

Student Survey about Career Goals, College Experiences, and Sustainability

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Questions from our survey were adapted or modified from prior surveys. The following references were used in developing our survey. The specific references adapted or modified for each survey item are provided below references.

References:

- Blizzard, J., Klotz, L., Potvin, G., Hazari, Z., Cribbs, J., and Godwin, A. (2015). "Using survey questions to identify and learn more about those who exhibit design thinking traits." *Design Studies*, 38, 92–110.
- Davis, M. H. (1983). "Measuring individual differences in empathy: Evidence for a multidimensional approach." *Journal of Personality and Social Psychology*, American Psychological Association, US, 44(1), 113–126.
- DeWaters, J., Qaqish, B., Graham, M., and Powers, S. (2013). "Designing an Energy Literacy Questionnaire for Middle and High School Youth." *The Journal of Environmental Education*, 44(1), 56–78.
- Dunlap, R. E., and McCright, A. M. (2008). "A widening gap: Republican and Democratic views on climate change." *Environment: Science and Policy for Sustainable Development*, 50(5), 26–35.
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., and Jones, R. E. (2000). "New trends in measuring environmental attitudes: measuring endorsement of the new ecological paradigm: a revised NEP scale." *Journal of social issues*, 56(3), 425–442.
- Godwin, A., Potvin, G., and Hazari, Z. (2013). "The development of critical engineering agency, identity, and the impact on engineering career choices." *American Society of Engineering Education Conference Annual Conference & Exposition*.
- Godwin, A., Potvin, G., Hazari, Z., and Lock, R. (2016). "Identity, Critical Agency, and Engineering: An Affective Model for Predicting Engineering as a Career Choice." *Journal of Engineering Education*, 105(2), 312–340.
- Klotz, L., Potvin, G., Godwin, A., Cribbs, J., Hazari, Z., and Barclay, N. (2014). "Sustainability as a Route to Broadening Participation in Engineering." *Journal of Engineering Education*, 103(1), 137–153.
- National Academy of Engineering. (2008). *Grand challenges for engineering*. National Academy of Engineering, Washington, DC.
- Royalty, A., Oishi, L. N., and Roth, B. (2014). "Acting with Creative Confidence: Developing a Creative Agency Assessment Tool." *Design Thinking Research: Building Innovation Eco-Systems*, Understanding Innovation, L. Leifer, H. Plattner, and C. Meinel, eds., Springer International Publishing, Cham, 79–96.

Sheppard, S., Atman, C., Fleming, L., Miller, R., Smith, K., Stevens, R., Streveler, R., Clark, M., Loucks-Jaret, T., and Lund, D. (2010). *An Overview of the Academic Pathways Study: Research Processes and Procedures*. University of Washington, Appendix 4-E.

Survey items that were adapted or modified from specific references:

Klotz, L., Potvin, G., Godwin, A., Cribbs, J., Hazari, Z., and Barclay, N. (2014). "Sustainability as a Route to Broadening Participation in Engineering." *Journal of Engineering Education*, 103(1), 137–153.

- Q4: How important are the following factors for your future career satisfaction?
- Q5: Which of these topics, if any, do you hope to directly address in your career? (mark all that apply)
- Q6: While an undergraduate, have you done (or are you currently doing) any of the following?
- Q7: Please indicate whether the following topics were covered in your courses. (mark all that apply)
- Q8: Please indicate how often the following occurred in your most recent engineering design course:
- Q17: In your opinion, to what extent are the following associated with the field of engineering?
- Q18: To what extent do you disagree or agree with the following:

Sheppard, S., Atman, C., Fleming, L., Miller, R., Smith, K., Stevens, R., Streveler, R., Clark, M., Loucks-Jaret, T., and Lund, D. (2010). *An Overview of the Academic Pathways Study: Research Processes and Procedures*. University of Washington, Appendix 4-E.

- Q10: Please indicate below the extent to which the following reasons apply to why you chose to major in engineering:

Godwin, A., Potvin, G., and Hazari, Z. (2013). "The development of critical engineering agency, identity, and the impact on engineering career choices." *American Society of Engineering Education Conference Annual Conference & Exposition*.

Godwin, A., Potvin, G., Hazari, Z., and Lock, R. (2016). "Identity, Critical Agency, and Engineering: An Affective Model for Predicting Engineering as a Career Choice." *Journal of Engineering Education*, 105(2), 312–340

- Q11: To what extent do you agree or disagree with the following:
- Q12: To what extent do you disagree or agree with the following

Davis, M. H. (1983). "Measuring individual differences in empathy: Evidence for a multidimensional approach." *Journal of Personality and Social Psychology*, American Psychological Association, US, 44(1), 113–126.

- Q13: How much do you agree or disagree with the following statements:

Blizzard, J., Klotz, L., Potvin, G., Hazari, Z., Cribbs, J., and Godwin, A. (2015). "Using survey questions to identify and learn more about those who exhibit design thinking traits." *Design Studies*, 38, 92–110.

- Q14: To what extent do you disagree or agree with the following:

Royalty, A., Oishi, L. N., and Roth, B. (2014). "Acting with Creative Confidence: Developing a Creative Agency Assessment Tool." *Design Thinking Research: Building Innovation Eco-Systems*, Understanding Innovation, L. Leifer, H. Plattner, and C. Meinel, eds., Springer International Publishing, Cham, 79–96.

- Q15: How confident are you in your ability to do the following:

National Academy of Engineering. (2008). *Grand challenges for engineering*. National Academy of Engineering, Washington, DC.

- Q16: How interested are you in working on the following solutions in your career?

Dunlap, R. E., and McCright, A. M. (2008). "A widening gap: Republican and Democratic views on climate change." *Environment: Science and Policy for Sustainable Development*, 50(5), 26–35.

Dunlap, R. E., Van Liere, K. D., Mertig, A. G., and Jones, R. E. (2000). "New trends in measuring environmental attitudes: measuring endorsement of the new ecological paradigm: a revised NEP scale." *Journal of social issues*, 56(3), 425–442.

- Q19: To what extent do you agree with the following:

DeWaters, J., Qaqish, B., Graham, M., and Powers, S. (2013). "Designing an Energy Literacy Questionnaire for Middle and High School Youth." *The Journal of Environmental Education*, 44(1), 56–78.

- Q20: How much do you agree or disagree with the following statements:
- Q21: Which of the following has contributed the most to your understanding of global climate change?
- Q22: Please answer to the best of your knowledge: What percentage of climate scientists think that human-caused global warming is happening?
- Q23: I believe that a cause of global climate change is...
- Q24: I believe a way to help reduce or slow down climate change is...
- Q25: Which of the following...(Mark only one per row)
- Q26: How much do you agree or disagree with the following statements about Earth's climate:
- Q27: Global warming will start to have serious impact on...
- Q28: I believe that global warming is a(n)...