



## Measuring Links between Awareness and Implementation of Engineering Education Research in Practice

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# WIP: MEASURING LINKS BETWEEN AWARENESS AND IMPLEMENTATION OF ENGINEERING EDUCATION RESEARCH IN PRACTICE

## Abstract

In order to make large-scale changes and promote research-to-practice in engineering education, there is a need for a greater understanding of factors that contribute to RTP in this field. Using the hierarchy of effects model, this work in progress strived to examine the RTP gap and factors that facilitate an RTP pathway in the engineering education discipline, specifically examining engineering education stakeholders' awareness of, interest in, influence of, and implementation of published research in their daily practices. Participants included 41 engineering education stakeholders. Greater awareness of published research was significantly associated with greater influence of published research and more frequent implementation of published research. A significant, positive association was found between the influence of published research and the implementation of published research. Participants on a non-traditional career track reported greater awareness of published research than those on a mid-career track. Engineering education researchers reported greater awareness, influence, and implementation of published research than engineering education practitioners. Implications of findings, such as future directions and ways for improving attitudes toward research in engineering education, are discussed.

## Introduction

Over the past several years, the field of engineering education has been striving for change at a systemic level (Center for Science, Mathematics, and Engineering Education, 1999; Elrod & Kezar, 2017; Reinholz, Corbo, Dancy, Finkelstein, & Deetz, 2014). Many have pointed to research as the path by which engineering education can move from small episodes of change to lasting, systematic change (Jamieson & Lohmann, 2012; Steering Committee of the National Engineering Education Research Colloquies, 2006). Reducing the *research-to-practice* (RTP) gap has been a focus of many scholars, including those in engineering education (Jamieson & Lohmann, 2012). The current paper proposes that individuals not only need to be capable of using research to inform practice but also need to be aware of, interested in, and influenced by research. To date, the extent to which research impacts the daily practices in engineering education are unknown. The purpose of the current study is to obtain a baseline of engineering education stakeholders' awareness of, interest in, influence of, and use of published research for conducting routine tasks.

## Research-to-practice

Overall, the current literature on research-to-practice (RTP) is centered on how research is used in practical settings, the transferring of knowledge from scientists to practitioners, and pinpointing the source of the innovation (Flaspohler, Duffy, Wandersman, Stillman, & Maras, 2008; Klein & Sorra, 1996). The emphasis on RTP has been primarily attributed to policymakers, who fund research and set expectations for scholars leading research projects to evaluate and specify how their projects are relevant and make an impact in practice (Daley & Shinton, 2014). Accordingly, various fields and disciplines (e.g., farming, construction,

linguistics, geriatrics, psychology, disabilities, health, and education) are concerned with the phenomenon of RTP, specifically improving RTP pathways and reducing the RTP gap (Bradley, Danielson, & Hallahan, 2002; Chang, Nixon, & Baker, 2015; Chun, 2002; Dingfelder & Mandell, 2011; Fiske & Earle-Richardson, 2013; Gillen, 2010; Jensen & Foster, 2010; Langberg et al., 2018; Li et al., 2016; Marschark, Lang, & Albertini, 2002; Subcommittee of Education Reform, U.S. Congress, & U. S. H. of R., 2002).

The Research Process model is described as a cycle in which practical problems motivate research questions, research questions inform research problems, research problems lead to research answers, and research answers help to solve practical problems. In the context of education, issues in educational programs and curriculum can motivate researchers to question and investigate these issues and identify empirically-based solutions; however, once solutions are found, the cycle continues as stakeholders in engineering education implement these evidence-based practices, and researchers continue to question and examine the effectiveness of practices over time and across settings. Jamieson and Lohmann (2012) discussed how innovations in engineering education are only impactful when they occur in this cyclical process described in the Research Process model.

