Ethical Leadership: Applied Decision & Ethical Theories – Workshop Series for Undergraduatesⁱ

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Abstract

NASA and most other technical organizations have two essential problems, (1) to identify, recruit and retain new STEM (Science, Technology, Engineering and Mathematics) capable people and (2) to develop their present workforce to provide the leadership required for the future. This paper describes an effort to develop future leaders.

National statistics show that the number of people who choose to work in STEM areas is not keeping pace with the number of positions open. To make matters worse, the population sectors growing at the fastest pace are the populations that have some of the lowest representation in STEM disciplines. There are a number of efforts underway to reverse these statistics and one of these efforts is the NASA Administrator Fellowship Program (NAFP). The NAFP focuses on building faculty strength at HBCU/MI to: (1) increase quality and quantity of graduates, (2) help place faculty who understand the uniqueness of HBCU/MIs in key positions of leadership and (3) create a presence of NASA at the HBCU/MI universities.

This paper describes one effort to develop leadership tools that focus on the application of decision and ethical theories to the art of leadership. The paper describes an effort to teach ethical decision making and presents some highlights of the program with a limited amount of assessment analysis.

Introduction

“The older I grow the more I distrust the familiar doctrine that age brings wisdom.”ⁱⁱ Sound cynical? No, it’s encouraging provided you understand it early enough. The point is simple; aging does not bring about wisdom. Becoming wise is a pursuit; it is something to earn and the sooner you start, the better. The purpose of the work reported here was to produce modular (1.5 hour long) seminars that teach and demonstrate the application of decision and ethical theories to strategic planning and leadership decisions. The objective was to increase the effectiveness of graduates from Minority Serving Institutions by helping them learn skills useful for making leadership decisions.

ⁱ This work was supported by NASA through a grant from the NASA Administrators Fellowship Program which is directed by the United Negro College Fund Special Programs. The author gratefully acknowledges their support.

ⁱⁱ Cynical quote of H. L. Mencken.

Now having said what the objective is, one reviewer made an excellent comment:

“While the rigor of the model of the decision-making process is laudable, the author does not describe how the core values of engineering, and the essential commitment of engineers to safety and preservation and sustenance of human life are presented to students, in such a fashion that they will moved to ‘lead’. The implications of ‘knowing’ the right thing to do, and then, taking the risk to do so are the fundamental tenets of leadership. These might be useful to articulate.”

These lessons do NOT attempt to move the students to lead. This is a wonderful goal, but the lessons do not do it. In fact it was never considered when the lessons were developed. Certainly this is a place for improvement. Many students express a desire to lead. From where does this come? The author does not know however, more than 70% of the students are Hispanic and there are many organizations that work to inspire them to great achievement. The author, of course, would love to take credit for this, but alas, he cannot.

The overarching purpose of these lessons was to help soon to be professionals understand the importance of methodological decision-making. In particular the lessons teach decision and ethical theory in the context of leadership. The paper focuses on the ethics component.

People constantly make decisions, most of which are trivial; when to sleep, what to eat. Some decisions including ethical ones can be a little harder. Using a set of ethical principles may help. There are several philosophical (ethical) precepts that can be applied to guide these decisions¹ and it is important for a new professional to understand what these precepts are and how one can use them to make consistent decisions.

As the decision becomes more complex, it becomes necessary to use a methodology that accommodates multi-criteria. Ethical theories may still play a role but they may not be the only consideration. One of the simplest methods for incorporating multiple criteria is the Analytic Hierarchy Process² or AHP. In the AHP the decision maker forms a hierarchy of criteria that are important to consider when making the decision. For example, when trying to decide what car to buy a person may be concerned about gas mileage, performance, styling and cost. To describe styling, one may consider appearance, comfort and convenience features. By evaluating one criterion against another at each level of the hierarchy, a person identifies their value system. Once the values are quantified, a process of weighing the options to produce the optimal decision is followed.³ The AHP has been used for decades to make very complex decisions.⁴

Although decision theory has been widely used, making decisions remains a bit of an art. There are many research questions remaining and many of them concern how to collect and express a person's or group's values, and how to compute the optimal decision given the values. For example Chernoff⁵ describes Utility Theory which tries to identify the values of the decision maker by capturing the expected utility of a decision outcome. A competitor to the AHP is called Multi Attribute Utility Theory in which the multiple criteria, similar to what is found in AHP, are weighed using their utilities. It seems there are strong proponents for both methods⁶.

