A statistical analysis of student feedback and the NSS: what do students really evaluate?

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Motivation

We get students to answer lots of questions. Could we get away with asking fewer? Does our feedback depend on a few key things?
Data investigated

- Student feedback from 2013/14
- Over 2500 responses from 54 modules
- Questionnaires (paper) distributed out in a lecture towards the end of a module
- 17 statements on (definitely disagree, mostly disagree, neither a/d, mostly agree, definitely agree) scale
- Statements aligned to NSS
- Consider % of students who at least ‘agreed’
The questionnaire

Appendix 1 - Cardiff University Module Evaluation

Module Code: XXXXXX  Module Title: XXXXXXX

For each statement, show the extent of your agreement or disagreement by putting a tick in the one box that best reflects your current view of the module. Your responses to all questions are anonymous.

<table>
<thead>
<tr>
<th></th>
<th>Definitely agree</th>
<th>Mostly agree</th>
<th>Neither agree nor disagree</th>
<th>Mostly disagree</th>
<th>Definitely disagree</th>
<th>Not applicable</th>
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<tbody>
<tr>
<td><strong>Teaching and academic support</strong></td>
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<td>1. I had a good idea of what to expect from this module.</td>
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<td>2. The teaching staff were good at explaining things.</td>
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<td>3. I was able to contact teaching staff when I needed to.</td>
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<td>4. The module inspired interest and was intellectually stimulating.</td>
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<td>5. The module met my expectations in terms of the knowledge I have gained.</td>
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<td>6. I feel confident in communicating the knowledge I have gained on the module.</td>
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<td>7. The module has helped my personal development by improving my employability skills (e.g. presentation skills, communication skills).</td>
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<td><strong>Resources and learning environment</strong></td>
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<td>8. The range of the module’s resources (on Learning Central and/or in paper form) has effectively supported my learning.</td>
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<td>9. Reading materials (books, journals, etc.) for this module were readily accessible.</td>
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<td>10. The teaching rooms used for this module were suitable for the style of delivery.</td>
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<td><strong>Assessment</strong></td>
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<td>11. I had a clear sense of what is required of me in the assessment/s for this module.</td>
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<td>12. The criteria used to mark my work were made clear in advance.</td>
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<td>13. Feedback on my marked work was provided within the specified timeframe.</td>
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<td>14. Feedback has helped me to clarify things I did not understand.</td>
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<td><strong>Organisation and management</strong></td>
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<td>15. The module has been well organised.</td>
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<td>16. Any changes in the module or teaching were communicated effectively.</td>
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<td><strong>Overall satisfaction</strong></td>
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<td>17. Overall, I am satisfied with the quality of this module.</td>
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</table>
Statements with highest correlation with overall quality (Q17):

Q1  Good idea what to expect  0.83
Q2  Good at explaining        0.87
Q5  Met my expectation        0.84
Q15 Module well organised    0.91
Factor analysis

- Factor analysis is a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called factors.
- For example, it is possible that variations in 17 observed variables mainly reflect the variations in three unobserved variables (or factors).

Our findings

1. Responses to the 17 questions can be reduced to 3 factors.
2. Factors are in decreasing order of importance.
3. Items within factors are in decreasing order of importance.
**Factor 1**

- Q5 met my expectation
- Q17 overall quality
- Q2 lecturer good at explaining
- Q6 improved my confidence in communicating
- Q4 module was inspiring
- Q1 I had a good idea of what to expect
- Q15 module was well organized
- Q11 I had a clear sense of the assessment
- Q16 changes communicated effectively

**What this means**

1. All these questions are highly correlated.
2. Not much extra value obtained by asking all of these questions.
3. Items within factors are in decreasing order of importance.
4. This factor is about expectations and quality.
Factor 2

Q9 reading materials available
Q8 range of resources available helped
Q10 teaching rooms were fine
Q3 contact staff when I needed

What this means

1. All these questions are highly correlated.
2. Not much extra value obtained by asking all of these questions.
3. Items within factors are in decreasing order of importance.
4. This factor is about resources.
Factor 3

Q13 feedback given in time
Q14 feedback helped me
Q12 feedback criteria made available in advance

What this means

1. All these questions are highly correlated.
2. Not much extra value obtained by asking all of these questions.
3. Items within factors are in decreasing order of importance.
4. This factor is about feedback.
Implications

- 75% of the variation in responses is explained by these three factors.
- It suggests that you would get nearly as much information by instead of asking agreement for 17 statements, ask something like these instead:
  1. Overall, I was satisfied with the quality of the module (Q17 as it stands)
  2. Overall, I was satisfied with the resources that were available.
  3. Overall, I was satisfied with the feedback that was given to me.
The missing statement...

- All the statements belonged to at least one factor.
- One statement stood out as ‘not belonging’ to any of the previous categories.
- Q7: The module has helped my personal development by improving my employability skills.
THE TEACHING ON MY COURSE
Q1. Staff are good at explaining things
Q2. Staff have made the subject interesting
Q3. Staff are enthusiastic
Q4. The course is intellectually stimulating

ASSESSMENT AND FEEDBACK
Q5. The criteria used in marking have been clear
Q6. Assessment arrangements and making have been fair
Q7. Feedback on my work has been prompt
Q8. I have received detailed comments on my work
Q9. Feedback on my work has helped me clarify things

ACADEMIC SUPPORT
Q10. I have received sufficient advice and support
Q11. I have been able to contact staff when I needed to
Q12. Good advice was available

ORGANISATION AND MANAGEMENT
Q13. The timetable works efficiently
Q14. Changes have been communicated
Q15. Course is well organised

LEARNING RESOURCES
Q16. Library services are good enough
Q17. Can access IT
Q18. Can access specialised equipment

PERSONAL DEVELOPMENT
Q19. Helped me present myself
Q20. Communication has improved
Q21. Confident in tackling unfamiliar problems

OVERALL SATISFACTION
Q22. Overall, I am satisfied with the quality of my course
Question

Using NSS data for Cardiff University from 2010 to 2014 are there questions from the NSS that are indicative of a high percentage agreement to Q22 (Overall Satisfaction)?
Final regression model

\[ Q_{22} = 0.168Q1 + 0.143Q2 + 0.263Q4 + 0.097Q6 + 0.128Q12 \\
+ 0.247Q15 + 0.121Q16 + 0.213Q21 \]

- All parameters statistically significant at 5% level
- \( R^2 \approx 70\% \)
- Most ‘indicative’ question: Q4 (Intellectually stimulating), but all of above are important.
Matrix of factor loadings

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<th>3</th>
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<th>5</th>
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<tr>
<td>Q1</td>
<td>0.756</td>
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<td>Q2</td>
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<td>Q22</td>
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</table>
Thanks for listening!
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