In disciplines outside of engineering, scholars demonstrate particular approaches to promoting RTP in their respective fields, such as providing overviews of relevant empirical literature with recommendations about practical applications of theories and research (Bradley et al., 2002; Chun, 2002; Marschark et al., 2002); describing specific examples of research-informed interventions and initiatives that demonstrate RTP in their field of interest (Chang et al., 2015; Gillen, 2010; Langberg et al., 2018); and a comprehensive approach that acknowledges the RTP gap in their field of interest, identifies the barriers that hinder RTP, and provide practical solutions for addressing these barriers and facilitating a RTP pathway in the field (Dingfelder & Mandell, 2011; Fiske & Earle-Richardson, 2013; Jensen & Foster, 2010; Li et al., 2016; Subcommittee of Education Reform, U.S. Congress, & U. S. H. of R., 2002). While other fields have examined the RTP phenomenon in these ways, the field of engineering education is significantly lacking in understanding the factors that obstruct and promote RTP. The current study strives to improve our understanding of the RTP gap in engineering education and factors that facilitate an RTP pathway in the engineering education discipline, examining attitudes towards research in particular.

### **The impact of attitudes towards research**

In the field of engineering education, there is a lack of knowledge regarding the impact of research on routine activities. Scholars in health-related fields, especially nursing, have identified how practitioners' interest in, awareness of, and implementation of research may be related as well as the factors that promote or hinder these interactions with research. Björkstöm, Johansson, Hamrin, and Athlin (2003) found that Swedish undergraduate nursing students reported mostly positive attitudes towards nursing research and expectations to implement this research. In this study, interest in research was the best predictor of expected future implementation of research. Moreover, the nursing students who reported interest in specialized research areas also reported expectations to implement research more frequently. Similar results were found in a study on nurses working in Austrian hospitals, who reported the

highest interest in research that was specialized to their practices, such as clinical interventions (Breimaier, Halfens, & Lohrmann, 2011). In regards to awareness, previous research on nurses has shown a lack of awareness is associated with less implementation of research (Nilsson Kajermo, Nordström, Krusebrant, & Björkvell, 2000).

In conflict with Björkström and colleagues' (2003) findings, Breimaier and colleagues (2011) found that attitudes towards research utilization, on average, were negative. This difference in findings may be due to differences in career tracks and culture, as Björkström and colleagues examined Swedish nursing students while Breimaier and colleagues examined Austrian nurses. Indeed, other research in health-related disciplines suggests that the characteristics of one's organization (Breimaier et al., 2011; Cummings, Estabrooks, Midodzi, Wallin, & Hayduk, 2007; Gerish et al., 2007; Johnston et al., 2016; Kristensen, Borg, & Hounsgaard, 2012; Sarabia-Cobo et al., 2015), as well as the local professional values and culture (Johnston et al., 2016; Kristensen et al., 2012; Sarabia-Cobo et al., 2015), can influence one's implementation of research.

While the healthcare literature demonstrates trends in attitudes toward research, the field of engineering education is lacking in our understanding of how attitudes towards research impacts engineering education stakeholders' use of research in their daily activities. Furthermore, to our knowledge, perceptions about the influence of research on one's professional activities have not been studied. In addition to establishing a foundation of understanding these attitudes, the current study aims to explore differences in levels of awareness, interest, influence, and use of published research across career tracks, work organizations, organizational roles, and types of research read/consumed.

## **Theoretical framework**

In our effort to enhance understanding of RTP and attitudes towards research in engineering education, our work is guided by the Hierarchy of Effects theory, the most common model AIDA developed by E. St Elmo Lewis (Wijaya, 2011). This model is utilized in advertising literature to describe consumer behavior, but it is transferable to the context of engineering education to describe the adoption of research in practice. The Hierarchy of Effects model describes a process in which a consumer is introduced to a product/brand through attention; this attention leads to interest, this interest would lead to a desire, and this desire leads to action. In the context of education, stakeholders in engineering education are made aware of evidence-based practices; this awareness grasps the interest of stakeholders while researchers continue to question and examine the effectiveness over time and across various settings that ultimately test the attitudes towards the adoptions of these practices. Overall, these processes categorize in the cognitive stage, where stakeholders can gather knowledge about practices and evaluate the effectiveness of existing research. Once these practices are deemed desirable by stakeholders, they can influence surrounding evidenced-based practice. This process categorizes the affective stage, where stakeholders can develop strong positive or negative feels towards applying practices. Ultimately, this desire for researched-based practices will lead to the action of implementing these solutions within stakeholder's environments. This final stage is the conative process, where the stakeholder decides to incorporate practices as their own. Using this model, our study examines the process of research answers (i.e., published research) translating

to engineering education stakeholders' navigation of practical problems in the field (i.e., daily practices and routines), focusing on how attitudes of stakeholders may impact this process. The purpose of the current study is to investigate engineering education stakeholders' awareness, interest, influence, and use of published research for carrying out routine tasks.