Researchers have given consideration for the number of head to head comparisons a decision maker must make⁷ and also whether these are consistent.^{2, 8} Inconsistency can pose problems and has lead to work in comparing methodology of soliciting ratio versus equivalence values from decision makers.^{9, 10} Inconsistencies also cause various weighing methods to give differing results.⁷

In spite of these issues, decision theory has been used in a number of interesting areas. First, it has been used to assist NASA in planning missions,¹¹⁻¹⁴ in planning roadwork,¹⁵ and in evaluating personnel.¹⁶

With all this as a backdrop, the work reported here has the objective of producing seminar content that will help students understand the importance of methodological decision-making, and how to apply ethical and decision theories to make leadership decisions. Assessments addressed whether student attitudes about ethical decision making changed, if they understand what ethical theories best fit their value system, whether they can identify the value system of friends and colleagues and whether they have the skill to identify applications for decision theory in their careers and can apply the methods correctly.

The AHP in a Nutshell

The emphasis of this paper is on ethical decisions, but a brief introduction to the AHP method will be provided. There are many excellent references for the analytical hierarchy process for decision making. Frair et. al.¹⁷ used the AHP to evaluate an undergraduate curriculum. Sato¹⁸ used the process to measure human perception and Sheskin¹⁹ used the it to apportion paper co-authorship. Dolan²⁰ was interested in determining if the method was simple enough for unskilled people to use it to make important medical decisions. Finally Millet²¹ has done work similar to what is presented here in that he demonstrated how to use the method to make ethical decisions. The key difference between Millet and the present work is that he was trying to make the most ethical decision, whereas here the idea is to choose an ethical foundation and use that to make a technical decision. A detailed explanation of the process can be found in Saaty².

Suppose I am trying to hire a recent graduate as a faculty member. The first step in applying the process is to break the decision down into a hierarchy of subordinate decisions. This is shown in Figure 1. The lowest level of the hierarchy provides three choices for the hire. The top row of the hierarchy lists the question that is being asked. The second row consists of criteria to help make the decision. The criteria consist of the amount of experience, the person's advisor, the university they attended, and their field of study. Each of these attributes has different weight (importance) in the decision process and the decision maker must determine these priorities. An example of how this is done will be given shortly. The figure also demonstrates how each criterion could be broken down into multiple criteria. For example in the amount of experience, the decision maker has decided to include research and teaching quality as criteria to assign values to experience.

Essentially what one does is compare preferences at each level of the hierarchy and transfer these preferences in the form of weights to higher levels. Ultimately whichever option earns the highest score is selected.

To understand how the points are awarded at each level, please consider another example. Suppose I need to select a job, and suppose I have two options. If I worked in “no place special”, I will get a lot of money. Let's award the number 3 to “a lot”. Also at “no place special” the weather is reasonable. We will give 2 to something that is reasonably good. The drive to work is long, so let's give it a one meaning it's not so good. If I worked in “pretty nice city”, I will get a lousy salary (1) but the weather is great (3) and the drive is medium (2) in tediousness. Where should I work?

Figure 1 - Four level hierarchy for deciding who to hire in a faculty position.

At this level, there are three attributes that are important in selecting the job location. These are salary (S), weather (W) and the drive (D). Compare these head to head and determine a weight matrix, K. This is done by filling in the following table. The table says weather is A more important than salary, the drive is B more important than salary and C more important than weather.

	Salary	Weather	Drive
Salary	1	A	B
Weather	1/A	1	C
Drive	1/B	1/C	1

By creating a table, the decision-maker is forced to compare one attribute against another using a pair wise comparison. Note that less than half of the table needs to be filled; the remaining terms are generated from the first. The values in these tables are converted into a matrix as follows:

$$K = \begin{bmatrix} 1 & A & B \\ 1/A & 1 & C \\ 1/B & 1/C & 1 \end{bmatrix} = \begin{bmatrix} K_{11} & K_{12} & K_{13} \\ K_{21} & K_{22} & K_{23} \\ K_{31} & K_{32} & K_{33} \end{bmatrix}$$

It can be shown that there should be some logical consistency in the values chosen for K. For example if the weather is more important than salary and the drive is more important than weather then it follows that drive will be more important than salary. These relationships can be expressed in the following equations:

$$K_{ij} = \frac{1}{K_{ji}}, K_{ii} = 1, K_{ij} = K_{im} K_{mj} \quad \text{for all } i, j, \text{ and } m.$$

This means that in reality only (n-1) terms need to be determined, where n is the number of attributes. All other attributes can be calculated. In practice however people usually find it easier to determine the upper diagonal values of K without calculating any of them. The formulas do however provide a method for identifying internal consistency in the decision because the maximum eigenvalue of a totally consistent matrix will be n.

