Refer to the guidelines regarding writing an effective conclusion. Use these guidelines to critique the example of a conclusion shown on the next page. Evaluate this example based on each of the following components.

* If you think a particular component was addressed effectively, explain what the writer did well.
* If you think a particular component was not addressed effectively, explain why not and provide suggestions for improvement.

|  |  |
| --- | --- |
| **Component** | **Comments** |
| Overview of Main Ideas |  |
| Synthesis vs. Summary |  |
| Specificity Level / Holistic Perspective |  |
| Use of  So What?  Why do I care?  mantras |  |
| Other Thoughts |  |

Example Conclusion

Investigating the Validity of the Survey of Attitudes Towards Statistics

**Implications and Further Research:**

After understanding the results of Winona State University students, it was of interest to compare them to the national norms to determine if they were similar. The creators of the SATS revealed the survey’s national norms in a personal communication with the professors involved in this study. *Value, Interest,* and *Effort,* the three components that showed a decrease from the beginning of the semester to the end, are in-line with what is typically observed nationally. After taking an introductory statistics course, Winona State students have significantly higher attitude scores relating to *Affect, Cognitive Competence,* and *Difficulty.* This, however, is not typically observed nationally. *Difficulty* usually tends to decrease, while *Affect* and *Cognitive Competence* stay about the same. Because *Difficulty* increased at the Winona State level and, on average, decreased at the national level, the professors in Winona are possibly teaching statistics better, since students think statistics was easier after taking the course than when they had first started.

In the future, it would be interesting to explore the differences in students based on the questions they had to answer at the end of the survey. There may be differences between males and females or differences among majors. It would also be interesting to look at differences between the three professors who administered the surveys and taught the courses. This could be helpful in finding out their strengths and weaknesses to increase students’ attitudes toward statistics. For example, if one professor had a higher attitude score for *Interest*, they may share the types of examples they use or the way they teach to engage students and interest them in statistics.

After investigating the SATS by running a factor analysis using the Winona State data, it can be said that the SATS may not actually be measuring six unique components as the authors claim it is measuring. Currently, it is only measuring two of the original components, *Value* and *Effort,* because the corresponding items load on two distinct factors. Educators using this tool should consider only measuring *Value* and *Effort* attitudes and combine the other components, *Affect, Cognitive Competence, Difficult,* and *Interest,* into only two factors to measure how confident students are in their ability to learn statistics.

Further research should be done to investigate the relationships between the components, especially the four that were not unique. It would also be of interest to conduct a confirmatory factor analysis to dig deeper into the validity of the survey. The SATS is a great tool for educators to use to assess their students’ attitudes, however, is should be used with caution. The administrators of the survey should look into all of the items that loaded on Factors 1 and 2 to determine if attitudes increased or decreased, rather than focusing on the original components.