1. What is the impact of awareness, interest, influence, and use of published research on routine activities?
2. What are the associations among awareness, interest, influence, and use of published research?
3. Are there differences in levels of awareness, interest, influence, and use of published research across career tracks, work organizations, organizational roles, and types of research read/consumed?

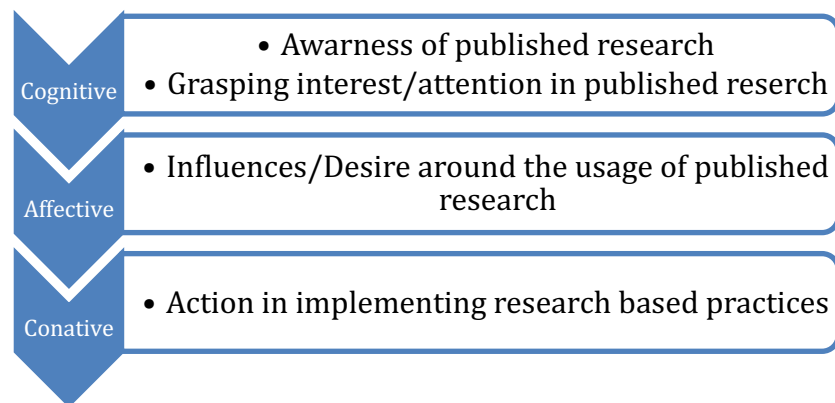


Figure 1. The Hierarchy of Effects Model (Wijaya, 2011)

## Method

### Participants

Data was collected as a pilot study for a larger study. The sample for the current study consisted of 41 engineering education stakeholders. Among these participants, 63.4% identified as female ( $n = 26$ ) and 31.7% as male ( $n = 13$ ), while 4.9% preferred not to answer ( $n = 2$ ). In terms of race, participants identified as White (61.0%,  $n = 25$ ), Black or African American (14.6%,  $n = 6$ ), Asian American (9.8%,  $n = 4$ ), multiracial (7.3%,  $n = 3$ ), and American Indian or Alaska Native (2.4%,  $n = 1$ ); 2 participants preferred not to answer for their race (4.9%). A majority of participants reported that they were not Hispanic, Latino, or Spanish (90.2%,  $n = 37$ ), while 2 participants identified as Hispanic, Latino, or Spanish (4.9%); 2 participants preferred not to answer for their ethnicity (4.9%).

Most participants reported being in an early career track (48.8%,  $n = 20$ ), followed by late career track (24.4%,  $n = 10$ ), mid-career track (17.1%,  $n = 7$ ), and on a non-traditional career track (9.8%,  $n = 4$ ). Participants primarily identified as working in doctoral universities (85.4%,  $n = 35$ ), followed by baccalaureate colleges and universities (7.3%,  $n = 3$ ), primary or secondary education (2.4%,  $n = 1$ ), non-profit, consulting, or research organization (2.4%,  $n = 1$ ), and "other" organization (2.4%,  $n = 1$ ). For their organizational roles, participants predominantly

identified as engineering education researchers (53.7%,  $n = 22$ ), engineering education practitioners (26.8%,  $n = 11$ ), “other” roles (9.8%,  $n = 4$ ), social/cognitive/learning science researchers (4.9%,  $n = 2$ ), and a non-engineering educator (2.4%,  $n = 1$ ); data for roles was missing for 1 participant (2.4%). In regards to what research participants read or consumed the most, participants reported reading engineering education research (65.9%,  $n = 27$ ), social/cognitive/learning science research (17.1%,  $n = 7$ ), “other” research (12.2%,  $n = 5$ ), and (non-engineering education) engineering research (4.9%,  $n = 2$ ).

