainable practices (Oreta 2024a). Five CE facets are identified that significantly contribute to QOL (Oreta 2024b) as shown in Figure 2. Here's how the five civil engineering (CE) facets align with the Quality of Life (QOL) domains and why they are interconnected.

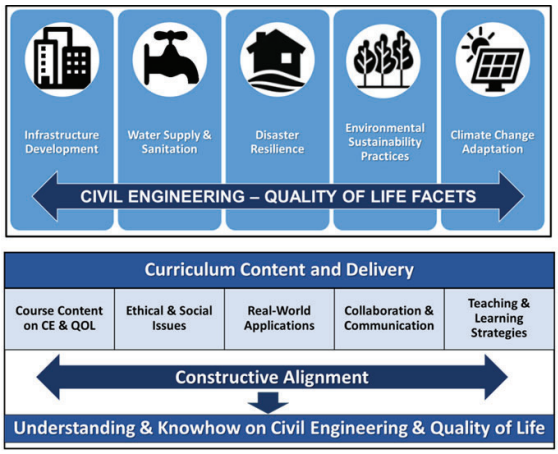


Figure 2: CE-QOL curriculum framework

1. ***Infrastructure Development*** → Material Well-being, Development & Activity. *Why?* Infrastructure development directly impacts material well-being by improving housing, transportation, and economic opportunities. It also supports development and activity by enabling employment, mobility, and access to education, recreation, and essential services.
2. ***Water Supply and Sanitation*** → Physical Well-being, Environmental Well-being. *Why?* Clean water and proper sanitation systems are fundamental to physical well-being, as they prevent diseases and promote hygiene. Additionally, sustainable water management enhances environmental well-being by protecting natural water sources and ensuring responsible consumption.
3. ***Disaster Resilience*** → Physical Well-being, Material Well-being, Social Well-being. *Why?* Disaster-resilient structures ensure physical well-being by safeguarding lives and reducing injuries. They contribute to material well-being by protecting homes, businesses, and infrastructure from damage. Strengthening communities against disasters also enhances social well-being, as people feel safer and more secure in their environments.
4. ***Environmental Sustainability*** → Environmental Well-being, Emotional Well-being. *Why?* Embedding eco-friendly practices in construction preserves ecosystems, reduces pollution, and mitigates climate change, directly benefiting environmental well-being. Additionally, living in a sustainable, green environment fosters a sense of responsibility and stability, contributing to emotional well-being.
5. ***Climate Change Adaptation*** → Environmental Well-being, Physical Well-being, Development & Activity. *Why?* Climate-resilient urban planning ensures environmental well-being by reducing environmental degradation and improving sustainability. It also supports physical well-being by mitigating climate-related health risks (e.g., heatwaves, flooding). Moreover, adaptation strategies encourage smart growth and sustainable development, enhancing development and activity by enabling functional, future-proof cities.

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Now that the CE-QOL relationship is defined, the contribution of each CE facet to the various QOL domains can be determined by identifying both quantifiable and qualitative indicators related to civil engineering that have an impact to the QOL domains.

Being an exploratory study, an awareness and understanding of the undergraduate students and civil engineers on QOL contribution by the discipline must be explored first. The basic research question in this study is "*Is our curriculum effective in imparting awareness and understanding on the important role of civil engineering in enhancing the quality of life of people and the community?*" The CE-QOL Curriculum Framework in Figure 2 serves as a guide in developing a checklist and survey to determine how well the civil engineering curriculum prepares students and graduates to understand their important role in improving QOL.

Civil Engineering Curriculum and Constructive Alignment to QOL

The CE-QOL Curriculum Framework in Figure 2 presents the five key facets of civil engineering's contribution to Quality of Life (CE-QOL) which can be addressed through various courses in the civil engineering curriculum. However, students' understanding and appreciation of the relationship between civil engineering and QOL largely depend on how these courses are designed and delivered.

