Ethics and values: The need for student awareness of workplace value systems

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ABSTRACT - Increasingly the literature highlights the importance of having ethics and values taught at all levels of the education system. Governments, such as those of India, New Zealand and Australia, are increasingly focused on introducing curricular requirements for values education and ethics, and some universities in India have already introduced 'core generic papers' across all degree programmes, including ethics. Co-operative education provides a unique learning environment which leans towards exploring the practice of professional values and ethics. In the workplace, decisions are often made through consideration of adherence to a particular value system or ethical code. A co-operative education student, situated in a workplace environment, observes, explores, and practices the workplace value systems and codes. Such a conclusion presents several challenging issues for co-operative education practitioners. Firstly, there presents a need to investigate what core values are held as important within the workplaces that students will be placed within and, secondly, students need to be provided with learning opportunities to practice their ethical decision making before being exposed to the workplace. Co-operative education programmes need to scaffold opportunities to allow students to advance their understanding of ethical behavior and identify skills required to engage with ethical issues. In addition, we need to consider that

Graduates should not just be prepared to become acquirers of existing practice, but also become critical agents in the development and advancement of ethical workplace practice. Thus the aim of this presentation will be to explore considerations around workplace value systems, development towards a generic framework, and the opportunities work placements presents towards developing students to be critical moral agents**.**

Keywords: Legalistic Moralism, Ethical Hierarcicalism, Ethical Hierarcicalism, Legalistic Moralism, Engineering ethics, Morality, Ethical Realism, Goals.

I.INTRODUCTION

Nine theories of ethics that rule the world

1. **Consequentialism maintains that the majority of an action depends on the non moral consequences that the action brings about.**

Morality of an action consists of the ratio of good to evil that the action produces. We should perform right and only right action in terms of good and evil, as each individual defines good and evil, and right and wrong. There is no objective right and wrong or good and evil. The person defines these. You jump into a car at the mall. You could leave a note, but since there were no witnesses and the owner is not around, you decide not to because you recognize that the damage is low (probably only a couple of hundred dollars). The car owner probably has insurance, and it would be such a hassle for the owner to contact you and your insurance company. You may have to end up paying higher premium, the owner may think ill of you all of which are non moral reasons that may be unpleasant for you. Ethical egoism state that you should always act so that your actions produce what is in your own best long-term interests. Personal egoism states that an individual should always act in his or her own best long-term interests, but that does not say how others should act. Impersonal egoism states that an individual should always act in his or her own best long-term interest.

2. **Values Clarification (Philosophical Relativism) teaches that the most important aspect is not what one believes, but being aware one's own feelings, beliefs, and values systems. People thus consider alternative models of thinking and acting. By acting thusly and making one's own choices, one develops one's own values.**

In this setting, a value is what a person likes to do. It is NOT an ought-to-do, but Rather a want-to-do. Values clarification puts a heavy emphasis on feelings so much so that it virtually equates values with feelings. It also reflects a philosophical relativism the

belief that there are no moral or ethical absolutes everything is relative. Concluding what is right or wrong is basically anybody's guess. Proponents of these systems say that they use the Socratic Method every ethical question is a question of either this or that choice. Unfortunately, Socrates and Plato had distinct beliefs about truth and ethics which the proponents of this methodology do not possess

3. Utilitarianism states that the moral standard should be promotion of the best long-term interests of everyone concerned. Much utilitarianism says that which is intrinsically good is pleasure and happiness (known as the hedonistic calculus). Others say there are other things which are intrinsically good such as beauty, power, knowledge, etc.

Act Utilitarianism states that the right utilitarian act is the one that produces the greatest ratio of good to evil for all concerned. Rule utilitarianism teaches us that certain actions almost always have a great utilitarian value and thus general rules are formulated to help us see that we follow these rules of action. A few doctors decide that a number of experiments on a few people, even if most of them died, would be worth it if they could find a cure for a disease that would relieve the suffering of millions of people. Utilitarianism would give the approval for such because it produces the greatest good for the greatest number of people.

