PREDICTORS OF EDUCATORS’ VALUING OF SYSTEMATIC INQUIRY IN SCHOOLS

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Abstract: This exploratory survey study of 310 educators was conducted to investigate what variables best predict educators’ attitudes toward systematic inquiry in schools. Eight variables were selected as potential predictors of educators’ self-reported views about applied research utility and relevance, their personal ability to do research, the need for teacher involvement in systematic inquiry, and teacher training in research methods. Significant proportions of the variance in the dependent variables were explained by prior participation in research and personal teacher efficacy. Years of experience teaching, perceived organizational learning capacity of respondents’ schools, and the panel in which respondents taught had modest explanatory value. Results are discussed in terms of our knowledge and understanding of teacher receptiveness to systematic inquiry in schools and implications for research and practice.

Résumé: Ce sondage exploratoire auprès de 310 enseignants et directeurs d’écoles s’est tenu afin de déterminer quelles variables prédisent mieux les attitudes des éducateurs envers les enquêtes systématiques dans les écoles. Huit variables ont été choisies comme prédicteurs des opinions des éducateurs sur l’utilité et la pertinence de la recherche appliquée, l’habileté individuelle à la recherche, le besoin de participation des enseignants dans les enquêtes systématiques, et leur formation en méthodes de recherche. Des proportions significatives de la variance des variables dépendantes furent expliquées par une participation antérieure dans la recherche et l’efficacité personnelle des enseignants. Plusieurs années d’expérience en enseignement, la capacité organisationnelle d’apprendre perçues dans les écoles des répondants, et les niveaux auxquels les participants ont enseigné ont une valeur explicative modeste. Les résultats sont discutés en termes de notre connaissance et notre compréhen-
The current educational reform agenda highlights the professionalization of teaching as a central thrust (Elmore, 1990; Fullan, 1993; Murphy, 1991; Noffke, 1992). Professionalization implies that teachers assume and practise increased control in areas of non-instructional decision making, engage in closer participation with colleagues in technical core matters than is presently the case, and develop a greater propensity to question curriculum content and methods. Teachers are called upon to play a larger role in grappling with educational purposes and directions (asking “Why are we doing this?”), rather than maintaining a preoccupation with procedural concerns (asking “How do we do this?”). Teachers, in a more professionalized culture, would take greater responsibility for generating their own expert knowledge (Louis & Kruse, 1995) thereby enhancing their readiness for and potential contribution to classroom, school-wide, and system-wide educational decision making and planning.

If we accept the enhancement of teachers’ professionalism as a viable means for school improvement, then a natural avenue for development is teacher participation in systematic inquiry, forms of applied research such as program evaluation, needs assessment, and action research. Teachers’ participation in carrying out applied research within their local setting or system either in collaboration with researchers (e.g., practical participatory evaluation, Cousins & Earl, 1992, 1995) or promoting and controlling their own research (e.g., action research, King & Lonnquist, 1992; Noffke, 1992) holds great promise as a strategy that would increase teacher utilization of research knowledge and, potentially, contribute to the development of “organizational learning” (Cousins, 1996b; Leithwood & Louis, 1999).

Not unlike research in other domains, studies indicate that research knowledge is under-utilized by teachers and the organizations in which they work (Cousins & Earl, 1992; Poole & Okeafor, 1989). The involvement of teachers in “hands-on” research activity is advocated by some on the grounds that it will help to foster the development of the “dense interpersonal networks” required for meaningful sharing, discussion, and reflection (Cousins & Earl, 1995; Galagan, 1993; Louis & Simsek, 1991) and, ultimately, the social
construction of knowledge (Bandura, 1977, 1986). Such knowledge is likely to be much more usable at the local level by virtue of its meaningfulness to teachers and their ownership of it. Teachers more directly involved in program evaluation, for example, may experience a sense of self-determination and ego involvement encouraging them to view the evaluation process as intrinsically rewarding, thus promoting a greater personal investment in its ultimate usage. The relevance of evaluation is likely to increase when teachers are personally engaged in conducting it and would therefore be more likely to act on the findings (Cousins, 1996a). Recent work in evaluation also indicates that increased participation by teachers enhances the potential for organizational assimilation of information (Alkin & Stecher, 1983; Cousins & Earl, 1992). Interaction processes and dense interpersonal networks can act to challenge the cultural perspectives, values, and basic assumptions of organization members and have the potential to create fundamental organizational change (Cousins, 1996b; Dyer & Dyer, 1986; Louis, 1994).

Ultimately, the aim is to facilitate greater understanding and acceptance of research and evaluation findings and, concomitantly, the needed motivation for utilization within the social setting. Engaging the primary users (those with a vital interest in the outcome of local research and evaluation) in problem formulation; instrument design and selection; data collection, analysis, interpretation; and the development of recommendations and reports (Cousins & Earl, 1992, 1995) facilitates the diffusion of learning through social interpretation that organization members integrate into their interpretive systems and interpersonal networks for sharing and discussion (Bandura, 1986; Cousins, 1996b).

