

The Concept of Ulul Albab Character-Based Education in the Department of Civil Engineering to Achieve Sustainable Infrastructure

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Abstract- Character education is a distinctive feature of higher education institutions, grounded in the vision and mission they strive to achieve. Character education embodies the development of reliable human resources in cognitive, psychomotor, and affective aspects by strengthening local wisdom. These reliable human resources are expected to support Indonesia's development, especially in sustainable infrastructure. The provision of infrastructure to achieve national welfare and prosperity requires individuals with knowledge, skills, and positive behavioural attitudes. In addition, spiritual and mental strength also contribute. This paper examines the concept of Ulul Albab character education in one engineering department included in the same scientific cluster, namely Civil Engineering. The method used is a contextual and conceptual study of character education at the UIN Maulana Malik Ibrahim Malang campus. Analysis by presenting theoretical studies and previous studies on character education compared to the concept of UIN Maulana Malik Ibrahim Malang. State Islamic University of Maulana Malik Ibrahim Malang, under the management of the Ministry of Religious Affairs, has the characteristic of Islamic boarding school-based education. This campus strives to implement the Ulul Albab character, consisting of dhikr (dzikir), thought (fikir), and action (amal), in all academic and non-academic curricula. State Islamic University of Maulana Malik Ibrahim Malang, one of the Islamic religious universities, is supported by four pillars in realising the Ulul Albab character. The four pillars include spiritual depth, moral nobility, breadth of knowledge, and professional maturity. This is implemented across all levels, including faculties and departments. The of Department Civil Engineering, a field of engineering and applied science, requires support for implementing the four pillars that integrate religious values with civil engineering.

Keywords—character, education, higher education, civil engineering, ulul albab

I. INTRODUCTION

Maulana Malik Ibrahim State Islamic University of Malang is committed to supporting national development by improving the quality of human resources through formal education. This paper aims to present the concept of Ulul Albab character education at UIN Maulana Malik Ibrahim Malang, specifically in the Department of Civil Engineering.

The Department of Civil Engineering, a branch of applied science, integrates educational and teaching systems with cognitive, affective, and psychomotor approaches [1]. These three aspects are included in the learning curriculum, which assesses students' knowledge, skills, and attitudes [2]. Curriculum development at the knowledge and skills level involves national curriculum standards, engineering professional criteria, and job-market requirements. Meanwhile, attitude development refers to national curriculum standards, engineering professional ethics, and the specifics of higher education institutions. Indonesia's infrastructure development requires human resources in the form of reliable professionals who meet all the required criteria. These professionals, known as engineers, must possess competency certificates that meet established standards. Data from the Indonesian Engineers Association (PII) shows that from 2017 to 2019, Indonesia still lacked 120,000 engineers to meet the need for engineers in infrastructure development [3]. The State Islamic University (UIN) Maulana Malik Ibrahim Malang, a pioneer in scientific integration [4], is striving to address this shortage, as the campus already offers a Department of Civil Engineering. The Department of Civil Engineering at UIN Maulana Malik Ibrahim Malang, established in 2024, is actively expanding its role in fulfilling the Tri Dharma of higher education.

II. METHODS

The method used is a contextual and conceptual study of character education at the UIN Maulana Malik Ibrahim Malang campus, specifically in the Department of Civil Engineering. Several literature sources supporting this research include theories and previous studies. These references are used as comparative material to generate novelty in this research. The analysis was conducted by presenting previous theories and studies on character education in higher education, particularly in Indonesia. These theories and previous studies were compared with the educational concept at UIN Maulana Malik Ibrahim Malang. References in the form of national competency standards and civil engineering were used in this study.

III. RESULTS AND DISCUSSION

As a Islamic educational institution, this campus combines general knowledge with Islamic values. This knowledge is applied in dhikr (remembrance of God), thought (fikir), and charity (amal). The concept of character education at UIN Maulana Malik Ibrahim has been developed over the years and continues to this day. The Ulul Albab character is a distinctive and unique characteristic that the entire campus community strives to display and embrace. The Department of Civil Engineering, established in 2024, is relatively new and is expected to produce graduates with the Ulul Albab character. The challenge of preparing Indonesia's highly competitive infrastructure cannot be achieved solely by engineers possessing extensive knowledge and advanced skills; ethics and morals are also crucial determinants. Therefore, engineers with strong character and ethical values will enhance their knowledge and skills. Table 1 compares the competency standards of Civil Engineering students across four standard references. The first reference is the competency standard according to the four main pillars of Ulul Albab UIN Malang. The second reference is the competency standard of the Indonesian National Qualifications Framework (Kerangka Kualifikasi Nasional Indonesia/KKNI), and the third is the standards of the Indonesian Engineers Association (Persatuan Insinyur Indonesia/PII). The final reference is based on the provisions of the Decree of the Minister of Manpower of the Republic of Indonesia.