4. Legalistic Moralism (Moral Absolutism) states that there are pluralities of absolutes (or norms) with each one covering an area of human experience. These absolutes never conflict with each other. An action that is evil under one absolute is evil under every other absolute and could never be seen as good under any absolute.

Some call this the ethic of absolute ends because we do what is right and trust god or fate or destiny or the forces of good to work things out. There is no personal responsibility for the consequences of morally right acts. We do them, not because they bring us pleasure, but because they are "right"…this is called the "categorical Imperative". A madman shows up at your door with a weapon raving, asking where your loved one is, that he intends to kill the person. You answer truthfully because it would be wrong to lie. You trust that since you have told the truth, things will work out. Perhaps the neighbors have called the police, or someone will intervene, or something will happen.

5. Situation Ethics shows that since legalistic Moralism is encumbered with a bundle of predetermined rules and regulations and while antinomianism says that there are no absolutes, then decision making must be based on a "middle ground". That middle ground then says the guidelines for decision-making must be 1) absolute love (agape) 2) general guidelines of helpfulness (Sophia)

3) Particular moment (kairos).

Love and justice are the same. If love is the end result, then the ends justify the Means. This is not a selfish love, but a love that desires the neighbor's best good at all times. There are four working principles involved) Pragmatism (love gives concrete practical, workable answers) b) Relativism (everything is relative to love) c) Emotivism (each person desires his or her own values) and d) Personalism (persons are the ultimate value). A man finds himself in an unfulfilled marriage, looking for a person with whom

He can deeply connect. A woman is trapped in a marriage that is abusive and filled with

Pain. They find each other and after a while one things lead to another until they are in love. Love being the ultimate goal, they being consenting adults, then they are morally right in having an affair

6. Ethical Realism (as espoused by Reinhold Niebuhr) (the lesser of two evils) states that when absolute norms come into conflict (as they will eventually do) one must decide which to follow. Each solution offers limited alternatives, so the solution which produces the less of two evils is the one to be chosen.

Unavoidable moral dilemmas occur because our world is not perfect. Niebuhr's theory, The Origin of Moral Dilemma, comes from a Christian perspective stating that we live in a "fallen" world since sin entered it. Thus there is an excusable and pardonable sin because people did not cause that dilemma by their own acts. Every decision will have some sinful consequence of which God will forgive. Thus people must make the choice that is the lesser sin and then ask God's forgiveness

Niebuhr talked of a world. War. The Soviet Union was an evil and brutish .Dictatorship over millions of people, forcing them into horrific, hellish conditions. Yet to oppose them in an outright war would bring massive destruction through nuclear weapons. Instead of direct opposition, we chose indirect opposition (the cold war) through economics and alternative means.

7. Ethical Hierarcicalism (Graded Absolutism) is the view that there are many Universal norms, but they are not all intrinsically equal. Thus when a conflict takes place, we must obey the "higher" norm…we choose the greater of the two goods.

Geisler Hierarchical Calculus is:

- Persons are more valuable than things
- God is more valuable than an incomplete person
- A complete person is more valuable than an incomplete person

- An actual person is more valuable than a potential person
- Potential persons are more valuable than actual things (fetus vs. appendage)
- Many persons are more valuable than a few persons
- Personal acts which promote personhood are better than those which don't

Why a person should be held responsible for committing a crime if the crime was a lesser norm .Is it wrong for a man to steal money to purchase a life-saving medicine for?

His child who is dying? Perhaps the system is at fault and not the person.

8. Principle Ethics states that principles are merely value states or guidelines to actions (as opposed to rules or laws). Thus when principles encounter each other in conflict it is not a conflict of norms, but rather an exercise in reasoning and logic.

Principle ethics is the most difficult to study because it demands the area test study and the most incisive analysis of principles and cases with the goal of determining which principles apply to which case. The decision that is made is based upon test of Logic, reasoning, and rationale.

9. Cognitive Moral Development (as espoused by Lawrence Kohlberg) states that ethics education is possible. Just as people develop mentally, physically, and emotionally, they develop a moral cognizance. Using critical thinking tactics such as the Socratic Method, people can solve their ethical dilemmas.

