# Review of: "Planning Courses on Ethics in Engineering Curricula"

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This article deals with the topic of teaching ethics in engineering studies, which has been fairly neglected compared to the incorporation of ethics, social responsibility and sustainability in business schools. In this sense, the choice of the topic is, in my opinion, very appropriate. However, the paper has some flaws which obliges me to recommend the author to extensively review it before sending it to a conventional peer reviewed journal. I will start with some formal suggestions and I will move towards more issues related to the content of the paper.

In my opinion —which I recognize is not the most qualified since I am not a native English speaker—, the wording should be reviewed.

The meaning of some acronyms, such as IEEE, should be explicit.

I also suggest to better organize the structure of the paper. For example, the results of the survey (relative response frequencies to the items in the questionnaire) are presented in the fourth section of the article, Research Methodology. Obviously, this is not the best election: I would prefer a specific section on results.

I also recommend reformulating the Introduction section. In its present shape, this section brings together a series of statements of principle, such as “Every engineer with ethics should help society in a better way”. It also contents some definitions of “ethics”, which are not always compatible with each other. Some of the approaches to the concept of “ethics” are: “Ethics are the principles accepted by society, which also equate to the moral standards of human beings”; “Ethics is based on well-founded standards of right and wrong that prescribe what engineers ought to do”. “Ethics = (Morals + Reasoning). Ethics is all about reasoning about how an engineer should act in a given circumstance- i.e. how to do the right action”. I think that the article would benefit if the author, instead of juxtaposing definitions and doctrinal affirmations from different authors, developed his own line of argument around these issues. For example, in the current state of the article, the reader can’t recognize if the author is more favorable to the teaching of ethics as a series of values and attitudes (more or less absolute and universal) or if, on the contrary, he is more supporter of teaching future engineers to reason ethically about complex issues in which right and wrong are not as easily identifiable as some of his definitions of “ethics” suggest. In his task, the author could rely on a fairly extensive doctrinal literature that deals specifically with the incorporation of ethics in business studies but makes sense in the field of engineering education too (Hosmer, 1985; Mintz, 1990; Solberg et al, 1995; McDonald, 2004).

I think that methodology constitutes one of the weakest points of this research. In fact, I see a serious lack of information

about the methodological decisions adopted by the author. There is little, if any, information on the methods used to determine sample size and selection criteria. The sample size, 76 individuals, seems small and, although information is not provided on the number of teachers in engineering schools in the region of southern India where the survey was made, the sample seems clearly insufficient to extract conclusions with the usual margins of error and confidence levels.

There is also a lack of information about the questionnaire, its design and validity. The reader doesn't know if the author adopted scales from previous researches or if there was any method to assure its validity. Some of the issues discussed in the questionnaire have already been addressed previously and this experience could be helpful for the author (see, for example, Beauvais et al., 2007; Doh & Tashman, 2014. The paper by Didier & Huet [2008] could be interesting for the author as well, as it is one of the few which deals with the presence of ethics in engineering studies)

Besides, the author affirms that he has used Likert scales in the questionnaire. However, his response alternatives (always, frequently, sometimes, never) are not common in Likert scales. In addition, these categories do not always seem the most appropriate considering the meaning of the questions. For example, what does the answer "always" mean when the question is "Does your institute/university offer any course on ethics?" Does it mean that an ethics course is offered in every major?; in every year?; in all the modules?

The research approach suffers from some important flaws. Some of the objectives of the investigation are not satisfied, nor could they be satisfied with the means used in it. The author's stated goals are:

*1. To assess the overall knowledge of the engineering faculty members on the ethical standards that they have to follow in designing curricula and implementing various courses for engineering students.*

*2. To develop suitable methods of introducing ethics in curricula of various engineering programs and implementing them as per the best ethical standards.*

*3. To suggest ethical methods of faculty recruiting, pre-service training, faculty orientation, assessment of the performance, declaring probation completion, and scaffolding the performance in teaching, research and consultancy works, leadership development, promotion, and contribution to the diverse global programs.*

The first objective cannot be satisfied since the research makes no assessment of teachers' knowledge on this topic is carried out. The questionnaire could have gathered academics' self-reported assessment in these topics, but does not include any question in this regard.

The third objective is completely ignored in the paper, at least as far as my understanding of the article goes.

Finally, the research questions are, apparently, the questions in the questionnaire for academics. This confusion between research questions and items in the questionnaire is particularly serious from a methodological point of view and I imagine it is due to mistranslation.

The second objective of the paper does receive attention and, in fact, constitutes the most substantial contribution of the article. The author proposes up to 10 strategies and makes 7 specific recommendations to introduce ethics education in

engineering curricula. Some strategies are quite straight forward—such as preparing case studies dealing with ethics issues—and are not clearly distinguishable from subsequent recommendations. However, all of them are attached to common sense and are reasonably applicable. My objection regarding this part of the article is twofold: the author limits himself to describing his proposals, without discussing the efficacy of different alternatives and without considering, at least explicitly, neither previous experiences nor the contribution of academic experts in this field. I suggest to the author a more complete review of the literature in this aspect. Some previous contributions that could be useful are: Sims (2000); Sims & Brinkmann (2003); Holland (2004).

The author rests the validity of his recommendations on the fact that they were based on in-depth discussions with academics. Here, too, I believe that a more complete and clear explanation of the number of participants in the in-depth discussions and their profile/background would be necessary, as well as the procedure used by the author to select those participants.

Later, the author refers to the fact that the validity of his recommendations is endorsed by 20 senior academics. It is not reported whether these academics are the same ones who participated in the discussion groups and therefore, the reader is bound to ignore their number, composition, profile, etc.

In general, I think that the author has selected an interesting topic for his research. His work is very promising and I encourage him to continue in the same line, but I recommend him to mature his research a little more, especially its methodological soundness, before submitting it to a peer reviewed journal.

**References**

Beauvais, L. L., Desplaces, D. E., Melchar, D. E., & Bosco, S. M. (2007). Business faculty perceptions and actions regarding ethics education. *Journal of Academic Ethics*, 5, 121-136.

Didier, C., & Huet, R. (2008). Corporate social responsibility in engineering education. A French survey.*European Journal of Engineering Education*, 33(2), 169-177.

Doh, J. P., & Tashman, P. (2014). Half a world away: The integration and assimilation of corporate social responsibility, sustainability, and sustainable development in business school curricula. *Corporate Social Responsibility and Environmental Managem*ent, 21(3), 131-142.

Holland, L. (2004). Experiences from a student programme designed to examine the role of the accountant in corporate social responsibility (CSR). *International Journal of Sustainability in Higher Education*, 5(4), 404-416.

McDonald, G. M. (2004). A case example: Integrating ethics into the academic business curriculum.*Journal of business ethics*, 54, 371-384.

Mintz, S. M. (1990). Ethics in the management accounting curriculum.*Management accounting*, 71(12), 51-54.

Sims, R. L. (2000). Teaching business ethics: A case study of an ethics across the curriculum policy.*Teaching Business*

*Ethics*, 4, 437-443.

Sims, R. R., & Brinkmann, J. (2003). Business ethics curriculum design: Suggestions and illustrations.*Teaching Business E*thics, 7, 69-86.

Solberg, J., Strong, K. C., & McGuire, C. (1995). Living (not learning) ethics.*Journal of Business Ethics*, 14, 71-81.