TABLE 1
Comparison of Competency Standards for Civil Engineering Graduates

The Four Main Pillars of Ulul Albab (UIN Malang)	Educational Approach (KKNI)	Basic Competencies of Civil Engineers (PII)	Responsibilities of Civil Engineers (Ministry of Manpower)
Dhikr (dzikir), Thought (fikir), and Charity (amal): 1. Spiritual Depth 2. Moral Excellence 3. Broadness of Knowledge 4. Professional Maturity	1. Attitude (Affective) 2. Knowledge (Cognitive) 5. Skills (Psychomotor)	1. Professional Ethics 2. Knowledge and Insight 3. Skills and Expertise	1. Social 2. Professionalism

Ulul Albab is based on the principles of stages in dhikr (dzikir), thinking (fikir), and charity (amal). Dhikr is the remembering and awareness of the presence of Allah SWT, supported by physical and spiritual belief in the greatness. Fikir is the cultivation of thought, reasoning, and logic, along with knowledge of God's creation, guided by one's dhikr. Meanwhile, charity, often also called good deeds, are acts of dhikr and of thinking that utilise God's creation to achieve a better, higher-quality life by harmonising worldly and hereafter matters. Dhikr (dzikir), thinking (fikir), and charity (amal) will guide every person to be characterised by Ulul

Albab, namely humans possessing four pillars: spiritual depth, moral nobility, breadth of knowledge, and professional maturity. These four pillars serve as competency standards that students of UIN Maulana Malik Ibrahim Malang must possess. This is supported by all available resources, including lecturers, educational staff, curriculum, policies, budget, and campus facilities. Ulul Albab (Islamic scholar) is defined as a scholar who possesses a range of intellectual, emotional, and behavioural qualities in daily life [5]. The meaning of these four pillars is as follows:

1. Spiritual depth, namely the ability to live and behave based on the spiritual principles of Islam as taught by Allah SWT through the Quran and Sunnah.
2. Moral nobility, namely the ability to behave well and nobly in accordance with Islamic teachings and the example of the Prophet Muhammad (peace be upon him).
3. Breadth of knowledge, namely the ability to master knowledge and insight that can improve the quality of life and solve problems in life.
4. Professional maturity, namely the ability to fulfil one's mandate and complete tasks responsibly in one's field of knowledge and expertise.

The Ulul Albab is applied as a competency standard in all departments at UIN Maulana Malik Ibrahim Malang, including the Department of Civil Engineering. The integration of Civil Engineering, based on the four pillars in Ulul Albab, is fully incorporated into the curriculum, in line with recognised standards such as KKNI, PII, and the Ministry of Manpower. A comparison of the principles in the four competency standards in Table 1 shows similarities and continuity. The Indonesian National Qualifications Framework (Kerangka Kualifikasi Nasional Indonesia/KKNI) serves as the basis for the curriculum in all departments, including Civil Engineering. According to KKNI, three standards must be possessed by Civil Engineering Bachelor students: an Attitude aspect called affective, meaning students have a responsible attitude, ethics, behaviour, and noble morals in carrying out the mandate and duties of the Civil Engineering field [6]. The knowledge aspect (called cognitive) involves understanding and retaining what is learned in Civil Engineering. Meanwhile, skills (Psychomotor aspects) mean that Civil Engineering students have the expertise and skills in the form of actions and actions ideally to complete Civil Engineering work and all relevant matters. The three aspects, according to the KKNI, also correspond to the three criteria set by the Indonesian Engineers Association (Persatuan Insinyur Indonesia/PII): Civil Engineering Bachelor students must demonstrate excellence in Professional Ethics, Knowledge and insight, and Skills and Competencies. Professional ethics are closely related to attitudes, knowledge and insight, including the cognitive sphere, and skills are skilled abilities, including psychomotor aspects [7]. According to the Indonesian Ministry of Manpower, Civil Engineering graduates have two major responsibilities: meeting society's social needs and resolving social problems professionally, in accordance with

the ethical standards and competencies of engineers in the field of Civil Engineering [8]. By meeting the four reference standards as in Table 1, it is hoped that Civil Engineering graduates from UIN Malang can become reliable engineers and compete at the national and international levels. This reliability can empower sustainable infrastructure development. The involvement of reliable Indonesian engineers in realising sustainable development goals is very important, as stated in Regulation of President RI No. 111 of 2022 concerning the Implementation of the Achievement of Sustainable Development Goals [9]. The regulation states that the objectives of Sustainable Development include improving the socio-economic welfare of the community, maintaining environmental quality, implementing inclusive development, and realising good governance for the continuity of life from one generation to the next. The need for reliable engineers is also to fulfil the successful implementation of sustainable construction principles in national development. This is as stipulated in Regulation No. 9 of 2021 of the Minister of Public Works and Public Housing concerning Guidelines for the Implementation of Sustainable Construction [10]. To achieve successful, sustainable development, engineers need excellence in knowledge, skills, and attitudes. This will be achieved by providing undergraduate Civil Engineering students with an education grounded in Ulul Albab, with its application in ethics, professionalism, responsibility, trustworthiness, mastery of knowledge and technology, and competent expertise and skills.