Kohlberg taught that there were six stages of ethical thinking, each stage being of Greater maturity than the previous one. By delineating these levels, we are allowed to

Know and test each our own thinking. This helps us know ourselves better and challenges us to move on to a higher level of thinking. This assumes a sort of natural goodness and integrity in the child whereby he or she will always want to do the right thing if only they had the time to reason things out. This is the idea that people suffer from a character defect if they are void of logical thinking

II. C**ode of ethics for student teachers**

Mandate:

A joint subcommittee consisting of members from two standing committees of the Faculty of Education (Faculty of Education Ethical Review Board and Student Standing) was created to develop a Code of Ethics for Student Teachers and to examine the ways in which this Code will be communicated to students, faculty members and educational partners.

Goals and rationale:

The interests of the two Standing Committees of the Faculty of Education in promoting appropriate ethical and professional conduct have led us to develop the following Code of Ethics for Student Teachers. This code seeks to respond to, and address the following needs:

- The Code addresses the interdependent duties, rights and responsibilities of student teachers, faculty members and educational partners. By addressing common issues and needs, the Code seeks to articulate and make explicit ethical principles that transcend disciplinary boundaries. These principles reflect the fundamental values that are expressed in the duties, rights and responsibilities of all involved in Teacher Education.

- The Code requires a reasonable flexibility in the implementation of common principles. It is designed to help those involved in Teacher Education, as a matter of sound ethical reasoning, to understand and respect the contexts in which they work and accommodate the needs of others.

- The Code seeks to encourage continued reflection and thoughtful response to ethical issues. It does not seek definitive answers to all ethical questions or situations. Rather, it seeks to outline the guiding principles to ethical conduct and to identify major issues which are essential to the development and implementation of this Code

Context of an ethics framework for student teachers

The principles and norms guiding ethical conduct are developed within an ever-evolving complex societal context, elements of which include the need for reflective action and ethical principles.

Education is premised on a fundamental moral commitment to advance and construct knowledge and to ensure human understanding and respect for individual and collective well being and integrity. The moral imperative of respect translates

into the following ethical principles that assume a student-centered perspective as articulated in the Quebec Curriculum Reform and Competencies outlined for Teacher Education.

B. Academic freedom and responsibilities

Teachers enjoy, and should continue to enjoy important freedoms and privileges. However, with freedoms come responsibilities and ethical challenges. This Code of Ethics is in keeping with the philosophy and spirit of the New Directions that are embedded in the document Teacher Training: Orientations, Professional Competencies (Ministère de l'Éducation 2001) and the reflective practice literature.

The role of the teacher and the contexts of teaching have changed. Thus, new resources (knowledge, skills, and attitudes) are required to practice the profession and meet the challenges of teaching and learning in whatever contexts student teachers may find themselves and to engage in professional development individually and with others.

C. Ethics and law

"Teaching is governed by a legal and regulatory framework" (MEQ p. 120). The law affects and regulates the standards and norms of teaching behaviors in a variety of ways such as respecting privacy, confidentiality, intellectual property, competence. Human rights legislation prohibits discrimination and recognizes equal treatment as fundamental to human dignity and well being. Teachers should respect the spirit of the Canadian Charter of Rights and Freedoms particularly the sections dealing with life, liberty and the security of the person as well as those involving equality and discrimination and the Education Act that sets out the obligations and rights of teachers.

D. Guiding ethical principles

III. Student teachers should respect the following guiding ethical principles:

1. Respect for human dignity * Speaks and acts towards all students with respect and dignity; and deals judiciously with them at all times, always mindful of their individual rights and personal sensibilities.

   * Respects the dignity and responsibilities of cooperating teachers, peers, principals, parents and other professionals or para-professionals within the school, school board and community.

2. Respect for vulnerable persons

   * Respects and recognizes ethical obligation towards vulnerable persons. This principle recognizes that students are in a vulnerable position and that student teachers are in a privileged relationship with students and their families and will always refrain from exploiting that relationship in any form or manner.

3. Respect for confidentiality and privacy

   * Respects the confidential nature of all information related to students and their families and will share such information in an appropriate manner only with those directly concerned with their welfare.