Constructive Alignment (Biggs and Tang 2007) is an approach to curriculum design which is focused on closely aligning teaching and assessment to intended learning outcomes. For this study, the intended learning outcome is related to the cognitive domain of "remembering and understanding" in the hierarchy of learning in Bloom's taxonomy: "*The students, after graduation and several years after, must have an understanding of the important role and contribution of the civil engineering profession to a community's well-being and quality of life*."

The CE-QOL Curriculum framework identifies several key aspects in the curriculum on content and delivery that can enhance students' awareness, understanding and practical knowledge of CE-QOL through the Constructive Alignment Theory.

1. ***Course Content***: Courses should explicitly emphasize or at least discuss the societal impacts of civil engineering projects on improving quality of life.
2. ***Ethics and Social Issues***: Embedding discussions on ethics and social responsibility within courses encourages students to recognize the broader societal implications of their work.
3. ***Real-World Applications***: Utilizing case studies and hands-on projects helps students engage with open-ended, community-centered challenges, bridging theory and practice.
4. ***Collaboration and Communication***: Fostering teamwork and effective communication skills is essential for success in people-oriented and multidisciplinary projects.
5. **Teaching Methodology and Materials**: The design and delivery of courses should be aligned with CE-QOL objectives, incorporating innovative teaching approaches, appropriate technological tools and relevant learning resources.

Aligning these curriculum aspects on teaching and learning to the CE-QOL facets will lead to a deeper understanding of on how civil engineering contributes to quality of life.

Survey of DLSU Students and Alumni

Using the CE-QOL Curriculum Framework, a research survey was conducted to determine the awareness and understanding of DLSU Civil Engineering students and alumni on the contribution and impact of civil engineering to quality of life. The data and analysis of the survey in the following sections were obtained from the Report on the "*Survey of DLSU Students and Alumni on Civil Engineering and Quality of Life*", April 2025 by Oreta, A, Galupino, J, and Uy, E. The CE-QOL surveys were conducted online separately, one for the undergraduate students and another for the alumni in the Bachelor of Science in Civil Engineering (BSCE) program at De La Salle University. For the student survey, there were a total of 60 student respondents. Fourth (4th) year students comprised most survey participants (56.45%), with Terminal (Graduating) students (20.97%) and 3rd-year students (19.35%) following in that order. This distribution is indicative of a substantial number of upper-level

students who have completed most of their core, elective and specialized courses, participated in design projects, and likely have had some exposure to real-world applications and professional practice though the practicum or on-the-job training. On the other hand, for the alumni survey of 68 respondents, 33 or about 48% graduated before 2020 or more than four years already. Their feedback is particularly valuable because they have likely encountered the old curriculum and traditional onsite classroom delivery. On the other hand, 28 or about 42% compose the alumni respondents who graduated in 2023 and 2024. This batch have encountered the most recent academic advancements and pedagogical innovations that are integrated into the current civil engineering curriculum.

CE-QOL Curriculum Survey Results

The CE-QOL Curriculum Assessment Survey aims to determine if the students and alumni learned concepts in general about CE-QOL from the CE common, major and specialized courses in the curriculum. The questions used the 5-point Linkert scale (*5: Strongly Agree, 3: Neutral and 1: Strongly Disagree*).

CE-QOL Facets Awareness Results

The survey data provides a multifaceted perspective on the perceptions of students and alumni regarding the efficacy of the civil engineering curriculum at DLSU in addressing critical areas related to quality of life. Table 1 shows the questions related to the five CE-QOL facets. Table 2 shows the ratings from 1 to 5 for the questions in Table 1.

