Variables that Correlate with Faculty Use of Research-Based Instructional Strategies

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RESEARCH QUESTION
What characteristics of physics faculty and their teaching situations correlate with knowledge about and use of Research-Based Instructional Strategies (RBIS)?

Data Source

20 potential explanatory variables developed from survey items.

Three Analyses
1. Relationship between explanatory variables and group membership.
2. Description of faculty groups using significantly correlated variables.
3. Logistic regression analysis to identify a minimal subset of variables that can predict group membership.

Correlated Variables
Variables that significantly correlate with knowledge about and use of research-based strategies:

1. Attending the New Faculty Workshop
2. Active in professional development
   - Attends workshops and talks related to teaching
   - Interested in using more research-based techniques
   - Published journals related to teaching.
3. TeachingFocused
   - Works in an institution with no graduate program in physics
   - Teaching is more than 50% of their job
4. Personal Traits
   - Female
   - Younger
5. Satisfied with meeting instructional goals

Who Uses the Most Research-Based Strategies?

1. Women: 43% of women report high levels of use compared to 20% of men.
2. New Faculty Workshop Attendees: 39% of NFW attendees report high levels of use compared to 22% of non-attendees. Nearly all NFW attendees report knowledge (99%) and using (74%) at least some RBIS.

Research journals related to teaching (READ).

New Faculty Workshop (NFW).

- NFW attendees were much more likely to be in the two groups of users (Group C and D) and were essentially nonexistent in Group A. The results suggest that all new faculty should be strongly encouraged to attend the NFW.
- NFW attendees report knowing about (99%) and using (74%) at least some RBIS.

Attending talks and workshops related to teaching (ATND).

- As might be expected, faculty who have attended one or more talks or workshops related to teaching are significantly more likely to be in Groups C and D. It is unclear, though, why the odds of being in Group C are similar to those of being in Group D. It may be that an individual in Group D has attended more workshops and then has maintained this use while faculty in Group D continue to seek additional knowledge about RBIS.

Satisfaction with meeting instructional goals (SATF).

- Faculty are more likely to be satisfied with meeting their instructional goals of developing student conceptual understanding and problem solving ability as their level of knowledge and use of RBIS increases.

Reading journals related to teaching (READ).

- It is not surprising that reading one or more of these journals is significantly correlated with Group membership.

Gender (GEN).

- Female faculty are much more likely to be high users of RBIS than otherwise similar male colleagues.

Current study is consistent with previous research indicating that female faculty are more likely to use research-based instructional strategies.

Class Size (SIZE). Class size is often seen as a barrier to the use of RBIS. Some aspects of group membership are significantly related to group membership, overall, however, the relationship between class size and group membership was only statistically significant for Group D. Class size does not appear to be a barrier to the use of at least some RBIS, although it may be a barrier to higher levels of use. (Median class size reported by each faculty group: A: 42; B: 35; C: 49; D: 32)

Research Productivity (RSH1, RSH2, RSH3). It is often thought that faculty cannot be highly productive in both teaching and research. Some researchers, though, have found almost no relationship between research productivity and teaching effectiveness. (Correlation coefficients are similar across all groups and range from 0 to 0.3.)

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Correlations not Found

See Ref [1] for survey details.