In this example a totally consistent K matrix would be the following:

$$K = \begin{bmatrix} 1 & A & AC \\ 1/A & 1 & C \\ 1/(AC) & 1/C & 1 \end{bmatrix}$$

Once the K matrix is determined, the priority weights (P_s, P_w, P_d) for each attribute are determined by minimizing the following:

$$\min \left\{ \sum_{i=1}^n \sum_{j=1}^n \left[\ln(k_{ij}) - \ln\left(\frac{p_i}{p_j}\right) \right]^2 \right\}$$

Which can be shown to be equivalent to finding the eigenvector of the largest eigenvalue:

$$K \cdot P = \lambda_{\max} P$$

The eigensystem of the example is:

$$\begin{pmatrix} 3 & \{AC, C, 1\} \\ 0 & \{-AC, 0, 1\} \\ 0 & \{-A, 1, 0\} \end{pmatrix}$$

Hence the priorities are ($P_s = AC, P_w = C, P_d = 1$). Now suppose $A=3$ and $C=2$. The total score earned by working in “no place special” is $3P_s + 2P_w + 1P_d = 3AC + 2C + 1 = 23$. If I worked in “pretty nice city”, the score is $1P_s + 3P_w + 2P_d = AC + 3C + 2 = 14$. So clearly I should go for the money and live in no place special. During the seminars, the AHP is facilitated using software.²²

Ethics Presentations

There are a number of excellent sources for teaching ethics; these seminars use material found in¹. The purpose is not to impose an ethical standard on the students but to get them to understand that there are multiple standards and decisions may differ depending on the standard they use.

The seminars suggest to students that leaders should make consistent, and righteous decisions; and these decisions should be documented if possible. Distinctions are made between technically sound, legal and ethical decisions. Certainly only technically feasible decisions should be considered good but things can become confused when legal and ethical conditions are considered. Through several examples and discussion, students identify actions that they consider righteous and illegal and contrast these to legal yet unrighteous behavior. Most of the discussion on ethics centers on the ethical foundations and how they can be applied to make decisions. The foundations used in the seminars are self-interest, natural law, both act and rule utilitarian, and respect for persons.

During the final seminar, students make a decision using the AHP by establishing the priority weights based on an ethical standard. They make the decision twice, once by assuming self-interest ethics and the second time by using respect for persons. The problem they are asked follows.

- There is a crew onboard a disabled submarine in water controlled by an “enemy”. You need to rescue the crew.
- You can send in a group of rescuers but there is a risk, and there may be political consequences. There are also financial concerns.
- Potential solutions:
 - Send in another sub
 - If unsuccessful there will be an even larger political problem.
 - There is also the danger of losing more sailors.
 - Send in an undercover crew (a covert operation) to rescue the first.
 - They sail into open water and run a secret rescue operation.
 - If unsuccessful there will be all kinds of problems.
 - Use diplomacy to talk your way into a solution with the enemy.
 - May not have a solution within an acceptable time.
 - If unsuccessful, the public will be pretty upset.
- Problem, what course of action should be taken?
 - Choose an ethical “standard” and put in your weightings

First students are asked to fill in AHP weights based on self interest ethics. The students fill in only a subset of the tables due to a lack of time in the seminar. Classroom discussion ensures the students understand what it means to assign priorities based on self-interest. The second time students assign priorities based on the Respect for Persons reference. Both responses are summarized in Table 1.

