Knowledge Forms and Career Decision Making:
A Component of Multidimensional Evaluation

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Abstract

The evaluation of career development programs and services through a multidimensional approach is advocated utilizing adaptations from methodologies found in evaluating cognitive instructional programs. Specifically, the present paper focuses on accessing the various forms of knowledge necessary in career decision-making through introspective, retrospective, and observational procedures. Accessing changes in content knowledge is insufficient in evaluating the effectiveness of career development programs and services. Understanding the strategic, procedural, and self-knowledge of participants is essential in judging outcomes. Initial suggestions for reader comment are provided.

Résumé

L'évaluation des programmes et des services en développement de carrière à travers une approche multidimensionnelle est suggérée en utilisant des adaptations méthodologiques trouvées lors de l'évaluation des programmes d'instructions cognitives. Plus particulièrement, cet article se centre sur l'accessibilité de diverses formes de connaissance nécessaire à la prise de décision à travers des procédures introspective, rétrospective et d'observation. Avoir accès aux changements dans le contenu des connaissances est insuffisant pour l'évaluation de l'efficacité des programmes et des services de développement de carrière. De comprendre les participants par leur utilisation de stratégies, de procédures et de connaissance de soi est essentiel pour juger des résultats. Des suggestions pour les commentaires des lecteurs sont initialement fournies.

INTRODUCTION

Career development is a life long process involving a wide range of dimensions including cognitive, affective, social, personal, vocational and situational. More specifically, for the individual it involves a decision-making process which includes a variety of cognitive acts such as planning, problem-solving and reflection. As well, career decision-making involves a variety of attitudes, beliefs, values and/or feelings. The decisions an individual makes also can be influenced by a range of situational factors such as opportunities and resources. Helping people develop a range of strategies or skills to make ongoing career decisions is one aspect of many career development programs and services.

MULTIDIMENSIONAL NATURE OF EVALUATION

Evaluating such a multidimensional process on either an individual or program level requires access to evaluation that is multifaceted and has many divergent tentacles to enable the broadest view possible. An exam-

ple of such a process is the data tentacle approach based on the work of persons in the cognitive education field including Baron (1987), Ennis and Weir (1985), Nickerson, Perkins and Smith (1985), French and French (1991, 1993). While the model attempts to account for formative and process evaluation as described by Nickerson et. al. (1985) and Posavac and Carey (1993), it also attempts to account for summative and outcome evaluation. As well, while the model is designed for program and/or service delivery evaluation, aspects of the model are applicable to helping understand individual functioning.

A comprehensive evaluation should address not only standardized numerical data such as represented in quantitative evaluations, but also the depth and detail of experiences of specific individuals in a program or service. Here intensive qualitative data collection methods have much to offer the evaluation process. While some would argue against combining qualitative and quantitative methods, there appears to be merit in taking an interactive approach rather than an either/or approach (Posavac & Carey, 1993). It is important to know both what happens to groups of participants as well as to individuals. Wiersma (1986) has made a similar point. Furthermore, it is important, as noted by Perkins (1985), to move beyond simply gathering quantitative data at two points (entry and exit) and to borrow something of the approach of the ethnographer to "take the pulse" (Perkins, 1985) of the process as it unfolds.

The importance of decision-making. One of the outcomes espoused in numerous career development programs is the ability to make ongoing decisions relative to one's career. In other words, career development programs would appear to be concerned with self-regulatory mechanisms utilized by persons during their decision-making. In order to assess self-regulatory mechanisms, various procedures have been employed including introspective and retrospective analysis of the verbal reports of participants as they have been asked to solve real life problems and/or make decisions about courses of action. Such procedures are not without their limitations. However, several authors have indicated that with care and when combined with the direct observation of task performance, the use of verbal reports as data can be beneficial and provide valid and reliable insights to the cognitive act (see Afferback & Johnson, 1984; Ericson & Simon, 1980).

Data tentacle approach. The integration of these and other data points requires a clear methodology and framework. Denzin (1978) provided the concept of data triangulation, the combining of two or more different research strategies in the study of the same empirical units as a process to help capture greater understanding of the impact of a specific program and/or service on both individuals and groups. Such combinations could be of data sources or data collection methods. French and

French (1991, 1993) have utilized and embellished this process in a variety of evaluations of cognitive instructional programs to provide manageable insights that might be missed if less inclusive approaches were utilized. While the process is not without its limitations and challenges it is a beginning.