## Procedure

Participants were recruited through the Educational Research and Methods (ERM) division of the American Society for Engineering Education (ASEE). The ERM listserv sends an email on the 1<sup>st</sup> and 15<sup>th</sup> of each month, in which members can submit announcements and invitations to participate in research. Participants for this pilot study were recruited over the course of approximately one month during the summer of 2018. As the largest division of ASEE with members who are from various engineering disciplines, the ERM division was used for recruitment to gain participants from various professional roles, such as graduate students, researchers, faculty, and practitioners. Participants interested in our study were provided a link to complete an online survey through Qualtrics. The final item on the online survey provided participants the opportunity to participate in a follow-up study on the relationship between impact and research in engineering education. Those who indicated interest in participating in this follow-up study were provided a link that directed them to a separate online survey where they could submit their email to receive additional information about the study.

## Measures

**Demographic information.** Participants completed a brief list of demographic items to indicate their gender, race, ethnicity, career track, work organization, organizational role, and research most often read/consumed.

**Study variables.** The following survey sections were used to investigate engineering education stakeholders’ awareness, interest, influence, and use of research for routine activities. Participants were asked about eight activities for each section: (1) designing/developing courses, (2) addressing issues that arise in courses, (3) mentoring students, (4) changing curriculum, (5) making personnel decisions, (6) promotion and tenure decisions, (7) conducting research, and (8) serving in a formal leadership position. See Appendix for survey items.

**Awareness of research.** Participants were asked to “select the option that best represents your awareness of published research” for the aforementioned eight activities. A sample item from this section includes, “I am aware of published research relevant to designing/developing courses.” Response options for the eight items were on a five-point Likert scale ranging from *Very untrue of me* (1) to *Very true of me* (5). Higher scores indicated greater perceived awareness of published research. Awareness items yielded a Cronbach’s alpha of .88, suggesting good internal reliability for this section.

**Interest in research.** Participants were asked to “indicate the extent to which you are interested in using published research to perform the following actions” for the aforementioned eight activities. A sample item from this section includes, “Mentoring students.” Response

options for the eight items were on a five-point Likert scale ranging from *Very disinterested* (1) to *Very interested* (5). Higher scores indicated greater perceived interest in using published research. Interest items yielded a Cronbach's alpha of .91, suggesting excellent internal reliability for this section.

***Influence of research.*** Participants were asked to "indicate the influence of published research on your approach to performing the following actions" for the aforementioned eight activities. A sample item from this section includes, "Forming promotion and tenure decisions." Response options for the eight items were on a five-point Likert scale ranging from *Not at all influential* (1) to *Extremely influential* (5). Higher scores indicated greater perceived influence of published research. Influence items yielded a Cronbach's alpha of .85, suggesting good internal reliability for this section.

***Implementation of research.*** Participants were asked to "indicate how often you implement published research to perform the following actions" for the aforementioned eight activities. A sample item from this section includes, "Addressing issues that arise in courses." Response options for the eight items were on a five-point Likert scale ranging from *Never* (1) to *Every time* (5). Higher scores indicated greater perceived influence of published research. Influence items yielded a Cronbach's alpha of .87, suggesting good internal reliability for this section.