   * Respects the confidential nature of all information related to all school personnel and will share such information in an appropriate manner.

4. Respect for justice

   * Respects and recognizes the right of individuals to be treated with fairness and equity and the importance of avoiding conflicts of interest.

5. Respect for safety of students

   * Respects the right of individuals to expect that student teachers will engage in practices that aim to ensure the physical, psychological and emotional safety of students.

6. Respect for existing ethical codes and professional standards

          * Respects the authority, roles and responsibilities of the cooperating teacher and agrees to adhere to the responsibilities and obligations for teachers as outlined in the Education Act, Faculty and University handbooks as well as all local agreements by host school boards and schools.

7. Balancing harm and benefits

          * `Acknowledges` that any potentially harmful practices (eg. Science Labs and Physical Education Activities) must be balanced with anticipated benefits and conducted in a prudent informed manner

IV. Ethical Issues Facing Engineers and their Profession

We celebrate the engineering profession because of the great good that it can produce in solving a myriad of pressing problems affecting the happiness and well-being of society. The technological advances which engineers have contributed to generating advances that have significantly improved our quality of life in ways so numerous that we cannot imagine the modern world without them. Engineering is the profession that provides the technical solutions necessary for contributing to a better and more efficient world. It takes what we know and applies it to solving society's problems. And while the education of engineers focuses almost exclusively on developing the technical capacities of aspiring engineers for solving a host of technical problems facing society, it has not also sufficiently advanced the moral character of those who call themselves "Engineers." In this paper we wish to call attention to the important contribution that engineering education can make to enhance the ethical sensibilities of engineers. Such efforts are crucial to ensuring that the trust we invest in engineering as a profession and critical to the future well-being of society and the profession is justified.

What is ethics?

"Ethics" or "morals"—we regularly use these two terms interchangeably—mean those habits or Customs that are standards of good conduct or character. To be ethical is to do the right thing; to consider the well-being of others as equal to your own; and to act in ways that aim to maximize the good. To be ethical is to be righteous, in the sense that our conduct and character are grounded on principle and commitment to doing our duty regardless of narrow self-interest. To be moral is to be fair and considerate of others, particularly to show them the respect we ourselves demand that acknowledges rights to life, liberty and property. Ethics is a discipline we freely embrace that regulates our baser instincts so as to promote a harmonious community and thereby reduce conflict and disorder. We expect others to order their behavior so as to not harm things of value and being ethical is the principal method for protecting and sustaining those values. In short, the choices we make and the habits we maintain as a result should be ethical, for such a life is a good life, one that enhances our happiness and promotes the good of society. Unfortunately, too often people consider ethics in a negative light; they seem to think that doing what's right is an unnecessary limitation of their freedom, requiring them to do things they don't want to do. In some way this is true but not totally true. While submitting to the discipline of an ethical life means we will not choose to do certain things that may be harmful to others or undermine our principles, such a discipline does not inherently imply either a restriction or a reduction of our personal freedom. Being ethical involves a free choice that commits one to doing what's right and because it is freely chosen it is misleading to think our freedom is in any way restricted or compromised. Nor is it the case that being an ethical individual reduces our freedom; in fact, like the rules of the highway, ethical rules bring order tour experience and enhance our ability to achieve our ends. When we pass each other on the highway, I know what to expect from you as you approach me which enables us to pass each other safely and efficiently. Simply stated, if we all observe the rules of the road this is the best way to avoid a collision, Thereby insuring our safety and protecting our property as well as enabling each of us to reach our destinations effectively. It is in our interest to be ethical just as it is in our interest to observe the rules of the road. to put it bluntly, to play "the blame game." While there is an expectation that an ethical person *be* accountable for their behavior, accountability and the assignment of blame for unethical behavior are not the main purpose of ethics. This negative concept of ethics unfortunately predominates in the public's mind, especially reinforced by the media's hypercritical stance towards those who violate ethical norms; it likes to point the finger of blame and shout "You're immoral; that's unethical!" No doubt we censure behavior that contradicts social mores because to do otherwise exposes us all to harm with the consequent threat to our human rights, just as we express our outrage whenever another driver veers over to the wrong side of the road and endangers our life and property.