Table 1: Awareness Survey on CE-QOL Curriculum on the Five CE-QOL Facets

CE Facet	Student Survey Questions	Alumni Survey Questions
1.Infrastructure Development	*1.1 I understand how civil engineering contributes to the design and construction of safe and sustainable housing.*	*The curriculum covers how civil engineering projects contribute to improving public infrastructure such as housing, roads, bridges, and utilities that enhance community life.*
	1.2 I have learned about the role of civil engineering in the development of resilient public infrastructure to enhance transportation and mobility (e.g., roads, bridges, railways).	
	1.3 I have learned strategies to develop smart cities and thus enhancing the quality of the built environment.	
2. Water Supply & Sanitation	*2.1 I can explain how civil engineering ensures access to clean water and effective sanitation systems.*	*The curriculum provided adequate coverage on how civil engineers contribute to improving public health, such as through water supply, sanitation, and waste management.*
	2.2 I have learned the importance of wastewater treatment and its impact on public health and the environment.	
	2.3 I have learned effective strategies how to effectively utilize rain and flood water for the benefit of the community.	
3, Disaster Resilience	*3.1 I understand how civil engineering designs structures to withstand natural disasters (e.g., earthquakes, floods).*	*Disaster resilience and the role of civil engineering in reducing risks from natural disasters are adequately emphasized in the curriculum.*
	3.2 I know how to analyze and design structures (e.g. buildings, bridges) to assure safety and serviceability based on design codes and standards.	
	3.3 I have learned how civil engineers contribute to disaster recovery and rebuilding efforts in affected communities.	
4. Sustainable Practices	*4.1 I understand that civil engineers have a responsibility to incorporate sustainability in their designs to improve community health and well-being.*	*The concept of sustainable design and consruction, including environmental and social responsibility, is integrated into the civil engineering curriculum.*
	4.2 I have learned how civil engineers integrate eco-friendly materials and practices into construction projects.	
	4.3 I understand how sustainable infrastructure can mitigate environmental impacts and reduce carbon footprints.	
5. Climate Change Adaptation	*5.1 I am aware of how civil engineering helps communities adapt to climate change through resilient infrastructure design.*	*An understanding on the impact of civil engineering projects to climate change and environmental degradation is addressed in the curriculum.*
	5.2 I have studied the role of civil engineering in reducing environmental degradation through sustainable practices.	
	5.3 I understand the concept of green building practices and their impact on climate change.	

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Table 2: Summary of CE-QOL Facets Ratings

			Percent (No. of Ratings over Total Responses)									
	Mean Rating		Rated '1'		Rated '2'		Rated '3'		Rated '4'		Rated '5'	
CE-QOL FACETS	Stud	Alum	Stud	Alum	Stud	Alum	Stud	Alum	Stud	Alum	Stud	Alum
1. Infrastructure Development	4.7	3.9	0.0	0.0	0.6	10.1	5.0	20.3	23.3	40.6	71.1	29.0
2. Water Supply & Sanitation	4.5	3.9	0.0	1.4	2.8	11.6	8.3	17.4	26.7	37.7	61.7	31.9
3. Disaster Resilience	4.1	4.1	1.1	2.9	6.1	10.1	19.4	8.7	25.6	29.0	47.8	49.3
4. Sustainable Practices	4.6	3.8	0.0	1.4	0.6	15.9	3.9	14.5	26.7	36.2	68.9	31.9
5. Climate Change Adaptation	4.6	3.8	0.0	0.0	0.6	13.0	5.0	23.2	26.1	34.8	68.3	29.0

Infrastructure Development. Students' mean (4.7) shows a very strong awareness and belief in the essential role of infrastructure in societal well-being. The extremely high '5' ratings (71.1%) among students indicate they view this as a core function of civil engineering and its most tangible contribution to QOL. Alumni give a lower mean (3.9), with only 29% rating it '5', suggesting: (a) Possibly greater exposure to real-world infrastructure limitations, such as budget constraints, poor planning, or bureaucratic delays or (b) Potential curricular shift over time: modern programs likely emphasize the direct societal impact of infrastructure more than in the past.

Water Supply and Sanitation. A strong area of confidence for students, with a high mean and majority believe it is a vital CE responsibility for public health. Students recognize this area's impact, suggesting current courses (CE Orientation, Urban Engineering) successfully convey real-world significance. Alumni again rate it notably lower. Alumni may see water services as increasingly handled by specialized environmental or utility sectors, thus perceiving CE's influence as indirect or shared.