While the rationale for teachers’ participation in systematic inquiry activities is strong, many potential barriers to such involvement need to be addressed. These include the hierarchical nature of the organizational structures within which teachers work, increasing levels of teacher workload and demands on their time, and cultural norms that value teachers’ high, if not exclusive, adherence to traditionally defined technical core activities. Time, effort, and other costs (e.g., time away from class) are emphasized as obstacles to participation by teachers in evaluation and applied research (King & Lonnquist, 1992; Noffke, 1992; Weiss, 1991). Noffke (1992) suggests that teachers may feel their involvement in applied research will contribute to their being viewed as less caring and concerned about students in the classroom. Involvement by teachers in sys-
tematic inquiry therefore, demands the interest and support of both senior administration (Cousins & Earl, 1992, 1995; Noffke, 1992) and the community. Noffke (1992) warns that research activity should not be incorporated as an “add-on” assignment demanding that teachers acquire and exercise new skills in addition to performing accustomed activities, thereby creating a double workload. Critics of teacher involvement in evaluation activities (e.g., Weiss, 1991) maintain that, despite the potential payoff, such activity is unrealistic and asks too much, since teachers have different skills, time orientations, reward systems, and ways of dealing with the world.

We need to know more about influences on teachers’ willingness to participate in systematic inquiry and their attitudes toward evaluation and applied research if barriers to participation are to be overcome. Enhancing our understanding of the principle influences on such attitudes may provide a basis for formulating strategies to improve them. An important question, then, becomes: What variables are predictive of educators’ valuing of systematic inquiry in schools? This question provides the central focus for the present study. We now turn to a review of the literature in order to identify variables that are likely to be predictive.

VARIABLES LIKELY TO PREDICT EDUCATORS’ VALUING OF LOCAL APPLIED RESEARCH

Our review of the literature suggests that educators’ valuing of evaluation and local applied research may depend on characteristics of both the individual educator and the organizational context in which he or she works. Specifically, we identified six personal and two organizational variables that are likely to be predictive of such valuing.

Personal Teaching Efficacy

Teachers’ sense of self-efficacy has been remarkably consistent in predicting classroom behaviours and teachers’ willingness to implement educational innovation (Ashton & Webb, 1986; Gibson & Dembo, 1984; Poole & Okeafar, 1989; Raudenbush, Rowan, & Cheong, 1992; Ross, 1995). Sense of self-efficacy influences whether a given behaviour (instructional or otherwise) will be initiated, the degree of effort expended, and how long the behaviour will be maintained in the face of obstacles. Ashton and Webb (1986) translated
Bandura’s (1977) original theory into an educational model comprised of two efficacy dimensions termed personal teaching efficacy and general teaching efficacy, corresponding to Bandura’s clear distinction between the sense of “personal efficacy” and “general efficacy.” Personal teaching efficacy was defined as the individual teacher’s belief in his/her ability to bring about student learning and general efficacy as his/her belief in the ability of teachers as a group to bring about such learning (Ashton & Webb, 1986; Gibson & Dembo, 1984; Ross, 1995). Teachers working in collaboration with other teachers, interacting with peer coaches, engaging in joint work, and sharing instructional decisions report a higher sense of personal teaching efficacy (Ashton & Webb, 1986; Poole & Okeafor, 1989; Raudenbush et al., 1992; Ross, 1995). Findings of other studies indicate that high efficacy teachers are innovative, tend to take risks, are open to learning difficult professional procedures, and persist in implementation tasks (Guskey, 1988; Riggs & Enochs, 1990; Ross, 1995; Smylie, 1988). Although empirical support is presently thin, it seems reasonable to postulate that a high sense of personal self-efficacy would be an important determinant of a teacher’s likelihood to become involved in systematic inquiry. Such individuals would be more likely to view participation in evaluation and research as a promising challenge with the potential to both increase their own knowledge and inform school improvement efforts.

Prior Participation in Research

A second variable that warrants attention as a potential predictor of attitudes toward systematic inquiry in schools is prior participation in research activities. Cousins and Leithwood (1993) found that teachers appreciated and benefited from their involvement in the design and delivery of interventions, their engagement in implementation and follow-up activities, and their ongoing contact with those able to provide “in-person” assistance. Huberman (1990) found that when teachers and researchers collaborated on research projects, increased inter-organizational sharing and contacts promoted deeper thinking about the meaning of findings. Greene (1987, 1988) also found that such interactions increased practitioners’ sense of benefits (political and personal) and, similarly, Alkin and Stecher (1983) noted that teachers became personally interested in research findings when they had been involved in the research process. These studies suggest that teacher involvement in research increases their personal commitment to and advocacy of the findings and enhances the chances of the findings being used. Prior satisfactory involve-
ment would then work to promote greater enthusiasm in educators to further participate.