But this only a part of what ethics is about. There is a more positive and enriching concept of ethics derived from ancient Greek philosophy that suggests that being ethical involves a vision of an orderly and harmonious community, freely choosing to regulate their behavior in accordance with standards that promote the common good and the rights of others. Ethics, in this positive sense, involves a vision of the good life and a harmonious community wherein each of us can live life to our fullest potential. It is a vision of an orderly society where each person is entitled to freely pursue their goals and desires, so long

As doing so does no harm to others. We all have an interest in avoiding harm and the moral point of views precisely that stance in which we commit ourselves to doing what's right, of striving to be good, and dedicating ourselves to live excellently. Ethics is the practice of being the best we can be, where pursuing excellence is our goal. This is the positive concept of ethics that has been obscured by the negative view that too often predominates when issues of ethics are discussed. To be ethical is to try to do the best we possibly can simply because there is no other better reason for doing anything except to do it well. An ethical individual is inspired by a vision of excellence, and being ethical and adopting the moral points of view define the essence of a good and happy life.

Can ethics be taught?

Given this enriched view of ethics, many have wondered: Can ethics be taught? There can be no
Doubt but the answer is certainly yes! Each generation recognizes the need to prepare the next one for the responsibilities it must assume in protecting critical human values, in maintaining order and in reducing conflict. We cannot idly stand by and watch as undisciplined individuals who have no regard for the welfare or interests of others act recklessly, destroying that which society values and has built with so much labor. Thus we must prepare each generation to assume the mantle of responsibility that is implicit in being ethical. As Isaac Newton is oft-quoted as saying "If I have achieved greatness it's because I have stood on the shoulders of giants" The issue is not whether ethics can be taught but more importantly what is the method that will best result in teaching the young what they need to know that ensures they will be ethical and act morally. That is the real issue. In the professions, especially in engineering, preparing aspiring professionals to assume the mantle of responsibility that is central to professional ethics is crucial. Without training in professional ethics society cannot be expected to trust those who act as professionals will use their expertise and power they possess for the welfare of society. Since we cannot resolve many of our difficulties without professional. Assistance we are at the mercy of those who possess esoteric knowledge because we are vulnerable to its abuse. We need assurance that professionals will not take advantage of their unique expertise and power to cause harm to things we value or undermine significant societal interests. Thus the teaching of professional ethics is a critical part of the curriculum we ignore at our own risk. Put more strongly, teaching professional ethics may be equally important as the technical competence we instill in our students, as recent scandals of the unethical activities of a wide variety of professionals have so clearly demonstrated. It is axiomatic that ethical behavior is mandatory in all professions but it is of particular importance in engineering because safety of many people and that of the environment depend on the quality of the design that engineers render. This by itself, in addition to the concern for the value of the property that can suffer destruction and/or damage places a heavy responsibility on engineers. High visibility cases provide simultaneously tragic and excellent tools for teaching engineering ethics. The list of cases to study is long: The Pinto case that clearly indicated the callousness of the corporation in willingness to sacrifice human life for increased profit, the walkway case at the Hyatt Regency hotel in Kansas City that killed many and injured many more, the explosion of the Space Shuttle Challenger, the Bart case in San Francisco, the DC-10 aircraft case in Paris that killed 346 people, the Bhopal case that killed and poisoned many, the most recent case of the Columbia shuttle that killed the crew of astronauts, numerous. Environmental disasters of the Exxon Valdez type and many product liability cases which could have been prevented had the proper engineering scrutiny been in place. These and many other cases amply demonstrate the need to infuse heightened awareness of ethical issues into the education of engineering professionals and to analyze how these could have been avoided had ethical engineering due processes been engaged. Engineering ethics is a part of professional ethics namely the study of moral values and issues in the professions. Professional organizations such as IEEE, ASCE, ASME, NSPE and many other ones have addressed the complexity of moral issues in their fields by developing codes of ethics. These codes delineate the importance that the profession attributes to ethical behavior but they do not encompass the full domain of professional engineering ethics. There is much more that needs to be engaged. In his memoirs Herbert Hoover, the only true engineer who was the president of the US compares engineers with other professionals: "His acts, step by step, are in hard substance. "His acts, step by step, are in hard substance. He cannot bury his mistakes in the graves like the doctors. He cannot argue them into thin air or blame
The judge like the lawyers. He cannot, like the architects, cover his failures with trees and vines. He cannot, like the politicians, screen his shortcomings by blaming his opponents and hope that the people will forget. The engineer simply cannot deny that he did it. If his works do not work, he is damned."The importance of this responsibility has been readily acknowledged by the professional societies that oversee the activities and training of new entrants to the engineering profession and which are tied to the accreditation process. A strong impetus towards study of ethics issues originated from the ABET 2000Criteria for accreditation as there is an outcome requirement of "understanding of professional and ethical responsibility". Accreditation Board for Engineering and Technology is the principal accreditation agency attesting as to the quality of the engineering programs in the USA. Criterion 3(f) states that "Engineering programs must demonstrate that their graduates have an understanding of professional and ethical responsibility". It