Disaster Resilience. Only area of agreement (equal mean rating). High agreement suggests that both legacy and modern programs address resilience, likely through structural design, geotechnical, and hydraulics courses. Indicates a shared recognition that civil engineers are integral to disaster risk reduction, e.g., through resilient infrastructure, flood control, and emergency planning. Alumni rate it slightly more favorably in the highest category, suggesting first-hand experience in disaster response might reinforce the value of CE in this area. Students may understand its importance but lack applied experience, accounting for more moderate ratings.

Sustainable Practices. The largest rating gap (+0.8): Students strongly value sustainability, likely reflecting: curricular emphasis on green building, life-cycle design, and environmental stewardship and Influence of global movements like SDGs and ESG. Alumni are less enthusiastic, with a third rating this a '3' or below which may suggest a generational knowledge gap or lesser emphasis during their academic formation.The difference highlights the evolution of CE education toward integrating ethical, environmental, and lifecycle thinking. This validates the impact of ABET/CHED/ESG-driven curricular modernization.

Climate Change Adaptation. Like sustainability, this shows a large discrepancy in perceived importance. Students' strong scores suggest that recent CE education places high emphasis on climate risks, carbon reduction, and adaptation design. Alumni's low ratings imply: limited exposure to climate science in past engineering education or possibly no formal courses addressing climate adaptation planning. This suggests that curriculum has evolved from purely technical to socially and ecologically responsible engineering.

CE-QOL Curriculum Content & Delivery Results

Guided by the CE-QOL Curriculum Framework, the survey tried to capture if the curriculum and the course delivery are effective in imparting an awareness and understanding on the important role of discipline to a community's well-being and quality of life. Table 3 shows the questions related to the Content and Delivery elements in the curriculum. Table 4 shows the rating for each question in Table 3.

CE Courses on QOL Improvements. Students (4.6 mean) significantly outscore alumni (3.9), with 72.8% rating it a '5'. This likely reflects a curriculum shift toward emphasizing community

impact, sustainability, and public welfare. Alumni ratings suggest that earlier versions of the curriculum may have been more technical and less community-oriented. Implication: Newer cohorts maybe better equipped to view CE as a service profession, not just a technical field.

Ethical & Social Responsibilities. Very strong ratings from students (mean 4.7), with 78.9% giving a '5' compared to only 37.7% of alumni. Indicates a significant integration of ethics in recent syllabi—possibly through case studies, codes of conduct, or community-engagement projects. Alumni might have had minimal exposure to structured ethical decision-making. Implication: Students are being trained to consider inclusive design, equity, and justice, aligning with global CE practice trends.

Real-World Applications & Technological Innovations. Similar means (4.1 vs. 4.0) and '5' ratings (45.6% vs. 44.9%) for both groups. Suggests curricular consistency in exposing students to technological tools and real-world relevance but also hints at potential for deeper industry engagement. The curriculum is functional but possibly lagging behind industry pace.

Multidisciplinary Collaboration. When asked whether the curriculum addresses civil engineering with a multidisciplinary and global perspective, students are in 90% in agreement with 57.2% (“5”), while the alumni’s ratings are mixed with top scores (39.1%) but with disagree at 13% (“2”). Students now experience greater integration across disciplines likely due to updated curricula encouraging teamwork and diverse and interdisciplinary project exposure. Alumni may have found limited collaboration opportunities across disciplines in their education or practice.

Impact of CE to QOL. Students strongly agree (4.6 mean, 65% '5'), whereas only 42% of alumni gave the top rating. A strong case of perception drop is evident. Students leave school with high belief in CE's QOL impact, but alumni experience may have a disconnect between academic ideals and actual societal influence, possibly due to implementation gaps in the profession. Alumni may have learned the connection of CE to QOL only later in practice, not in school.

Curriculum Delivery & Teaching Methods. In terms of whether the curriculum offers sufficient opportunities to engage with real-world challenges related to improving community life through lectures, projects, learning materials, site visits, and field trips, the response was largely positive: students: 83.9% agree, though less top-heavy (only 47.2% “5”), while alumni: 72.5% agreement, with many staying at “4”. Alumni may recall more traditional, less innovative methods, while students benefit from modernized pedagogy. Moreover, the scope or implementation of learning opportunities may differ significantly depending on the course or instructor.