IV. CONCLUSION

The Ulul Albab character is a distinctive and unique characteristic that the entire academic community of UIN Maulana Malik Ibrahim Malang strives to display and possess, including the Department of Civil Engineering. It is hoped that it will produce graduates with the Ulul Albab character. Every Civil Engineering engineer who possesses the Ulul Albab character possesses four pillars: spiritual depth, moral nobility, breadth of knowledge, and professional maturity. The integration of Civil Engineering knowledge based on the four pillars of Ulul Albab is comprehensively incorporated into the curriculum content in line with recognised standards such as the Indonesian National Qualifications Framework (Kerangka Kualifikasi Nasional Indonesia/KKNI), the Indonesian Engineers Association (Persatuan Insinyur Indonesia/PII), and the Ministry of Manpower. According to the KKNI, three standards that Bachelor of Civil Engineering students must possess are: an affective attitude, meaning students possess a responsible, ethical, behavioural, and moral attitude in carrying out the mandate and duties of Civil Engineering. The cognitive aspect of knowledge (called cognitive) encompasses an understanding and knowledge of the subjects studied related to Civil Engineering. Meanwhile, skills (Psychomotor aspects) mean that Civil Engineering students have the expertise and skills in the form of ideal actions and works to complete Civil Engineering projects and all relevant matters.

The three aspects, according to the KKNI, also correspond to the three criteria of the PII standards: Civil Engineering Bachelor students have excellence in Professional Ethics, Knowledge and insight, and Skills. Professional ethics are closely related to attitudes, knowledge and insight, including the cognitive sphere, and skills are skilled abilities, including psychomotor aspects. The Ministry of Manpower standards state that Civil Engineering graduates have two major responsibilities: to fulfil society's social needs and to solve social problems professionally, in accordance with the ethical standards and competencies of engineers in the field of Civil Engineering. To achieve sustainable development, engineers need excellence in knowledge, skills, and attitudes. This will be achieved by providing Civil Engineering undergraduate students with education grounded in Ulul Albab, translated into practice in accordance with KKNI, PII, and the Ministry of Manpower, including ethics, professionalism, responsibility, trustworthiness, mastery of knowledge and technology, and competent expertise and skills.

REFERENCES

- [1] R. Lubis., A. Rahmadani, A.R. Fadillah, F. Fadillah, W.A. Putri, L.K. Nasution, and K. Khairunnisa, "Aplikasi Perkembangan Kognitif Afektif Psikomotorik Moral dan Spiritual Peserta Didik dalam Pembelajaran pada Sekolah Dasar Kelas 6," *ALFIHRIS: Jurnal Inspirasi Pendidikan*, vol. 3, pp. 148-159, January 2025.
- [2] Paramista, "Menyelami Esensi Tujuan Pembelajaran: Panduan Lengkap dari Ranah Kognitif, Afektif, Hingga Psikomotor," unpublished.
- [3] R. Sinaga, and K. Wibisono, "Kementerian PUPR: insinyur Indonesia harus bersertifikat kompetensi," unpublished.
- [4] Y.N. Hanum, "UIN Malang Disebut sebagai Pelopor Integrasi Keilmuan," unpublished.
- [5] R. Aziz, "Pendidikan Ulul Albab Pada Mahasiswa Universitas Islam Negeri (UIN) Malang," *Progresiva: Jurnal Pemikiran & Pendidikan Islam*, vol.2, pp. 157, June 2007.
- [6] I. Ishak, "Desain Kurikulum Berbasis Kompetensi KKNI Pada Prodi Teknik Sipil," *Rang Teknik Journal*, vol. 3, pp. 02, June 2020.
- [7] I. Miswar, B. Hidayat, and T. Ophiyandri, "Relevansi Unit Kompetensi Insinyur Sipil pada Bidang Pekerjaan dan Pengaruhnya Terhadap Kinerja Profesi," *Jurnal Rekayasa Sipil (JRS-Unand)*, vol. 13, pp. 123, October 2017.
- [8] Kementerian Ketenagakerjaan Republik Indonesia, "Keputusan Menteri Ketenagakerjaan Republik Indonesia No. 196 Tahun 2021 Tentang Penetapan Standar Kompetensi Kerja Nasional Indonesia Kategori Jasa Profesional Ilmiah dan Teknis Golongan Pokok Jasa Arsitektur dan Teknik Sipil: Analisis dan Uji Teknis Golongan Jasa Arsitektur dan Teknik Sipil serta Konsultasi Teknis yang Berhubungan dengan itu (YBDI) pada Jabatan Kerja Arsitek."
- [9] Kementerian Sekretariat Negara Republik Indonesia, "Peraturan Presiden Republik Indonesia Nomor Ili Tahun 2022 Tentang Pelaksanaan Pencapaian Tujuan Pembangunan Berkelanjutan."
- [10] Kementerian Pekerjaan Umum dan Perumahan Rakyat Republik Indonesia, "Peraturan Menteri Pekerjaan Umum Dan Perumahan Rakyat Republik Indonesia Nomor 9 Tahun 2021 Tentang Pedoman Penyelenggaraan Konstruksi Berkelanjutan."