Prior Research Coursework

It seems probable that educators who have had prior research coursework would have a more well-developed appreciation for systematic inquiry, which would positively influence their attitudes toward local evaluation and applied research. For example, McColskey, Aultschuld, and Lawton (1985) found that principals’ use of research knowledge increased with their level of research training. Green and Kvidahl (1990) found significant correlations among teachers’ education, coursework in research methods, and attitudes toward research. Teachers with advanced degrees were more likely to report having taken research methods coursework. Teachers with either advanced degrees or prior research coursework reported greater usage of research and more positive opinions and attitudes about the value and utility of research in education. However, slightly less than half of these teachers reported having any training in research methods and, on average, also reported low utilization of research findings and a sense of inadequacy in being prepared to carry out research. Nonetheless, prior training appears likely to predict teachers’ propensity to engage in school-based systematic inquiry.

Experience

The number of years of educators’ teaching experience may be important as a predictor of attitudes toward systematic inquiry despite Guskey’s (1988) finding that it was not significantly related to perceptual or attitudinal variables in the implementation of instructional innovation. Personal characteristics such as experience have been found to predict evaluation utilization (Cousins & Leithwood, 1986). For example, some studies indicate that educator characteristics such as organizational position (Braskamp, Brown, & Newman, 1978), professional level, and professional background (Newman, Brown, & Littman, 1979) affect how evaluative information is interpreted. Teachers and administrators, experienced teachers and student teachers, and business persons and educators differed in the value and utility they placed on the same information. Experience cannot be considered separately from career stage, however. Huberman’s (1988) research suggests that stabilization may be an
important factor. His data revealed that teachers at the stabilizing stage of their lives had diminished interest in participating in school improvement activities. It seems likely that such teachers would view involvement in evaluation and research similarly.

Gender

Research findings indicate that the sex of the potential user of evaluative information affects how it is interpreted although the direction of the effect is not clear (Cousins & Leithwood, 1986). Green and Kvidahl (1990) found that male teachers with prior training in research reported greater participation than similar females. Since gender affects perceptions of the value of research information and reported participation, it is reasonable to include it as a potential predictor of educators’ attitudes toward research in the present study. However, the literature does not provide enough evidence to predict the direction of the effect.

Organizational characteristics along with personal characteristics are likely to have a significant impact on attitudes toward research (Cousins & Leithwood, 1993; Weiss, 1991). Two such possible influences seem worth considering: perceived organizational learning capacity and panel or level of the school (elementary, secondary).

Organizational Learning Capacity

Organizations that provide opportunities for collaborative work and social processing have “learning” characteristics (Cousins, 1996b; Leithwood & Louis, 1999). Such organizations are not only collaborative but inquiry-focused and prone to professional sharing and discussion of information, support the social interpretation of information, stimulate staff to rethink conceptions, and challenge basic assumptions. In education, the cultural norms of schools with high organizational learning capacity actively encourage the effective contribution of teachers to school-wide matters. Staff have a higher level of commitment and are motivated to participate in learning activities and receive the time and resources required to be involved in unconventional school-based activities such as research. Leaders in such schools provide vision, foster commitment to group goals, model valued behaviours, provide individual support and intellectual stimulation to teachers, and foster high performance expectations (Cousins, 1996b; Leithwood & Louis, 1999). Given this
forward-moving learning orientation, it seems likely that educators working in such environments would be receptive in their attitudes toward research, since research activity provides knowledge for reflection, discovery, and refinement and fits naturally within such progressive cultural norms.

Panel

It is of interest to test for differences between elementary and secondary school teachers in their attitudes toward research. Elementary schools have been shown to be more “tightly coupled” than their secondary school counterparts, and elementary teachers more collaborative than is the norm in high schools (Firestone & Herriott, 1982; Herriott & Firestone, 1984). From this indirect evidence, it might be postulated that elementary teachers would be more willing to participate with their peers on collaborative projects such as evaluation and school-based applied research studies.

METHOD

Sample

Data for the present study were collected under the auspices of a larger ongoing funded research project investigating phenomena associated with participatory evaluation (Cousins & Earl, 1992, 1995). Teachers and school administrators were sampled from three east-central Ontario school districts, each district with separate experiences regarding participatory evaluation and applied research.

One organization was a medium-sized (23,000 students) public school district, while another was a small-sized (approximately 11,000 students) Roman Catholic separate school board. The third district was a small (approximately 11,000 students) public school board. The intended sample for this study consisted of all school administrators and teachers in the small districts and in schools with intermediate or senior programs (i.e., grades seven to high school graduation) in the medium-sized district. The total sample was 310 which reflected nearly 20% of the population. Of those responding, 90% were teachers and 10% principals or vice-principals.

Local co-ordinators were recruited to administer the study within their districts. Questionnaires were sent in bundles to principals
who were asked to distribute them to teachers to be completed and returned anonymously. Local co-ordinators assumed responsibility for collecting the data from the schools and forwarding them to the researchers for scoring and analysis. Participation in the study was optional, though a covering letter assured anonymity, acknowledged district administrative consent, and promised a summary of the study. A subsequent site visit revealed that limitations on the response rate were likely to be attributable to a variety of factors including principals’ decisions not to distribute the questionnaire, teachers’ perception of the study’s lack of relevance to their needs, heavy workloads, and competing surveys within close temporal proximity. Since the principals could (and in many cases likely did) exercise their right of refusal, many teachers would not even have seen the questionnaire.

