Language Center

Writing up Research

Conclusions

This page is designed to be interactive, so in places you can jump forward for more information, or will be asked questions that you find answers to by using the links. Simply click on the link, then use to return to where you were. This page covers:

PURPOSE

To give a summary of:

- What was learned (this usually comes first)
- What remains to be learned (directions for future research)
- The shortcomings of what was done (evaluation)
- The benefits, advantages, applications, etc. of the research (evaluation), and
- Recommendations.

COMMON PROBLEMS

- **Too long**. The conclusion section should be short. Often the conclusion section is as little as 2.5% of an entire piece of published research.
- **Too much detail**. Conclusions that are too long often have unnecessary detail. The conclusion section is not the place for details about your methodology or results. Although you should give a summary of what was learnt from your research, this summary should be short, since the emphasis in the conclusions section is on the implications, evaluations, etc. that you make.
- **Failure to comment on larger, more significant issues**. Whereas in the introduction your task was to move from general (your field) to specific (your research), in the concluding section your task is to move from specific (your research) back to general (your field, how your research will affect the world). In other words, in the conclusion you should put your research in context.

- **Failure to reveal the complexities of a conclusion or situation**. Negative aspects of your research should not be ignored. Problems, drawbacks etc. can be included in summary in your conclusion section as a way of qualifying your conclusions (i.e. pointing out the negative aspects, even if they are outweighed by the positive aspects).
- **Lack of a concise summary of what was learned.** In order to be able to discuss how your research fits back into your field of study (and the world at large) you need to summarize it very briefly. Often the summary is only a few sentences.
- **Failure to match the objectives of the research.** Often research objectives change while the research is being carried out. This is not a problem unless you forget to go back and rewrite your original objectives in your introduction so that they accurately reflect what you were trying to accomplish in your research (not what you thought you might accomplish when you began). Here is an example of an objective and conclusion that do not match:

Objective: The main objective of this study was to assess the impact of roadbuilding on villages on rural communities.

Conclusion: The model produced in this study can accurately predict the social and economic impact of road-building on villages in northern Laos.

If we rewrite the objective to match what we actually did (we developed a model), it will fit the conclusion:

Rewritten objective: The main objective of this study was to develop a model to predict the social and economic impact of road-building on rural communities.

EXAMPLES

Read the texts below and see if you can decide the purpose of each highlighted sentence (e.g. summary of research, major conclusion, problems/drawbacks and other negative aspects, qualified conclusion, directions for future research, structure of the writing). Click on each sentence for suggested answers, then use the arrows to return to the texts.

Analysis of coupled shear/core walls using a beam-type finite element
Kwan, A. K. H., and Cheung, Y. K. (1994) Engineering Structures. Vol 16 No 2.

Conclusions
The Sisodiya and Cheung beam-type element is found to be particularly suitable for the analysis of coupled shear/core wall structures. However, it is not without problems. Firstly, when connected with coupling beams, it yields large fluctuations of shear stresses which are not realistic. Secondly, it gives only the average bending moments within the elements but would not give directly the maximum bending moments needed for structural design. Thirdly, the finite element method is computationally less efficient than many other methods. These problems have been studied and the following remedies are proposed.

To resolve the problem with shear stress evaluation, it is suggested that the shear stresses in the element should be determined from the horizontal nodal forces acting on the element instead of from the strain-displacement relation of the element. This can eliminate all the unrealistic

fluctuation of shear stresses and produce shear stress results which are always in equilibrium with the external loads. To resolve the problem with bending stress evaluation, it is proposed to use the element in pairs in the form of a composite element and apply linear extrapolation to determine the maximum axial and bending stresses. Finally, in order to improve the computational efficiency of the method, the number of unknowns to be solved is reduced by neglecting the lateral strains in the walls which are generally insignificant. After these modifications, it is believed that the improved beam-type element method is a better method than most others for the analysis of coupled shear/core wall structures.

Buckling solutions for Mindlin plates of various shapes
Wang, C. M., Y. Xiang., S. Kitipornchai, and K. M. Liew (1994). Engineering Structures, Vol 16, No 2.

Conclusions
New buckling solutions for regular polygonal, elliptical, semicircular and annular Mindlin plaes under isotropic inplane loads have been presented. It can be seen that the shear deformation effect depresses the buckling loads more significantly with increasing plate thickness and greater boundary restraint. Future research on such plate buckling problems should be directed at considering: firstly, other loading conditions, such as shear loading, partial loadings and non-uniform loadings at the edges; and secondly, boundary conditions involving point supports, mixed edge conditions and elastic restraints.

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