Model description. The evaluation model proposed by French and French (1991) outlines areas of the program, the process and the outcomes that need to be evaluated from a variety of perspectives. The model incorporates a review of the underlying assumptions, goals, content and materials of the program/services; how the goals of the program are implemented; and with what level of support, through what means, by whom and with whom. As well, the model addresses the nature and impact of both the process and outcomes, both expected and unexpected, on a range of persons involved in this process as well as on the system in which the programs/services are being utilized.

Knowledge forms and their importance. The purpose of the present paper is to focus attention on one aspect of the model; assessing various forms of knowledge held by the persons delivering the program/services and by the persons who are participating in the program/service (clients, students). If, as implied by Dewey (1938) and others, learning is a dynamic interactive process, then it is important to assess not only the knowledge of participants as an outcome but also to assess the knowledge of those delivering the program. As well, the entry knowledge of those participants in the program/service and of those who deliver the program also should be of interest.

Knowledge has been broken into various components, including declarative knowledge, procedural knowledge, self-knowledge and strategic knowledge. This breakdown into four forms of knowledge is somewhat artificial to facilitate the examination of knowledge. All four aspects or forms of knowledge in reality are overlapping, interdependent and integrated functions. However, it is possible to examine them as individual components to determine the impact of specific programs and services.

Declarative knowledge has been defined by Dillon (1986) as the content of a particular discipline. Siegler and Richards (1982) referred to declarative knowledge as knowing factual information about a content area. Examples of content crucial for career decision-making include the characteristics and demands of occupational clusters and their relationship to paid employment, awareness of different personal, social and economic parameters for different types of work, and awareness of the number and location of job vacancies.

Procedural knowledge according to Dillon (1986) includes the specific or general processes undertaken in the acquisition, maintenance and re-

trieval of content. In career decision-making, procedural knowledge would involve having a sense of the procedures to be followed in creating a résumé, participating in an interview, gathering information on a career, or knowing how to access information on the job market. Knowing that there is a process and the specific sequence of events in the process constitutes procedural knowledge.

Strategic knowledge refers to knowledge individuals have about alternatives for goal setting and planning (Messick, 1984). More recently, Gaskins and Elliot (1991) building on the work of Pressley (1991) and Flavell (1977) expanded on the notion of strategies and defined cognitive and metacognitive strategies as those "core" strategies that effective participants independently know how to implement in order to process information successfully. These strategies require active involvement of the learner to construct meaning, monitor understanding and remember concepts as well as to take control of task, person, and situational/environmental variables.

Cognitive and metacognitive strategies assist in the processing of information with the goal of achieving meaning, acquisition, memory and use of knowledge. Examples of strategic knowledge in career decision-making might include the knowledge that asking an open-ended question and using active listening will provide more insight into the expectations of the employer during an interview. Another aspect of strategic knowledge might be awareness of mnemonic strategies to facilitate memory of a set of facts pertinent to a job interview. A third example might be the use of a diagram of the positives, negatives and interesting, but not critical, aspects of different career choices to help organize information pertinent to one's decision.

Self-knowledge, according to Nickerson, Perkins and Smith (1985) is knowledge about one's individual strengths and limitations. This is important in career decision-making and in learning in general. Self-knowledge facilitates monitoring one's own progress and helps determine the comfort level with which a person approaches the decision-making task as well as the confidence level with which one progresses. If we examine career development theories such as Holland (1973) or Krumboltz (1979), the importance of self-knowledge and self-acceptance of responsibility for outcomes and self-concept emerges. In order to actively confront the material and content of career decision-making, to facilitate active monitoring and consequent regulation, it is imperative that the person have the confidence to undertake the task.

Accessing and understanding the procedural, declarative, strategic and self knowledge of the individual will provide critical information to better understand how the individual approaches a career decision and will assist the person in their own progress. As well, it will help adjudicate the effectiveness of career development programs and services. Rather

than limit one's notion of effectiveness to being able to site content knowledge or how to access that knowledge, being able to access all four forms of knowledge enables both a breadth and depth of understanding for the practitioner and the evaluator.

Assessing Forms of Knowledge

In addition to standardized tests and measures and more traditional methods of observation and interviewing, assessing the various forms of knowledge requires the development of alternative approaches—a challenging task. However, considering the alternative approaches utilized in assessing work performance such as the "in-basket" technique developed as part of work sampling (Hunter & Hunter, 1984), meeting the challenge has been a part of the history of persons in career development. Indeed, a variation on work sampling affords a possible beginning to better understand how an individual deals with real life issues. The problem with the way work sampling has been used is that it taps production level work and not the higher cognitive processes necessary in decision-making and problem-solving.