Table 1 Sub-Criterion (1-1) - Self Interest and Respect for Persons Cases

	Political – a good solution is viewed positively by everyone	Implementation – a good solution will be successful at rescuing the sailors	Economic – a good solution is inexpensive
Political – good solution viewed + by everyone	1	Left is more important 6 SI Top more important 5 RFP	Left is more important 2 SI Left more important 3 RFP
Implementation – good will be successful rescue	1/6 SI 1/5 RFP	1	Top is more important 4 SI Left more important 6 RFP
Economic – good is inexpensive	1/2 SI 1/3 RFP	1/4 SI 1/6 RFP	1

Some of the discussion on the Self Interest centers on the ideas that it is more important to appear good and to protect one's budget than it is to affect a rescue. If the public "believes" the decision maker did the right thing then it will advance their career. Hence it is most important to have a positive political solution; secondarily it's important to save money. They also say the political gain may, in the long term, be lost if the budget doesn't balance.

Two rules are established for the RFP: (1) Human life is the most important thing and (2) it is more important for people to feel good than to save a little money. From these rules it is obvious to the students that it is far more important to have a successful mission than to look good to the public and it is marginally more important to have a politically good solution (have people feel good) than to save money and it is far more important to have a successful mission than to save money.

Depending on the time allowed for the seminar, the students discuss in small groups other tables for the models and fill in values. These values are entered in the Expert Choice computer program²² and produce the results shown in Figure 2 for the Self Interest Model and Figure 3 for the Respect for Persons Model.

What is important to note about these models is that first the results differ. The point emphasized to the students is the decisions you make will depend on what you believe as you make comparisons between options. Therefore, be aware of what you believe. Point 2, the differences, at least in this simple problem, emanate from obvious differences in the decision maker's belief system. For example in the SI case, Politics is weighed heavily (0.6) followed by Economics (0.3) with a paltry (0.1) for Implementation. For the RFP case, Implementation is critical with Political and Economic falling distant second and third respectively.

Not shown in the model results are equally important issues such as level of consistency and the values of pair wise comparisons. The two purposes of the model results are to demonstrate that different results can be found depending on the ethical foundation you adopt and it is possible to document the process used to arrive at a decision.

Seminar Evaluations

The evaluations used in this seminar were very traditional and consisted of asking students what they thought of the activities. Homework assignments were made and collected to help justify a grade for the course. This section describes the student feedback, its analysis and results.

The questions were based on a Likert scale. Some were posed so a “strongly agree” is a “positive” result and others so it is a “negative” result. Some were repeated with a positive and negative tone to see if students are consistent with their ratings. The analysis section interprets the meaning of the questions. The actual questions and graphs of the responses are placed in the Appendix.

Analysis of the Evaluations

The first step in the analysis was to convert answers so a high number indicates a positive response. For example if the question was “the seminars were too simple”, we hope the students disagree therefore a strongly disagree earns five points and a strongly agree earns a one.

Second the questionnaires were analyzed for consistency. For example one of the questions asked if the seminar was too simple and another asked if the seminar was too difficult. If the students are answering consistently you would expect them to agree on one and disagree on the other or perhaps giving neutral on both. The individual student responses were investigated for consistency and as long as the inconsistent responses were fewer than 10%, the results were considered consistent. The first ethics seminar had the worst inconsistency in that 4 students out of 34 said the seminar was too simple and too difficult to follow. Two students said that ethics was irrelevant yet important. And one student said that ethics was relevant but unimportant. It should be noted that a large percentage of the students at UTEP have English as a second language. The evaluations were printed in English and it is not uncommon for the students to have problems understanding words like irrelevant. It is the author's judgment that the inconsistency in the surveys are within acceptable limits.

Figure 2 - Example Results from the Self Interest Model.

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Figure 3 - Example Results from the RFP Model.

Several of the questions were asked at the end of each seminar. One in particular asked the students if ethics had relevancy to them. There was an 80% positive response on most surveys and the overall lowest positive response was approximately 70%. This indicates that the students expressed the idea that ethics is important to them. Another issue was whether people instinctively know what is right and wrong or if they need some foundation on which to base their decisions. The students consistently (between 60 and 70%) said they needed a foundation. They also rated the need for consistent ethical decisions 80% but this dropped to as low as 25% for the final seminar.

The negative results worth mentioning include that the students said the final ethics seminar was too difficult to follow. When evaluating the decision making seminars, students were not too critical about the process but when it came to the final ethics seminar where the decision process was used to make an ethical decision, the students were very critical. This may be an indication that the students were confused, it may also be that they're telling us they don't get the connection.

iii The vertical scale of this plot is identical to the previous. Regardless of how the plot is drawn the program corrupts the axis on this particular model. This is most likely due to the author's inexperience with the program.