While direct data on the generalizability of the findings is not available, it seems likely that the present sample would be biased in favour of schools whose norms were more conducive to educational innovation and change, sites where research activities might be more highly valued. This limitation should be borne in mind as data are interpreted.

Instrument

A questionnaire was developed and tailored slightly for each school district. Among other things, the questionnaire inquired about perceived impact of a designated research study specific to each school district and factors influencing impact. Other data collected were teachers’: (1) willingness to participate in future research projects and the conditions under which they would be willing to do so; (2) propensity to consume research data and to engage in, for example, systematic inquiry within their own classrooms; (3) prior experience with research including participation and graduate training; (4) personal teacher self-efficacy; (5) attitudes toward applied research in education; and (6) opinions about local (district- or school-level) research. Although the instrument was developed and pilot-tested for the present study, significant portions of it were adapted from the instrument used by Green and Kvidahl (1990).

Operationalization of Variables

Data were analyzed using SPSSpc+. Table 1 shows all variables included in the study and the associated descriptive statistics for the
sample. As the foregoing review of the literature implies, attitude toward systematic inquiry in schools, the dependent variable for the study, is a multidimensional construct. The construct was operationalized with the aid of exploratory factor analysis conducted on 24 items pertaining to teachers’ general beliefs and opinions about systematic inquiry. Varimax rotation yielded six discernible factors each of which informed the subsequent construction of scale variables. Table 1 provides details about five of the scale variables and their root items. A sixth variable, pertaining to the sixth factor, was found to be insufficiently reliable and interpretable to include in the present analysis, and dropped accordingly. The five dimensions of teachers’ attitudes toward systematic inquiry in schools were perceptions about its general utility, perceived relevance to practice; teachers’ beliefs about their own preparedness to consume or participate in evaluation and research, teachers’ views about the desirability of educators becoming involved in school-based systematic inquiry, and the extent to which research curricula ought to be integrated into pre- and in-service teacher training programs. The original factors explained from 30% to 5% of the variation in the 24 items, respectively. We opted to use linear combinations of the factors to maintain the metric of the root items (scale of 1-4) and to enable the assessment of internal consistency using Cronbach’s alpha. As shown in Table 1, the reliability of all the scale variables was sufficiently high for the present purposes.

Generally, it may be said that teachers’ views about research were reasonably positive and optimistic, although some variability was observed. It is possible that limitations in the sample may have inflated these mean scores. Of the five criterion variables, educators’ perceived ability to consume and do evaluation and applied research was the only variable to yield a mean score on the “disagree” side of the scale. This finding is consistent with prior knowledge (Green & Kvidahl, 1990).

Seven predictor variables were used in this study. Two of these pertained to the organization, while the remaining variables described the individual respondents. Personal teacher efficacy (PTE) consisted of items originally developed for the Rand studies of school change (Armour et al., 1976). The three items assume a broader perspective on teacher efficacy, specifically including willingness to accept responsibility for student outcomes (Guskey & Passaro, 1994); they predict scores on lengthier instruments and continue to be used extensively in teacher efficacy research (Gibson & Dembo, 1984; Ross,
1995). Table 1 shows that internal consistency was high and that respondents’ propensity to perceive themselves as efficacious was only modest.

### Table 1

<table>
<thead>
<tr>
<th>Variable Name and Description</th>
<th>Scale</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>N</th>
<th>Alpha</th>
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<tbody>
<tr>
<td><strong>CRITERION VARIABLES: Educators’ Attitudes Toward Systematic Inquiry in Schools</strong></td>
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<tr>
<td><strong>Perceived Utility of Systematic Inquiry</strong> (Mean of 12 items on a four-point Likert agree (4)/disagree (1) scale. Top 5 items ordered by factor loading.)</td>
<td>1-4</td>
<td>2.88</td>
<td>0.39</td>
<td>296</td>
<td>.83</td>
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<td>• Research results stimulate educators to reflect on practice.</td>
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<td>• Professional journals are useful sources of practical information.</td>
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<td>• Research in education is of great value.</td>
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<td>• Research findings on teaching have been helpful to me in my teaching.</td>
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<tr>
<td>• Research reports are interesting.</td>
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<td><strong>Perceived Relevance of Systematic Inquiry to Practice</strong> (Mean of 8 items on a four-point Likert agree (4)/disagree (1) scale. Top 5 items ordered by factor loading.)</td>
<td>1-4</td>
<td>2.75</td>
<td>0.49</td>
<td>296</td>
<td>.84</td>
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<td>• Local research helps to meet school or board accountability demands.</td>
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<tr>
<td>• Local research helps to show the public that schools are doing what they should be.</td>
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<tr>
<td>• Research is done to find new ways of doing things.</td>
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<tr>
<td>• Research results are relevant to practice.</td>
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<td>• Practising educators should carry out research.</td>
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<td><strong>Perceived Personal Ability to Consume and Conduct Evaluation and Applied Educational Research</strong> (Mean of 5 items on a four-point Likert agree (4)/disagree (1) scale. Items ordered by factor loading.)</td>
<td>1-4</td>
<td>2.33</td>
<td>0.43</td>
<td>296</td>
<td>.70</td>
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<tr>
<td>• I have adequate background or training in research.</td>
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<td>• I am able to evaluate research.</td>
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<td>• I have time to conduct research.</td>
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<td>• Research reports are not hard to understand.</td>
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<tr>
<td>• Research reports are interesting.</td>
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</table>