In discussing collaborative problem-solving as a part of employment counselling, Patsula and Boyle (1987) outlined a problem-solving process that includes clarifying the employment related issue, determining what has to be addressed, determining a strategy, implementing the strategy and evaluating the effectiveness of the strategy. In their conceptualization, they were examining a collaborative problem-solving process. However, the process of problem-solving and decision-making also can be an individual process. In any event, the process involves decision-making, and decision-making in turn involves cognitive function and information processing (Sternberg, 1986).

Cognitive information processing requires all four forms of knowledge and involves innate ability. While innate ability is in part genetically determined, cognitive functions are largely acquired and can therefore be learned. Strategic, declarative, procedural and self knowledge contribute to, interact with, and are directly related to cognitive function. However, having a repertoire of strategies is not enough; knowing when, how and why to apply a particular procedure or strategy also is necessary. How this is undertaken is a matter of some concern. However, utilizing real life scenarios is in no way intended to detract from other aspects of the model noted earlier, nor is it meant to detract from the need to "take the pulse" of the program in an ongoing manner through the least invasive format possible. In much the same way that one provides a set of math problems or reading comprehension tasks as pre and post measures in evaluating the effectiveness of teaching children with learning disabilities, a set of scenarios could be developed tapping essential aspects pertaining to career development. The critical aspect would be to

examine not only whether the person addresses the content knowledge, but also to address how the person went about the task and whether she/he utilized procedures and strategies that would be conducive to problem-solving and decision-making in an independent manner.

These scenarios could be presented to individual participants by an independent evaluator or the instructor. Scenarios can be video-taped, audio-taped, or notes can be written. During individual sessions, participants' career decisions can be assessed by analyzing their verbalizations on open-ended, orally presented real life work situations. Verbalizations can be based on think-aloud procedures first refined by Olshavsky (1977). Since participants' strategies can be assessed on different occasions (e.g. prior to the initiation of the program, following the program, and two months later for maintenance) alternate sets of situations/ problems can be developed. The interviewer/observer may query uncertainties; however, only open-ended questions and encouragements that do not interfere with the participants' problem-solving process should be used. Transcripts of the tapes can then be reviewed to ascertain the types of strategies used by the individuals at different stages in the program/ service. Interview data along with other data such as direct observation by the instructor, checklists, or questionnaires can be used to augment the introspective data being gathered.

Pre and post interview responses can be compared to gauge individual and/or group progress in declarative, procedural, and strategic knowledge relative to career-planning. Self-knowledge and the ability to monitor and consequently regulate their own behaviour also can be assessed through observations and interviews. Interviews also can be conducted intermittently. In addition to providing information regarding participants' progress, these tapes are a practical learning/teaching tool that can assist in discussion, self-evaluation and the defining of future goals. The information gained from such procedures should be compared with program content, goals, and expected outcomes. While other measures such as questionnaires and direct observations can be utilized to gain additional information, they are not a replacement for dialogue with participants. Recalling the interactive nature of the learning process, it is important also to access not only the forms of knowledge held by the learner, but also, the forms of knowledge held by the teacher/facilitator, and the changes that take place in each.

The merits and limitations of introspective, retrospective and think-aloud procedures have been reviewed by a range of authors with the conclusion that these approaches do provide valuable insights into the cognitive behaviour of learners provided reasonable guidelines are followed in undertaking the procedures. Included in the guidelines are supplementing the think-aloud procedure with other sources of data collection and ensuring that the participant is both comfortable with and

informed about the process. Ericson and Simon (1984), Nesbitt and Wilson (1977), Cavanaugh and Perlmutter (1982), Afferback and Johnson (1984), Taylor (1983) and Olshavsky (1977) are among the authors who have provided more comprehensive reviews on the use of reflective practices in assessment.

By way of a summary, it has been argued that in evaluating the effectiveness of career development programs, one of the components that is worthwhile considering is the change that takes place in the procedural, declarative, strategic, and self knowledge of participants. Furthermore, it has been argued that a multidimensional approach to evaluating career development programs and services is necessary and should utilize various forms of knowledge. Career development is a broad based, life long process, involving a wide range of dimensions. Failure to examine all aspects of these dimensions and to consider group and/or individual data exclusively can lead to incomplete and perhaps inappropriate decisions. While determining and communicating the effectiveness of programs/services has been a desire for some time, it is particularly critical in today's economic climate. This paper has presented some preliminary thinking on one approach to a comprehensive evaluation model that addresses the various forms of knowledge essential to career decision-making.

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