Summary and Conclusions

This paper described a method for using the analytic hierarchy process to make ethical decisions. This material was presented to two groups of students over two semesters. For the most part the students were positive about the need for consistent ethical foundations. They were also relatively positive about decision making tools. They were most critical when the tools were put together in a culminating seminar. Their feedback indicates further work is needed to develop the technique.

References

1. Harris Jr., C.E., M.S. Pritchard, and M.J. Rabins, *Engineering Ethics: Concepts and Cases*. 2004: Thomson Wadsworth. 408.
2. Saaty, T.L., *Decision Making for Leaders*. New Edition ed. 2001, Pittsburgh: RWS Publications. 316.
3. Saaty, T.L., *Decision-making with the AHP: Why is the principal eigenvector necessary*. European Journal of Operational Research, 2003. **145**(1): p. 85-91.
4. Saaty, R.W., *Decision Making In Complex Environments*. 2003, Creative Decisions Foundation.
5. Chernoff, H. and L.E. Moses, *Elementary Decision Theory*. 1986, New York: Dover Publications.
6. Kinoshita, E., *Why We Need AHP/ANP Instead of Utility Theory in Today's Complex World — AHP from the Perspective of Bounded Rationality*, in *ISAHP 2005*. 2005: Honolulu, Hawaii.
7. Ishizaka, A., *Advantages of clusters and pivots in AHP*, in *15th Mini-EURO Conference*, INESC Coimbra.
8. Belton, V. and T.J. Stewart, *Multiple Criteria Decision Analysis and Integrated Approach*. 2002, Boston: Kluwer Academic Publishers. 372.
9. Lai, S.-K., *An Empirical Study of Equivalence Judgments vs. Ratio Judgments in Decision Analysis*. Decision Sciences, 2001. **Spring 2001**.
10. Baron, J., *Value Trade-offs and the Nature of Utility: Bias, Inconsistency, Protected Values, and Other Problems*, in *Behavioral Economics and Neoclassical Economics*. 2002, American Institute for Economic Research: Great Barrington, MA.
11. Elfes, A., et al., *Risk-based technology portfolio optimization for early space mission design*. IEEE Transactions on Aerospace and Electronic Systems, 2006. **42**(1): p. 22-36.
12. Elfes, A., et al., *Extending the START framework: computation of optimal capability development portfolios using a decision theory approach*. Systems Engineering, 2006. **9**(4): p. 331-57.
13. Weisbin, C.R., et al., *Toward a systematic approach for selection of NASA technology portfolios*. Systems Engineering, 2004. **7**(4): p. 285-302.
14. Weisbin, C.R., et al., *Toward a systematic approach for selection of NASA technology portfolios*. IEEE Engineering Management Review, 2005. **33**(1): p. 60-76.
15. Piantanakulchai, M., *Analytic Network Process Model For Highway Corridor Planning*, in *8th International Symposium of the AHP*. 2005: Honolulu, Hawaii.
16. Taylor III, F.A., A.F. Ketcham, and D. Hoffman, *Personnel evaluation with AHP*. Management Decision, 1998. **36**(10): p. 679-685.
17. Frair, L., J.O. Matson, and J.E. Matson, *An undergraduate curriculum evaluation with the analytic hierarchy process*, in *Frontiers in education*. 1998, IEEE.
18. Sato, J., *Comparison between multiple-choice and analytic hierarchy process: measuring human perception*. International transactions in operations research, 2004. **11**: p. 77 -- 86.
19. Sheskin, T.J., *In the analytic hierarchy process model to apportion co-author responsibility*. Science and engineering ethics, 2006. **12**(3): p. 555 -- 565.
20. Dolan, J.G., *Are patients capable of using the analytic hierarchy process and willing to use it to help make clinical decisions?* Medical decision-making, 1995. **15**(1): p. 76 -- 80.
21. Millet, I., *Ethical decision-making using the analytic hierarchy process*. Journal of business ethics, 1998. **17**: p. 1197 -- 1204.
22. Anonymous, *Expert Choice*. 2004, Expert Choice Inc.: Arlington.

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Appendix

Questions for Ethics Seminar 1

1. The presentation was too simple.
2. The material has no relevancy to me and my future career.
3. Most people instinctively know what is right and wrong, we do not need a method to solve Ethical questions.
4. Since most people in the world are unethical, I will have a disadvantage when I behave ethically.
5. The time allocated for students to give opinions, have discussion and ask questions was too short.
6. The presentation was difficult to follow.
7. I have already had to deal with ethical questions.
8. Ethics is exactly the same as religion so legally it should not be taught at a public university.
9. Practicing good ethics is important.
10. I had sufficient time to voice my opinions during the presentation.