should be noted that this criterion requires and "understanding of" rather than, as it is the case with most other criteria, that require an "ability to". This alleviates the requirement being actually demonstrable yet it is still the goal of engineering educator to imbue the students with solid background of a road map for ethical and professional behavior and ability to navigate the complexities of the modern world. One way of introducing ethical issues to engineers is through case studies. This method frequently illustrates some issues but it has both strengths and weaknesses. The strength of this approach is that usually a one dimensional case may be explained and ethical dilemmas illustrated. However, real life seldom presents issues in a one-dimensional context. More often than not, there are varieties of parameters that enter the fray hence the totality of the issues does not enter the considerations. Simplistic situations lead to simplistic solutions. The more difficult issue perceives the moral dilemmas and determining the rules and principles to guide the engineer's actions. The responsibility to perform the "right" decision is not always quite clear as are the possible consequences for the career of the engineer. History of engineering should be a major topic for the introduction of the coverage of the subject matter. Engineering as a profession must be presented to the students. A key concept is that one of the "professional responsibility' that represents moral responsibility based on the engineer's professional training and specialized knowledge. In their book Martin and Schinzinger note that the goal of responsible engineers is "the creation of useful and safe technological products". ABET criterion 3(h) states that "Engineering programs must demonstrate that their graduates have the broad education necessary to understand the impact of engineering solutions in a global and societal context." This criterion clearly emphasizes the role attributed to understanding not only of the correct choices made by engineering professional but also the importance of right choices made by societies where these engineers practice their skills. Obviously there will be variations in interpreting the choices deemed correct in different cultures but it is clear that the responsibilities are broad and that the decisions may have to change as the technology and societies evolve ABET has correctly insisted that engineers through their professional training assume more responsibility for the society they serve. In the criterion 4 the requirement stipulates that "… a major design experience … that includes most of the following considerations: economic, environmental, sustainability, manufacturability, *ethical*, health and safety, social, and political". This criterion mandates that students design effort present them with situations in which they have to make ethical decisions and choices that affect the outcomes. Students are to be faced with situations to consider their actions and the consequences of those as well as provided with choices which affect the society with respect to safety, environmental consequences, ability to rationally explain the choices made with respect to different decisions, indicate that they anticipated possibilities of failures of given hardware and/or software and the consequences of these not excluding liability for these, and the ability to cogently explain the genesis of the design, fabrication methods, maintenance and operations of the product in a regional and global context. Engineering students are interested in ethical issues as was demonstrated with a high level of questions every single time the authors presented ethics in an engineering context as well as product liability issues .All engineering codes of ethics give a very prominent place to safety, stating that engineers must hold paramount the safety, health and welfare of the public. Of course, there is an implicit recognition that every design, every product developed by humans carries a certain degree of risk with it. And the relationship between risk and safety is an obvious one. If designs, products, techniques and materials used are in some manner unsafe they expose humans and the environment to undue risk. Engineers are the people who are responsible for the safety of the general public, they are responsible for making engineering decisions consistent with the safety, health and welfare and these decisions must be made in terms of accepted engineering approaches, they must conform to codes and standards and approved practices. Engineers are to be held responsible for disclosing anything that would subject the public or environment to dangers. In order to perform their functions properly engineers must maintain and improve their competency and engage in continuous learning. Furthermore, engineers must practice their profession only in the areas in which they possess the requisite knowledge and expertise until the nineteenth century manufacturers were generally shielded from liability resulting from fabricating defective or dangerous products as the society and the courts avoided in getting into the disputes. Caveat emptor was the guiding legal principle. The evolution of the laws governing behavior of the industry brought about a number of legal theories on which actions against anyone in the chain of commerce can be brought: negligence, breach of warranty or strict liability. All three are predicated on the fault system namely, that whoever caused injury to take place is required to fully and fairly compensate the injured party. While the legal aspects of product liability are very complex and interesting areas where engineering and law complement one another, the most significant consequence here is that engineers may be responsible and may be held liable for the damages and/or injuries. A huge number of cases exist where engineers were held responsible for the consequences of their actions or inactions, for violating safety principles, for ignoring the state of the art approaches, for selecting the wrong materials, for utilizing erroneous design approaches, for not incorporating the appropriate maintenance, and for not anticipating what may take place under given conditions. Ethical behavior mandates that engineers engage fault tree analysis or a like approaches and anticipate what may go wrong and the consequences of that. Conflict of interest situations take place where engineer's loyalties and obligations may be compromised due to self-interest or other obligations and commitments which lead to biased judgments. Situations in which the proper conduct may be questioned requires that the engineer avoid being put in