Personal Reflection. Students received the lowest rating, with only 35.00% of students strongly agreeing that they are confident and prepared to apply their knowledge to enhance the quality of life in communities.

This implies a discrepancy in the self-perceived readiness of students to transition from academic learning to practical application. For the alumni, results are almost the same at 31.9% for “5” and 39.1% with a 4. Nevertheless, the 15.9% neutral responses and 13% low ratings indicate that the curriculum may not have resulted in a strong sense of readiness or purpose in relation to community impact for certain individuals.

Relating the Survey Results to the DLSU BSCE Curriculum

The BSCE Curriculum at De La Salle University has undergone revisions through the years since its re-establishment in 1987. Aside from the specialized courses, new courses and teaching and learning methods were introduced especially in later years. Among the new courses and innovative teaching and learning strategies being implemented are:

a) ***Civil Engineering Orientation (CEORIEN),*** an introductory course for freshmen where the students are oriented on the CE profession – its impact to society, the various specializations and professional practice requirement.

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b) ***PROCESS, a Professional CE Specialty Symposium*** (A 4th hour activity under CEORIEN) where invited resource speakers are professional civil engineers sharing their professional practice and experiences including their specialization.
c) ***CEBUILD Service Learning (SL),*** a learning strategy where students participate in an organized service activity that meets identified community needs.
d) ***Urban Engineering (CESPECS),*** a specialized course on the application of civil engineering to urban development in the built environment.
e) ***Capstone Design Project***, a culminating activity and learning exercise for seniors to apply the knowledge and hands-on technical skills they have gained through coursework.

Table 3: Awareness Survey on CE-QOL Curriculum Content and Delivery

CE Facet	Student Survey Questions	Alumni Survey Questions
6.QOL Improvements	*6.1 I understand how civil engineering improves accessibility and inclusivity in public spaces and infrastructure.*	*I believe that the curriculum fosters an understanding of how civil engineering can address social equity (e.g accessibility and mobility) and contribute to inclusive community development, urban beautification and cultural heritage preservation.*
	6.2 I can identify how transportation systems designed by civil engineers enhance mobility and connectivity for communities.	
	6.3 I have learned how civil engineering contributes to urban beautification and aesthetic improvements in cities.	
7. Ethical & Social Responsibilities	*7.1 I am aware of the ethical responsibilities of civil engineers in ensuring public safety and welfare.*	*The curriculum includes an understanding of ethical considerations in balancing technical solutions with the social responsibility and development of communication skills to ensure effective and responsible community and stakeholders' interaction and engagements.*
	7.2 I have learned the importance of engaging with communities to understand their needs during the design and construction process.	
	7.3 I have developed effective communication skills to be able to interact with people and future stakeholders in civil engineering projects.	
8. Real-World Applications & Technological Innovations	*8.1 I have participated in projects or case studies that address real-world community challenges through civil engineering solutions.*	*The curriculum includes practical case studies or projects using modern tools that focus on the role of civil engineering in enhancing quality of life.*
	8.2 I have been exposed to modern tools and technologies (e.g., GIS, BIM) that are used to improve infrastructure and community planning.	
	8.3 I have learned to analyze data for impact assement using advanced computational and data processing tools .	
9. Multidisciplinary Collaboration	*9.1 I have learned how to interact, network and collaborate with students and people from other disciplines in solving civil engineering problems.*	*The curriculum also adressed civil engineering with multidisciplinary and global perpective requiring collaboration and consultation of experts from various disciplines.*
	9.2 I have learned how civil engineering interacts with other fields (e.g., environmental science, urban planning) to address complex societal challenges.	
	9.3 I understand how global challenges, such as urbanization and population growth, are addressed through civil engineering solutions.	
10. Impact of CE to QOL	*10.1 I have learned the need to assess the societal and environmental impact of civil engineering projects.*	*The civil engineering curriculum emphasized the important role and responsibility of civil engineering practice and projects in improving the quality of life of communities.*
	10.2 I have studied examples of civil engineering projects that have significantly improved quality of life locally and globally	
	10.3 I now understand that civil engineering has significant and long terms effects to the people, environment, community and to quality of life.	
11. Curriculum Delivery & Teaching Methods	*11.1 The faculty encourage discussions on the social, economic, and environmental implications of civil engineering projects on the community in our courses.*	*I believe the curriculum provides sufficient opportunities through lectures, projects, learning materials, site visits and field trips to engage with real-world challenges related to improving the quality of life in communities.*
	11.2 There are exposure and site visits in the curriculum where we learn actual and real life issues on civil engineering.	
	11.3 The textbooks, learning materials and assignment in relevant courses do not focus only on technical topics but also on societal issues.	
12. Personal Reflection	*12. I feel confident and prepared to apply the knowledge gained from the curriculum to contribute positively to the quality of life in communities as a civil engineer.*	*As a civil engineer and with your present professional practice, do you feel that the civil engineering curriculum equipped you with an understanding and knowhow on how you can contribute to improving the quality of life in communities?*