## Results

### Descriptive statistics

Among items assessing participants' awareness of published research in engineering education, on average participants reported being most aware of research relevant to conducting their own research ( $M = 4.46$ ,  $SD = .90$ ) and being least aware of research relevant to promotion and tenure decisions ( $M = 2.46$ ,  $SD = 1.27$ ). Items assessing the extent to which participants were interested in using published research showed that, on average, participants reported being most interested in using research for designing/developing courses ( $M = 4.56$ ,  $SD = .78$ ) and making changes in course curriculums ( $M = 4.55$ ,  $SD = .78$ ), while participants reported being least interested in using research for forming promotion and tenure decisions ( $M = 3.70$ ,  $SD = 1.13$ ). Across all items assessing interest in using published research, the number of participants who reported that the item was "not applicable" ranged from 1 to 4. Items assessing the influence of published research on participants' actions showed that, on average, participants reported that published research was most influential to conducting research ( $M = 4.34$ ,  $SD = 1.15$ ) and reported that published research was least influential to forming promotion and tenure decisions ( $M = 2.69$ ,  $SD = 1.40$ ). Across all items assessing the influence of published research on participants' actions, the number of participants who reported that the item was "not applicable" ranged from 1 to 9. Among items assessing how often participants implemented published research, on average, participants reported implementing published research most frequently when conducting research ( $M = 4.34$ ,  $SD = .97$ ) and least frequently when forming promotion and tenure decisions ( $M = 2.28$ ,  $SD = 1.10$ ). Across all items assessing how often participants implemented published research, the number of participants who reported that the item was "not applicable" ranged from 1 to 16.

### Correlations among study variables

Pearson's bivariate correlation analyses were conducted to examine associations among composite scores of variables (see Table 1). Greater awareness of published research was significantly associated with greater influence of published research and more frequent implementation of published research. A significant, positive association was found between influence of published research and implementation of published research.

Table 1

*Correlations of Study Variables (N = 41)*

	1	2	3	4	<i>M</i>	<i>SD</i>
1. Awareness of Research	—	0.01	0.63*	0.53*	3.62	0.78
2. Interest in Research		—	0.30	0.13	4.25	0.71
3. Influence of Research			—	0.66*	3.65	0.80
4. Implementation of Research				—	3.30	0.69

Notes. \*  $p < .001$

### Group differences among study variables

Data were tested for normality to determine the appropriate test of group differences. Shapiro-Wilks *W* tests were conducted and showed that data were not normally distributed for many groups analyzed ( $p$ 's  $> .05$ ). Consequently, Kruskal Wallis *H* tests were conducted to examine group differences in our variables of interest. Results for these tests are described below.

**Differences in career path.** Differences in career path groups (i.e., early career, mid-career, late career, and non-traditional career track) among variables were examined using Kruskal Wallis *H* test (see Table 2). A Kruskal-Wallis *H* test showed that there was a statistically significant difference in awareness of research between the different career path groups.

Post hoc analyses using Mann-Whitney *U* tests were conducted using Bonferroni adjusted alpha levels of .008 per test (.05/6). Mann-Whitney *U* test indicated that awareness of research was greater for non-traditional career track (mean rank = 9.50) than for mid-career (mean rank = 4.00),  $U < .001$ ,  $p = .008$ .

Table 2

*Kruskal Wallis H Test of Differences in Career Path (N = 41)*

	Awareness of Research	Interest in Research	Influence of Research	Implementation of Research
Chi-Square	9.42	.78	1.63	2.28
<i>df</i>	3	3	3	3
<i>p</i> -value	.02	.86	.65	.52



*Notes.* Career path groups compared included early career ( $n = 20$ ), mid-career ( $n = 7$ ), late career ( $n = 10$ ), and non-traditional career track ( $n = 4$ ).

**Differences in career role.** Differences in career role groups (i.e., engineering education researcher, engineering education practitioner, social/cognitive/learning science researcher, and non-engineering educator) among variables were examined using Kruskal Wallis H test (see Table 3). A Kruskal-Wallis H test showed that there were statistically significant differences in awareness of research, influence of research, and implementation of research between the different career role groups.

Post hoc analyses using Mann-Whitney U tests were conducted using Bonferroni adjusted alpha levels of .008 per test (.05/6). Mann-Whitney U test indicated that awareness of research was greater for engineering education researchers (mean rank = 21.05) than for engineering education practitioners (mean rank = 8.91),  $U = 32.00, p = .001$ . Mann-Whitney U test indicated that influence of research was greater for engineering education researchers (mean rank = 20.16) than for engineering education practitioners (mean rank = 10.68),  $U = 51.50, p = .008$ . Mann-Whitney U test indicated that implementation of research was greater for engineering education researchers (mean rank = 20.43) than for engineering education practitioners (mean rank = 10.14),  $U = 45.50, p = .004$ .