the position of making decisions which could be challenged later on. Whistle blowing is a situation in which engineers who are aware of a harmful, illegal and dangerous mode of behavior decide to go public with that information. This may take place in a number of methods the information may be reported to the appropriate authorities (city, county, state or federal), released to media or a combination of these may be employed. An engineer who is engaged in revealing the information has a serious conflict of interest. The engineer has an obligation to the employer but also to protect the society. Clearly, the protection of the public is paramount and must be held as such. But the consequences may be extreme: the engineer may lose the job and destroy a career, finding a new job may prove to be difficult as employers could be unwilling to hire a potential whistleblower. The effects of such actions may prove very damaging to the family of the engineer and cause a financial disaster. The engineer who engaged in whistle-blowing may be ostracized by the colleagues in the company and in the profession. One must carefully weigh potential consequences of such actions. Still, the gratification of doing the right thing should be a powerful motivator to do just that. Concern for the environment is an integral part of ethical practices of engineering. Humanity can no longer be the adversary of nature; it must be its ally, its guardian. Careless practices of engineering may destroy complete ecosystems, pollute the air, water and soil, bring about the change in the weather pattern and destroy varieties of life species. We must also be aware of the impact on the protective ozone layer which safeguards plants and animals from the deleterious ultraviolet light. The concept of sustainable development incorporates the requirement of people to live well and improve their standard of living while at the same time protecting the environment. Emphasis on conservation of resources, recycling and nonpolluting technologies are a required mode to reach the sustainable development while reducing our dependence on fossil fuels. Engineers are the only profession that can make efficient usage of renewable energy sources such as solar, wind, biomass, tidal or fission breather reactors. Engineers must develop energy efficient resources and minimize waste and inefficiency.

V.CONCLUSIONS

It is evident that the engineering ethics is the very essence of the engineering profession. It is the Roadmap of behavior of engineers and points out the values and traditions of the profession in leading humanity to make crucial choices and confront the challenges necessary for a better and more meaningful life. The academic engineering community has the difficult and responsible task and challenge of ensuring that future practitioners of the profession are educated and equipped with the skills of confronting the ethical problems, examining the standards of conduct with critical thinking and the competence and ability that are illustrated and taught in engineering classes. This challenge can be met only by making a conscious effort to acquire the understanding of ethical issues by following the test cases which appear on the regular basis in the courts of law, recalls by companies, discussions and seminars presented by professional societies and exercising the utmost dedication and commitment to professional integrity.

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