*(cont.)*
Table 1 (continued)
Variable Construction and Descriptive Statistics

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<tr>
<th>Variable Name and Description</th>
<th>Scale</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>N</th>
<th>Alpha</th>
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</table>

**CRITERION VARIABLES: Educators' Attitudes Toward Systematic Inquiry in Schools**

Perceptions about the Need for Teacher Involvement in Systematic Inquiry (Mean of 6 items on a four-point Likert agree (4)/disagree (1) scale. Top 5 items ordered by factor loading.)

- Research done by teachers should be taken seriously.
- Researchers from universities should work closely with teachers and principals in doing research.
- Teachers are more likely to use research ideas if they hear them from other teachers.
- Practising educators should carry out educational research.
- Research done by teachers would be taken seriously.

|  | 1-4  | 3.06 | 0.44 | 296 | .74 |

Perceived Need for Integrating Systematic Inquiry into Teacher Training. (Mean of 5 items on a four-point Likert agree (4)/disagree (1) scale. Items ordered by factor loading.)

- Undergraduate programs in education should provide training in reading research.
- Undergraduate programs in education should provide training in doing research.
- Research in education is of great value.
- Teachers are more likely to use research ideas if they hear them from other teachers.
- Research findings about teaching should be given more emphasis in in-service programs.

|  | 1.4   | 3.03 | 0.47 | 296 | .76 |

**PREDICTOR VARIABLES: Personal and Organizational Factors Influencing Teachers' Attitudes Toward Systematic Inquiry in Schools**

Personal Teacher Efficacy (PTE) (Mean of 3 items on four-point Likert agree (4)/disagree (1) scale.)

- If I try really hard, I can get to even the most difficult and unmotivated students.
- When the grades of my students improve, it is usually because I found more effective teaching approaches.
- When a student does better than usual, many times it is because I exerted a little extra effort.

|  | 1-4  | 2.72 | 0.58 | 297 | .81 |

(continue)
Table 1 (continued)  
Variable Construction and Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable Name and Description</th>
<th>Scale</th>
<th>Mean</th>
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<tr>
<td>PREDICTOR VARIABLES: Personal and Organizational Factors Influencing Teachers’ Attitudes Toward Systematic Inquiry in Schools</td>
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<tr>
<td>Personal Prior Participation in Systematic Inquiry</td>
<td>1-5</td>
<td>2.2</td>
<td>0.71</td>
<td>297</td>
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</table>
| • Read research articles.  
• Tried out research result (method, project) in classroom.  
• Recorded observations of effects of teaching methods or projects in some systematic way (e.g., journal, notebook).  
• Worked with college or university colleagues on research projects.  
• Presented research findings to colleagues in the board or school. |
| Prior Coursework in Research Methods | 0-1   | 0  183 | n.a. | 290| n.a. |
| • 0 = no prior coursework.  
• 1 = research coursework taken or underway. |
| Personal Experience in Schools | 1-35  | 16.72| 8.74     | 283| n.a. |
| • Number of years of teaching experience. |
| Gender | 1-2   | 1  163 | n.a. | 288| n.a. |
| • 1 = female.  
• 2 = male. |
| Perceived Extent to Which Present School has Organizational Learning Capacity | 1-4   | 2.98 | 0.44      | 297| n.a. |
| • Teachers here share ideas with one another.  
• Teachers here do not hesitate to ask colleagues for help.  
• Teaching staff play an important role in school-wide decision making.  
• We tend to agree about how the school should function.  
• We often question our beliefs about education (e.g., about teaching, learning, school work). |
| Organizational Panel | 1-3   | 1  65 | n.a. | 271| n.a. |
| • 1 = elementary (primary, junior).  
• 2 = elementary (intermediate).  
• 3 = secondary (intermediate, senior). |
The predictor variable labelled prior participation was constructed by averaging responses to 11 items, all rated on a five-point frequency scale. This scale variable represented teachers’ and principals’ intensity of prior involvement with and in research activities in the past three years. The reliability of the prior participation scale was impressively high, but the mean score reveals that respondents were generally not very active in research activities. A reasonable amount of variation was noted, however.

Prior coursework in research methods was a dichotomous variable taken directly from the questionnaire. As shown in Table 1, most of the respondents had not taken (or were not taking) coursework in research methods, a finding that is consistent with our knowledge of teacher training practices (e.g., Schafer & Lissitz, 1987). The predictor variable experience revealed how long in years respondents had been working in the field of education. The table shows that respondents averaged about 17 years of teaching experience, but that considerable variation was apparent; two thirds of the respondents had been teaching between 8 and 26 years. Also shown in the table, the sample, broken down by gender, turned out to be 57% female.

