Engineering Education Research Sample Reviews

Manuscript Title: Engineering Students' Written Communication Skills Valued by Industry

Reviewer 1 - Recommends Reject
Confidential comments to the editors
This study is interesting, but the statistical analysis shows limited correlations in the raw data, despite the authors claiming the opposite. Therefore I do not believe the authors can revise the paper unless they begin over with data collection and analysis to look for correlations.

Comments to the author

The paper presents the analysis of a survey data collected from practicing engineers to evaluate the correlation between the written communication skills valued by industry in [country] and the level of acquisition of such skills by engineering students in a communication training program at the authors' university. The authors' objective is to make recommendations about the training program based on the data analysis. This topic is interesting and valuable to engineering educators, but the paper contains a number of critical issues both in the analysis and in the way the results are presented.

The major issue concerns the statistical analysis, specifically Pearson's correlation coefficient. The authors incorrectly state that correlation values around 0.5 show clear correlations. The authors claim to have p values equal to zero but they do not show the actual values; these are questionable anyway given the low correlation values. This brings into question the reliability of the findings and weakens the conclusions and potential value of the paper. Also, the data presented on p. 38 show similar averages of the importance and level of acquisition of the different skills, making it difficult to draw and generalize conclusions.

Further, the authors do not provide enough information about the training program, such as how it is organized and implemented, and how written communication is taught within the program. I am also not clear if the authors are talking about an educational program or a training program. This is an important distinction that needs to be made. The literature review is a mix of background on the analyses conducted and context for the study. I would recommend separating these, and conducting a more detailed and current literature review, including theoretical framework that formed the basis for the study and the training program. You have included a full discussion of the lack of written communication instruction in engineering; I don't think this is needed because although it is important, it is not what this article is actually addressing.

The methods for this study are not clear. It is difficult to understand what data are relevant and what are not, which data were and were not included in the analyses. For example, on p. 25, the participants' gender percentages are listed as 92.1 % male and 8.7 % female, and further on in the paper, the gender is presented as 75.4% male and 24.6 % female. Which is the relevant sample to consider? What was the number of participants?

The overall quality of the writing is not good, particularly in terms of language use, which makes it difficult to read. For example, verb tenses vary between past, present and future.

I would strongly recommend the authors revise the statistical analysis, clarify the theoretical frameworks, results, discussion and claims in light of current engineering education research.

Reviewer 2 - Recommends Minor Revisions

Confidential comments to the editors

The findings are worth publishing, but the paper needs minor revisions to address specific comments.

Comments to the author

This is an interesting paper with a large quantity of data obtained via surveys.
Specific Comments:

- The Abstract should be rewritten in passive form. Overall the language needs to be revised for clearer details and smoother reading.
- The literature review is limited to sources from the authors' home country. It is strongly suggested that the literature review be expanded to include contemporary literature from other countries and regions.
- Page 1, line 39: What is meant with 'Initial Training'? Is that the education at school?
- Page 5, Line 11, should read "Design of the Survey Instrument"
- Page 7, Line 4, should read "…and the way survey prompts were worded."
- Page 7, Line 17, should read "… and engineering industry personnel as shown …".
- Page 8, Line 3, should read "Table 2 presents…"
- The word "Diagram" and "Figure" are used interchangeably. It would be better to use word "Figure" throughout.
- The use of verb tense needs to be consistent throughout the text.
- Page 10, Line 28, the sub heading "Conclusion and Recommendations" should be simply "Conclusions" because the text is more about conclusions than recommendations, and a separate "Recommendations" should be created under a new heading.

Reviewer 3 - Recommends Reject

Confidential Comments to the Editors

The work itself is interesting, but the manuscript reads like an excerpt from a dissertation rather than a research article.

Comments to the author

I assume this manuscript is written by a first or second year PhD student, and my comments are written with this in mind. Please regard my comments as an attempt to offer constructive remarks that may I hope will help the authors to develop their work further.

The first 5 sections of the article are not easy to read given the way the work is presented, the sometimes awkward sentence construction, and the organization of the main points. A more detailed description of the education system in which this study was conducted should have been provided to better frame the study.

The literature review is not well done; it ignores a number of other studies (many from other regions and countries) regarding discrepancies between employer's expectations and the components of graduates' written communication. The choice for the framework of written communication skills is poorly justified, and no other frameworks are mentioned for comparison. Also, the detailed list of skills appears too late in the paper (only when the results are discussed).

With respect to the research methodology, the validity of the survey is questionable. The way items from the survey were changed or deleted after pilot testing is not described. The inclusion of the surveys for the recently employed engineers should have been considered, as they might give the authors a measure of the misfit between employers' opinions and the actual engineers' opinions. These could be included in an appendix.

The analysis of the results is rather shallow and I think a correlation analysis with a sample that is not large enough was a poor choice for this study. Also, there is no description of the present curriculum (which should also be discussed, for the same of an adequate framing of the study) in regard to the analysis of the results. Noticeably, the recommendations all involve some degree of the use of active learning strategies, which left me wondering how traditional the program organization is and where, in the curriculum, those changes would be implemented.

In the Introduction, the authors promised to describe their "suggested course of action we wish to implement." In the Conclusions and Recommendations section, this course of action is not present. There are only a few recommendations, which do not constitute a course of action. Please consider how your findings can advance how we train engineering students to develop their written communication skills.