Table 3

*Kruskal Wallis H Test of Differences in Career Role (N = 36)*

	Awareness of Research	Interest in Research	Influence of Research	Implementation of Research
Chi-Square	12.72	1.89	7.96	9.09
<i>df</i>	3	3	3	3
<i>p</i> -value	.005	.60	.05	.03

*Notes.* Career role groups compared included engineering education researcher ( $n = 22$ ), engineering education practitioner ( $n = 11$ ), social/cognitive/learning science researcher ( $n = 2$ ), and non-engineering educator ( $n = 1$ ).

**Differences in organization.** Differences in organization groups (i.e., primary or secondary education; baccalaureate colleges and universities; doctoral universities; and non-profit, consulting, or research organizations) among variables were examined using Kruskal Wallis H test (see Table 4). A Kruskal-Wallis H test showed that there were no statistically significant differences in variables between the different organization groups.

Table 4

*Kruskal Wallis H Test of Differences in Organization (N = 40)*

	Awareness of Research	Interest in Research	Influence of Research	Implementation of Research
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Chi-Square	.39	2.39	.32	1.59
<i>df</i>	3	3	3	3
<i>p</i> -value	.94	.50	.96	.66

*Notes.* Organization groups compared included primary or secondary education ( $n = 1$ ); baccalaureate colleges and universities ( $n = 3$ ); doctoral universities ( $n = 35$ ); and non-profit, consulting, or research organizations ( $n = 1$ ).

**Differences in research consumption.** Differences in research consumption groups (i.e., engineering education research, engineering research [non-engineering education], and social/cognitive/learning science research) among variables were examined using Kruskal Wallis H test (see Table 5). A Kruskal-Wallis H test showed that there were no statistically significant differences in variables between the different research consumption groups.

Table 5

*Kruskal Wallis H Test of Differences in Research Consumption (N = 36)*

	Awareness of Research	Interest in Research	Influence of Research	Implementation of Research
Chi-Square	5.17	2.00	1.66	4.31
<i>df</i>	2	2	2	2
<i>p</i> -value	.08	.37	.44	.12

*Notes.* Research consumption groups compared included engineering education research ( $n = 27$ ), engineering research (non-engineering education,  $n = 2$ ), and social/cognitive/learning science research ( $n = 7$ ).

## Limitations

One limitation of the current study was the small sample size. Due to the recruitment measures and response rate, our sample size is not what we intended. Another limitation is that the sample size includes primarily ASEE ERM members. This population are not typical engineering educators. We intend to have a larger, more diverse sample in the future. These limitations may skew the results of our preliminary findings but the implications at this point are worth noting.

## Discussion

Our results reveal that awareness is related to greater perceived influence and implementation of research, which is consistent with previous work demonstrating a link between awareness and implementation (Nilsson Kajermo, Nordström, Krusebrant, & Björvell, 2000). Implementation and perceived influence were positively related, which suggests that those who use research in daily activities may recognize the value/impact of research. Initiatives for increasing research utilization may want to focus on enhancing professionals' attitudes related to the value of research in practical settings.

The current study found that EE professionals on non-traditional career tracks reported greater awareness than those on a mid-career track. Based on the literature describing factors that

can impede research utilization, professionals on traditional career tracks may experience barriers related to organizational structures and cultures, such as lacking time and support to explore relevant research for practice (Breimaier et al., 2011; Cummings, Estabrooks, Midodzi, Wallin, & Hayduk, 2007; Gerish et al., 2007; Johnston et al., 2016; Kristensen, Borg, & Hounsgaard, 2012; Sarabia-Cobo et al., 2015). Professionals on non-traditional career tracks may work in non-traditional settings where they have more time and resources to access research related to daily routine. Examining these differences among professional tracks is an area for future research.

Suggestions for the engineering education field to improve future research and attitudes on the implementation of research practices include developing workshops and research-focused coursework. Gerçek et al. (2016) argued that, within the nursing field, initiatives to improve interest and awareness towards research are highly crucial for practitioners and should be thoughtfully planned. Relatedly, the health professional has demonstrated the success of formal activities, such as workshops, dedicated to increasing awareness of research among practitioners in their fields (Goodenough et al., 2017; Weitzel & Robinson, 2011). In another study examining Turkish nursing students, interest and use of research were positively correlated to the number of courses in research completed by the students (Gerçek, Okursoy, & Dal, 2016). The implementation of these strategies can aid in bridging the RTP gap for the wider community in the future.