The organizational learning capacity measure consisted of the average of nine questionnaire items assessing teachers’ and principals’ beliefs and opinions about their school and context for teaching. Items for this scale were adapted from the instrument used by Leithwood, Cousins, and Gérin-Lajoie (1993). The reliability of the scale variable was high, and Table 1 shows that, on average, respondents in this sample were only modestly disposed to a view of their school as having high organizational learning capacity. However, these data may be somewhat inflated by limitations of the sample reported above. Finally, panel indicated that 60% of the respondents were teaching in the secondary school panel (grade nine to graduation) and the remainder in the elementary panel (grade K to eight), more or less evenly divided among primary/junior and intermediate levels.

RESULTS

The analysis plan was to examine the unique contribution of each of the predictors in explaining variation in educators’ attitudes using stepwise multiple regression. As a starting point, however, Table 2 shows the zero-order intercorrelations among criterion and predic-
### Table 2
Zero-order intercorrelations among Criterion and Predictor Variables (pairwise deletion of missing data, $N = 262-295$)

<table>
<thead>
<tr>
<th>CRITERION VARIABLES</th>
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<td>1. General Usefulness</td>
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<td>2. Relevance</td>
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* $p < .05$; ** $p < .01$; *** $p < .001$
tor variables. The table shows that the relationships among the five dependent variables were relatively strong and in the expected positive direction (\(p < .001\)). Given that these coefficients were generally less than .80 we conclude that each variable measured a different dimension of educators’ attitudes toward systematic inquiry.

Table 2 also shows that the correlations between the seven predictor variables and the five dependent variables were variably statistically significant, but coefficients were much lower on average. PTE was found to correlate with each of the five dependent variables as did prior participation in research. These correlations were moderately strong (\(p < .001\)) and in the predicted direction. The extent to which teachers perceived their schools to be learning organizations was also found to correlate fairly consistently across dependent variables, save for perceived ability to consume or carry out research activities. Whether respondents had taken prior research coursework was related in the expected direction to perceived ability to do research. Those who had previously taken research courses also tended to see systematic inquiry as being more relevant to their practice but this relationship was weak. In general, elementary teachers in the lower grades were more likely to perceive systematic inquiry as being useful and to support the need for training in research methods according to the, albeit weak, zero-order correlations. No differences were found between secondary and elementary teachers in terms of their perceptions of the relevance of research, their ability to draw from the research literature and to conduct evaluation and research, nor their attitudes toward teachers’ involvement in systematic inquiry. Gender was not found to be correlated with attitudes toward research save for the very weak case of women being more likely to perceive school-based systematic inquiry as being useful. Finally, experience in schools correlated negatively with one of the criterion variables. Educators who had not been around as long tended to be more likely to recognize the need for teachers to acquire knowledge and skill about research through pre- and in-service programs.

A third area of the intercorrelation matrix provides insight about interrelationships among predictor variables. While most of the observed coefficients were not statistically significant, several revealed associations between variables. These correlations were quite modest, suggesting that assumptions about multicolinearity would not be violated for the ensuing stepwise regression analyses. PTE was found to be positively related to educators’ acknowledged prior par-
participation in research and to their perceptions of their schools as learning organizations. Estimates of PTE were higher on average for women and teachers located in the lower elementary grades. Prior participation in research was also directly related to whether prior coursework had been done. Next, in comparison with their male counterparts, women tended (1) not to have had as much school experience, (2) to be located in lower elementary grades, and (3) to be less likely to have completed prior research coursework. Finally, those respondents located in elementary schools were more likely to think of their schools as having a greater capacity for learning and to have done research courses.

Stepwise multiple regression was used to assess the extent to which the relationships observed between individual predictor variables and the various criterion variables held true, while controlling for influences from other predictors. Table 3 displays the results of five separate regression analyses corresponding to each of the dependent variables. In each analysis, all seven personal and organizational

<table>
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* p < .05; ** p < .01; *** p < .001
independent variables were included as potential explanatory variables. Across the five models, the number of predictors entered in the final stepwise equation ranged from two to four, accounting for from 18% to 35% of the variability in the respective criterion variable. In every model, both and prior participation in research and PTE surfaced as statistically significant predictors of attitudes toward applied research. Although correlated with one another, as noted above, these predictors were observed to explain significant unique aspects of the variability in educators’ attitudes toward evaluation and applied educational research. Also, in every case, prior participation was the first variable entered in the model, because it accounted for the most variation in the effect variables. PTE was almost always the second variable entered.

Other findings worth noting are the following. First, elementary teachers tended both to perceive school-based systematic inquiry as more useful and to lean toward the need for research knowledge and skill to be integrated as components of teacher training programs. These findings confirm observations in the zero-order correlations matrix (Table 2). Second, and also confirming the prior analysis, educators who had taken previous research coursework tended to view themselves as being more able to read and participate in research. Third, greater experience in schools was associated with lower perceived ability to consume or carry out research and lack of support for having teachers become involved in such activities. The former relationship was not observed in the zero-order correlation matrix (Table 2). Finally, the need for educators to be involved in research was recognized by those belonging to staffs at schools they viewed as being learning organizations, but three other zero-order relationships with this organizational variable were eliminated once the controlling influence of the other predictors was introduced.