Table 4: Summary of CE-QOL Curriculum Aspects Ratings

			Percent (No. of Ratings over Total Responses)									
	Mean Rating		Rated '1'		Rated '2'		Rated '3'		Rated '4'		Rated '5'	
CE-QOL CURRICULUM	Stud	Alum	Stud	Alum	Stud	Alum	Stud	Alum	Stud	Alum	Stud	Alum
6. QOL Improvements	4.6	3.9	0.0	4.3	2.2	7.2	3.9	15.9	21.1	43.5	72.8	29.0
7. Ethical & Social Responsibilities	4.7	4.0	0.6	0.0	0.6	11.6	2.8	15.9	17.2	34.8	78.9	37.7
8. Real-World Applications & Technological Innovations	4.1	4.0	2.8	1.4	5.0	13.0	13.3	14.5	33.3	26.1	45.6	44.9
9. Multidisciplinary Collaboration	4.5	3.9	0.0	4.3	2.2	13.0	7.8	8.7	32.8	34.8	57.2	39.1
10. Impact of CE to QOL	4.6	4.0	0.0	1.4	0.6	10.1	6.7	20.3	27.8	26.1	65.0	42.0
11. Curriculum Delivery & Teaching Methods	4.3	4.0	0.6	0.0	3.3	4.3	12.2	23.2	36.7	40.6	47.2	31.9
12. Personal Reflection	4.1	3.9	0.0	1.4	6.7	11.6	11.7	15.9	46.7	39.1	35.0	31.9

These courses and innovative teaching and learning methods may have enhanced the awareness and understanding of the present students as compared to the alumni which is reflected in the survey. Examples of feedback from the students on the open-ended question of the survey on S*hare a course and a specific assignment where you think you learned CE & QOL*" is shown in Table 5. The parallel open-ended question for the alumni is "*Share a specific project in your practice which you believe had a significant contribution to QOL?* Table 6 shows some examples of alumni responses.

Table 5: Student Responses

1	*CEORIEN - when we were assigned to interview current Civil Engineers. I learned a lot about the field and what civil engineers really do. It's not just about building structures but also being meticulous in everything you do.*
2	*In CEBUILD, we were introduced to the concept of LEED certification and shown examples on how structures can be made more environmentally-friendly… Also our term end project in assessing the safety of housings emphasized disaster resilience …*
3	*In CESPECS, we explored how civil engineering shapes communities and improves daily life. A key project involved designing a sustainable urban area with efficient transportation, flood-resistant housing, and green spaces.*

Table 6: Alumni Responses

1	*In my practice as a civil engineer, one of my most impactful contributions to quality of life was being part of an affordable, community-centered socialized housing project. The goal was to keep costs low without compromising on safety or functionality. By carefully selecting cost-effective materials, optimizing structural design and construction methods; and incorporating shared green spaces, we have helped create a safe, resilient, and welcoming living community.*
2	*My first project was the construction of a school. I believe education plays a big part in quality of life.*
3	*As a civil engineer working in DPWH, all of our projects greatly benefit the people in our community. From road construction particularly farm to market roads, to bridges, and flood control structures. I can say that these infrastructures help improve the quality of life of people.*