For the engineering education research community, creating more opportunities that raise awareness around engineering education research is key. This includes strategic, creative workshops and means of public outreach to increase public awareness of research among engineering educators and the broader education community. These outreach activities can aid in linking research to practice within the field of engineering education.

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## Appendix

### Research Utilization Survey

1. Please indicate your gender
  - a. Male
  - b. Female
  - c. Prefer not to answer
2. Please indicate your race
  - a. American Indian or Alaska Native
  - b. Asian
  - c. Black or African American
  - d. Native Hawaiian or Other Pacific Islander
  - e. White
  - f. Multiracial
  - g. Prefer not to answer
3. Please indicate your ethnicity

- a. Hispanic or Latino or Spanish Origin
  - b. Not Hispanic or Latino or Spanish
  - c. Prefer not to answer
4. How would you characterize where you are in your career?
- a. Early career (e.g., undergraduate/graduate student researcher, pre-tenure, research associate, or little managerial experience)
  - b. Mid-career (e.g., associate professor or middle management experience)
  - c. Late career (e.g., full professor or upper management experience)
  - d. Not on a traditional career track
5. What type of organization do you work in?
- a. Primary or secondary education
  - b. Community or two-year college
  - c. Baccalaureate colleges and universities
  - d. Master's colleges and universities
  - e. Doctoral university
  - f. Industry or commercial firm
  - g. Government
  - h. Non-profit, consulting, or research organization
  - i. Other (please specify): \_\_\_\_\_
6. What role best describes you?
- a. Engineering education researcher
  - b. Engineering education practitioner
  - c. Social/cognitive/learning science researcher
  - d. Non-engineering educator
  - e. Engineering researcher (not engineering education)
  - f. Other (please specify): \_\_\_\_\_
7. What type of research do you read/consume most often?
- a. Engineering education research
  - b. Engineering research (not engineering education)
  - c. Social/cognitive/learning science research
  - d. Other (please specify): \_\_\_\_\_

Please select the option that best represents your awareness of published research:

	Very Untrue of Me	Somewhat Untrue of Me	Neutral	Somewhat Untrue of Me	True of Me
I am aware of published research relevant to designing/developing courses.					
I am aware of published research relevant to addressing issues that arise in courses.					
I am aware of published research relevant to mentoring students.					
I am aware of published research relevant to changing curriculum.					

I am aware of published research relevant to personnel decisions.					
I am aware of published research relevant to promotion and tenure decisions.					
I am aware of published research relevant to conducting my own research.					
I am aware of published research relevant to serving in a formal leadership role.					

Please indicate the extent to which you are interested in using published research to perform the following actions:

	Very Disinterested	Disinterested	Neutral	Interested	Very Interested	Not Applicable
Designing/developing courses						
Addressing issues that arise in courses						
Mentoring students						
Making changes to course curriculum						
Informing decisions related to personnel						
Forming promotion and tenure decisions						
Conducting research						
Serving in a formal leadership role						

Please indicate the influence of published research on your approach to performing the following Q10 actions:

	Not at all Influential	Slightly Influential	Neutral	Influential	Very Influential	Not Applicable
Designing/developing courses						
Addressing issues that arise in courses						
Mentoring students						
Making changes to course curriculum						
Informing decisions related to personnel						
Forming promotion and tenure decisions						
Conducting research						
Serving in a formal leadership role						

Please indicate how often you implement published research to perform the following actions:

	Never	Almost Never	Occasionally/ Sometimes	Almost Every Time	Every Time	Not Applicable
Designing/developing courses						
Addressing issues that arise in courses						
Mentoring students						
Making changes to course curriculum						
Informing decisions related to personnel						
Forming promotion and tenure decisions						
Conducting research						
Serving in a formal leadership role						