DISCUSSION

The present study adds to our knowledge about educators’ participation in systematic inquiry being tied to their heightened understanding of evaluation and research knowledge and influencing their usage of it (Cousins & Earl 1992, 1995; Cousins & Leithwood, 1993). This study contributes to our understanding of the influential “personal factor” that brings evaluation work to bear on decision making (Patton et al., 1975). In considering potential personal characteristics that would possibly contribute to educators’ attitudes
toward local applied research, those with the most promise were divided into two categories: personal and organizational.

Several interesting findings resulted from this study. Most notably, the predictor variables of prior participation in research and sense of personal teaching efficacy both consistently explained variance across all five composite measures of attitudes toward systematic inquiry. Findings concerning the influence of prior participation are consistent with suggestions from the literature. Studies indicate that teachers who have been involved in school and system-based research activity describe the experience as professionally valuable, both as a source of renewal and a benefit in improving their understanding of the use and purpose for research knowledge in educational change (Cousins & Leithwood, 1993; King & Lonquist, 1992; King et al., 1991; Noffke, 1992). The present data extend this knowledge. More broadly, evaluation utilization researchers and theorists have recently focussed on a construct that Patton (1997) labelled “process use.” By virtue of proximity to evaluation logic, practice-based professionals develop knowledge, skills, and attitudes that extend beyond the evaluation project in question. The present data add to a growing body of empirical support for this psycho-social construct (Preskill & Caracelli, 1997; Shulha & Cousins, 1997).

Several interesting things may be said about the relationship of PTE to attitudes toward systematic inquiry. First, high-efficacy teachers have been found to be unusually effective teachers and most receptive to implementing new practices and embracing challenging and difficult teaching techniques (Guskey, 1988; Riggs & Enochs, 1990; Ross, 1995; Smylie, 1988). It may be that efficacious teachers are more inclined to engage in research activities because such activities are perceived as being innovative, academically-oriented, collaborative, and change-oriented (Berman, McLaughlin, Bass, Pauly, & Zellman, 1977; Guskey, 1988; Ross, 1995). Second, as Ross (1995) points out, it is unknown whether higher personal efficacy precedes innovative practice or results from it. He suggests that there may be a reciprocal interaction, in that collaborative involvement increases efficacy and efficacy increases this type of involvement and that this effect is generative, fostering high-efficacy teachers to attempt greater challenges. Therefore, it seems plausible that high-efficacy teachers would be attracted to participate in systematic inquiry activities and that such involvement would increase their propensity to participate and positive valuing of evaluation and applied research. The observed correlation between PTE and prior participation in research is congruent with this interpretation.
Finally, Guskey (1988) comments that high-efficacy teachers tend to volunteer for new programs and low-efficacy teachers avoid participation. Anxiety is related to sense of self-efficacy and arises from low self-esteem in possessing the skills, information, or behavioural requirements in new situations (Arnold & Razak, 1991; Bandura, 1977; Leibowitz, Kay, & Farren, 1986). Teachers low in sense of personal self-efficacy likely experience inhibited motivation to participate in evaluation and research, and their anxiety may increase a personal sense of threat, when considering such involvement. This may explain why low-efficacy teachers tended to report not having prior research experience in this study. Generally, teacher training does not provide course work in research methods (Green & Kvidahl, 1990; Schafer & Lissitz, 1987), so many teachers have not had the opportunity to be exposed to systematic inquiry activities that would aid in overcoming their apprehensions. Interestingly, as Ross (1995) comments, collaboration with other teachers can have the effect of stimulating less efficacious teachers.

Also of interest are the findings that educators’ years of teaching experience resulted in their having negative opinions and beliefs about their own research abilities and other teachers’ participation in research projects. Huberman’s (1988) study offers a potential explanation for this finding. Some more experienced teachers reach a career stage where they “disinvest” in school work and increase other outside interests. They wish to avoid additional teaching tasks or off-hours commitments that promote involvement in school-wide innovations (e.g., participation in research). This occurs after the “stabilization” or middle stages of a teacher’s career. Leithwood (1990) comments that the school culture and its organizational structures may be partly responsible for stifling teachers’ development as they psychologically enter this career stage. After they gain experience, teachers often become isolated and entrenched in routine and regularity, and such organizational cultural norms are highly resistant to change. Staff development efforts are needed to promote opposite norms that encourage reflection on practices (outside the classroom), collegiality, and experimentation. In more desirable circumstances, schools embody norms as learning environments (Leithwood, 1990). Teachers with more experience may have accustomed themselves to accept the traditional norms of expected disengagement, because this conventional pattern of behaviour prevails in their own and their organization’s belief system. Therefore, older teachers with “less energy, activism, involvement, idealism, and more scepticism and pessimism” (Hubberman, 1988, p. 129) have person-
ally and socially learned to hold less positive opinions about “breaking from the mould” and venturing into participation in local evaluation and applied research. Further, at least some teachers who had been around for a while may have developed scepticism and disillusionment from having witnessed past evaluation exercises go unused (Alkin, Daillak, & White, 1979; Huberman, 1988), fostering a “why bother” sentiment which encourages them to shun participation in current attempts to change local practices.