Conclusion

The CE-QOL Curriculum Framework demonstrated that curriculum content and delivery experienced by the students and the alumni may influence their awareness and understanding of CE-QOL. Across all five CE-QOL facets, *students under a relatively new curriculum consistently report higher percentages in the top rating category ('5')*, especially in Infrastructure Development (71.1%), Sustainable Practices (68.9%), and Climate Change Adaptation (68.3%). Modern CE curricula seem to be effective in conveying the societal impact of engineering to the students, especially in climate and sustainability domains. In contrast, *alumni responses are more distributed, with a higher concentration in the middle ratings ('3' and '4').* Their highest awareness was reported in Disaster Resilience (49.3% rated '5') and Water Supply & Sanitation (31.9% rated '5'), but overall, fewer alumni gave the highest rating across all facets compared to students. Alumni responses, while still generally positive, reflect a more balanced or critical stance. In assessing curriculum aspects like QOL Improvements and Curriculum Delivery, alumni rated these significantly lower than students. This may point to a gradual dilution of perceived impact over time, a shift in perspective influenced by professional practice and lived experience or a reflection of a CE curriculum they experienced where QOL is not emphasized. Overall, the results affirm that while curriculum reforms in recent years have successfully embedded QOL-oriented themes, further action is necessary to ensure these concepts translate into meaningful, real-world impact. *By updating teaching*

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strategies and pedagogies, enhancing field-based learning and continuously aligning educational outcomes with evolving professional demands, the curriculum will prepare civil engineers who not only build our world—but who also improve the lives of those living in it.

References

Biggs, J., & Tang, C. (2007). Using Constructive Alignment in Outcomes-Based Teaching and Learning Teaching for Quality Learning at University (3rd ed., pp. 50-63). Maidenhead: Open University Press.

Budayova, Z. et al (2022). Dimensions of Quality of Life in Selected Social Areas, June 2022, Publisher: International Scientific Board of Catholic Research and Teachers in Ireland, ISBN: 978-0-9957986-4-9.

Decyk, K. and Rzeszutek, A. (2021). "Economic Aspects of the Quality of Life," Olsztyn Economic Journal, 16(2), 143–157, ISSN 1897-2721

Felce, David and Perry, Jonathan (1995). "Quality of Life: Its Definition and Measurement," Research in Development Disabilities, Vol. 16, No. 1, pp. 51-74, 1995, Elsevier Science, Ltd.

Haraldstad, K. et al (2019). "A systematic review of quality of life research in medicine and health sciences," Quality of Life Research (2019) 28:2641–2650

Hill, J. (2024). "The benefits of Civil Engineering: Improving Our Everyday Lives," https://blog.sporteng.com.au/, Oct 2024

Hollandsworth, J. (1988). "Evaluating the Impact of Medical Treatment on the Quality of Life: A 5-Year Update," Soc. Sci. Med., Vol 26, No. 4, 425-434

Oreta, A. (2024a). "Civil Engineering and the UN Sustainable Development Goals," https://digitalstructures.blogspot.com/2024/12/civil-engineering-and-un-sustainable.html

Oreta, A. (2024b)."A Conceptual Framework Relating Civil Engineering and Quality of Life," https://digitalstructures.blogspot.com/2024/12/a-conceptual-framework-relating-civil.html

Oreta, A, Galupino, J, and Uy, E. (2025). Survey of DLSU Students and Alumni on Civil Engineering and Quality of Life, Unpublished Report, April 2025.

Ruzevicius, J. et al (2007). "Quality of Life and its Components' Measurement," Engineering Economics, January 2007

Senate Bill No. 1467 (2022). Philippine Building Act of 2022, Filed on Nov. 3, 2022, https://legacy.senate.gov.ph/lis/bill_res.aspx?congress=19&q=SBN-1467

WHOQOL (1998). "The World Health Organization Quality of Life Assessment (WHOQOL): Development and General Psychometric Properties," Soc. Sci. Med., Vol. 46., No. 12, pp. 1569 – 1585, 1998, Elsevier Science, Ltd.

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