Clearly questions 1&6, 2&7, 5&10 are opposites, they deal with the administration of the seminar and students are expected to answer in opposite values. The questions 2, 3, 4, 7, 8, and 9 attempt to get at what the students perceive to be ethics.

Unique Questions for Ethics Seminar 2

1. The presentation was too simple.
2. The material has no relevancy to me and my future career.
3. The four Ethical Foundations are really all the same thing.
4. I can identify the Ethical Foundation that most closely matches the way I decide what is right and wrong.
5. The time allocated for students to give opinions, have discussion and ask questions was too short.
6. The presentation was difficult to follow.
7. I don't need an Ethical Foundation, right and wrong is obvious.
8. Consistency in making ethical decisions is important.
9. This seminar on ethics was redundant with the previous one, I don't understand why we need two of them.
10. I had sufficient time to voice my opinions during the presentation.

Questions for AHP Seminar 1

1. The presentation was too simple.
2. The material has no relevancy to me and my future career.
3. Most people instinctively know what is right and wrong, we do not need a method to solve decision making questions.
4. The time allocated for students to give opinions, have discussion and ask questions was too short.
5. The pair ~~discuss~~ ^{iv} *discussions were* helpful to answer the questions
6. The presentation was difficult to follow.
7. The instructional materials ~~are~~ *were well* organized by the instructor.
8. I have already had to deal with decision making questions.
9. Making a good decision is important for us.
10. I had sufficient time to voice my opinions during the presentation.
11. The class assignment is clear for us

Questions for AHP Seminar 2

1. The presentation was too simple.
2. The material has no relevancy to me and my future career.
3. Most people instinctively know how to make decisions; we do not need a method to solve decision making questions.
4. The time allocated for students to give opinions, have discussion and ask questions was too short.
5. The group discussion was helpful to answer the questions.
6. The presentation was difficult to follow.
7. The instructional materials were pretty organized by the instructor.
8. I have already had to deal with decision making questions.
9. Making a good decision is important to all of us.
10. I had sufficient time to voice my opinions during the presentation.
11. The homework assignment is clear and explicit.

Questions for AHP Seminar 3

1. The presentation was too simple.
2. The material has no relevancy to me and my future career.
3. Most people instinctively know how to make decisions; we do not need a method to solve decision making questions.
4. The time allocated for students to give opinions, have discussion and ask questions was too short.
5. The group discussion was helpful to answer the questions.
6. The presentation was difficult to follow.
7. The instructional materials were pretty organized by the instructor.
8. I have already had to deal with decision making questions.
9. Making a good decision is important to all of us.
10. I had sufficient time to voice my opinions during the presentation.

^{iv} Editing performed by L.J. Everett for the paper.

11. The homework assignment is clear and explicit.

Questions for AHP Seminar 4

1. The presentation was too simple.
2. The material has no relevancy to me and my future career.
3. Most people instinctively know how to make **group** decisions; we do not need a method to solve **group** decision making questions.
4. The time allocated for students to give opinions, have discussion and ask questions was too short.
5. The group discussion was helpful to answer the questions.
6. The presentation was difficult to follow.
7. The instructional materials were pretty organized by the instructor.
8. I have already had to deal with **group** decision making questions.
9. Making a good **group** decision is important to all of us.
10. I had sufficient time to voice my opinions during the presentation.
11. The homework assignment is clear and explicit.

Questions for “Grand Finale” Using AHP to Make Ethical Decisions

1. The presentation was too simple.
2. The material has no relevancy to me and my future career.
3. The time allocated for students to give opinions, have discussion and ask questions was too short.
4. The presentation was difficult to follow.
5. I don’t need an Ethical Foundation, right and wrong is obvious.
6. Consistency in making ethical decisions is important.
7. This seminar on ethics and AHP is not needed. Ethically decisions are simple enough that they do NOT need a decision process.
8. I had sufficient time to voice my opinions during the presentation.
9. I would like to use the software myself and not rely on the presenter to enter everything.
10. The AHP method is really useless. I don’t think it will help me make any really important decisions.