The extent to which teachers perceive themselves as belonging to a learning organization emerged as a predictor of educators’ beliefs and opinions about whether teachers should be involved in evaluation and research. Also, teachers from the typically more tightly knit elementary schools had more favourable attitudes toward systematic inquiry and saw it as important for teacher training. Poole, Okeafor, and Sloan (1989) found that collaboration stimulated teachers’ involvement in change implementation. It can be presumed that if the organization is predisposed to collaborative activity, as is required for research involvement, then member teachers would be too. Again, traditional organizational norms do not incorporate research into teachers’ role definition (Murphy, 1991). However, a forward-moving collaborative teaching organization probably tends to favour both structural and social norms that encourage positive attitudes toward finding new ways of doing things, promoting the image of progressive and innovative education, and viewing research activity as a means to this end. Such organizational climates have been termed “transformational” (Leithwood, 1992) and emphasize accomplishment, increase teachers’ certainty about the worth of their practice, involve teachers in school decision making, are responsive to teacher concerns, encourage innovation, provide supportive and useful supervision, and promote teacher professionalism (McLaughlin & Marsh, 1978; Newmann, Rutter, & Smith, 1989; Raudenbush et al., 1992; Rosenholtz, 1989; Ross, 1995). Knowledge acquired from research activity would be very important to professionals responsible for local and school-wide decision making. The influence of perceived organizational learning on attitudes toward systematic inquiry in this study is noteworthy. The question that arises is: What weight does this variable carry in affecting teachers’ research participation and efficacy characteristics? To what extent do cultural characteristics of a school or school system act to prevent teachers from pursuing research involvement? The literature is replete with studies indicating the powerful role organizational characteristics exert on the evaluation process and the use of evalu-
ation data (Alkin et al., 1979; Cousins & Earl, 1995; Cousins & Leithwood, 1986; Patton et al., 1975). Future studies assessing the potency of such factors in influencing teachers’ willingness to engage in local evaluation and applied research are required.

Engagement in prior research coursework had an impact on educators’ opinions about systematic inquiry and their self-perceived ability, time, training, and understanding to conduct research. Green and Kvidahl (1990) found a similar relationship. The present study reveals that although relatively few educators had taken prior research coursework, when they had, more favourable attitudes toward research were apparent. These data suggest that increased attention to strategies designed to enhance teachers’ knowledge and skill in research is likely to be productive and add to a growing body of literature on teacher training curriculum renewal in this direction.

Since both personal and organizational characteristics impact on evaluation and applied research activity and thus are ultimately likely to have an impact on utilization, future research needs to investigate the relationship between these two categories of variables to better understand how they interact. In addition, further clarification is needed about the relationship between personal sense of teaching efficacy and prior participation in local research and attitudes toward systematic inquiry. Teacher efficacy can be changed through organizational action aimed at reform and implementation of innovation (Stein & Wang, 1988), especially in the earlier teaching years (Brousseau, Book, & Byers, 1988; Hoy & Wollfolk, 1993; Ross, 1995). Therefore, if teacher efficacy coincides with proclivity to participate and can be strengthened, a better understanding of the contributing role of this personal characteristic may provide clues to how to increase educators’ involvement in systematic inquiry. Direct involvement of this sort holds much promise for enhancing the utilization and implementation of research findings by educators.

NOTE

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REFERENCES


Value-education is a many sided endeavour and in an activity during which young people are assisted by adults or older people in
schools, family homes, clubs and religious and other organisations, to make explicit those underlying their own attitudes, to assess the
effectiveness of these values for their own and others long term well-being and to reflect on and acquire other. Despite many
educators and educationists description regarding value-education, it cannot be denied that continuing research will continue to making
the description of value-education more adequate. ADVERTISEMENTS Values Education in Schools is a new resource for teachers
involved in values and ethics education. It provides a range of ‘practical philosophy’ resources for secondary school teachers that can be
used in English, religious education, citizenship, personal development and social science subjects. Framework for Values Education
in Australian Schools (2005). Some effort has been made to describe how care and compassion might operate in this context through
classroom resources (Freakley, Burgh, & Tilt-MacSporran, 2008; Rowan, Gauld, Cole-Adams, & Connolly, 2007), yet little is known
about the different approaches to teaching compassion in school settings. Educators, politicians, a student and even U.S. Secretary of
Education Arne Duncan weigh in on what the new year may bring. Tell us your own education predictions with #EdPredictions. While
they educate a different population than a century ago, the schools and classrooms are organized much the same. Yet that’s starting to
change. Blended learning â€” coupling technology based-instruction with live instruction â€” is evolving from an idea that was mostly
hype to a daily practice for students in all kinds of public schools. Andrew Rotherham Bellwether Education Partners, a nonprofit
consultancy.