Generic Attributes of IS Graduates -
A Comparison of Australian Industry And Academic Views

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This paper describes the final phase of a study that validates a group of generic attributes of graduates of Australian undergraduate degree programs with majors in Information Systems (IS). 105 academics from all Australian universities that offer IS undergraduate degree programs of study and 53 member of the Australian Computer Society (ACS) took part in this study. A three round Delphi questionnaire was used. The results of this study are compared with a previous study of generic attributes conducted by the authors in Queensland, Australia. Differences between academics and industry are identified. The top three attributes in each study are the same, although the order is reversed in the national study. Some of these include the higher ranking of interpersonal skills, teamwork, and knowledge of the IS discipline by academics compared with the higher ranking of industry of self-motivation and the ability to learn independently. Other major findings include the high ratings of the attributes of team participation and the commitment to further learning and intellectual development. Oral and written communications are significantly rated as more important than a comprehensive knowledge of IS. This study has a very strong overall correlation with the previous Queensland study.

INTRODUCTION

This paper reports on the final phase of a study (Snoke and Underwood, 1998a, 1998b, 1999) that validates a group of generic attributes of graduates of Australian tertiary Information Systems (IS) programs of study. This study was motivated by increasing anecdotal reports from newspapers, statements from industry representatives, including professional societies such as the Australian Computer Society (ACS) and a study by Turner (1999) suggesting that tertiary curricula do not meet the needs of industry. Educators and trainers of future IS professionals, in order to gain accreditation and recognition for their programs of study from professional associations, must be able to identify and validate the generic attributes desired by employers of IS graduates. Apart from being a unique Australian study, the results are significant in that they provide a comparison of industry and academic views on the importance of preferred student attributes. These comparisons reveal a number of disparities suggesting the need for closer collaboration between industry and academe in the development of courses in information systems. The study will form the basis for the development of an instrument for accreditation of courses by the ACS.

The sample population included both academics and representatives from industry who employ the graduates of IS courses. The total sample population of 449 consisted of 354 academics and 95 industry representatives. A significant number of academics (30 percent) responded to all three rounds while a high number of industry representatives (51 percent) participated giving an overall participation rate of 34 percent.

The study was conducted using a modified three round Delphi technique that asks respondents to rate rather than rank questionnaire items. The study rates a previously identified set of attributes (Snoke and Underwood, 1998b) and then ranks them according to their mean rating. Industry and academic comparisons are made.

The paper proceeds as follows. First the aims of the study are explained and the definition of key terms given. The research method is then described along with the results of the study. Conclusions are drawn and recommendations made from the study.

AIM OF THE STUDY

This Australian study identifies and examines the generic attributes required of entry-level employees from IS programs of study. This project will help provide a focus for
IS curriculum development in the next millennium.

The results of the study will be used to develop a technique for developing a more responsive tertiary curriculum that meets the needs of the information systems industry. Institutions will be able to map their IS curriculum offerings against those of the Australian Computer Society (ACS) Core Body of Knowledge (Underwood, 1996) to identify strengths and weaknesses in their curricula. They will be able to offer a curriculum that is more responsive to the local employment market that their institution serves. This is particularly important for regional institutions as they serve a much smaller employment area.

DEFINITIONS

This paper uses the term generic attributes to describe a core set of abilities and characteristics of an individual (Sandberg, 1994, 1997). It has many meanings, interpretations and synonyms such as generic skills, basic skills, qualities, knowledge and understanding and competencies (Bradley, 1997; Crebert, 1995; Doyle, 1996; Moss & Liang, 1990; Stasz et al., 1993).

The literature often refers to the concept of generic attributes as generic skills or competencies. Competencies may be defined as consisting of skills, attributes or abilities and understanding or knowledge. Understanding or knowledge is defined as the content or core body knowledge of a subject discipline that a person has acquired. Skills are the routine implementation of the acquired knowledge or attributes. Attributes or abilities are the personal qualities that are applied by an individual to a specific task under a situation. Figure one gives one interpretation of the relationship between some of the terms used to describe generic attributes.

There exists much debate as to the meaning of the terms competency, competent and competencies. A person by definition is defined to possess competencies if they are competent at a specified task under a given set of conditions.

The possession of a set of competencies does not necessarily imply that a person is competent at any task. Therefore the task of educators is to identify a minimal set of qualities or competencies that will enable a graduate of an IS course to obtain employment. This paper treats generic attributes as competencies that a graduate possesses upon completion of a tertiary degree.

RESEARCH METHOD

The Delphi technique for gaining consensus amongst a diverse group of individuals was used. Previous researchers (Ball and Harris, 1982; Brancheau and Wetherbe, 1987; Brancheau et al., 1996; Dickson et al., 1984; Hartog and Herbert, 1986; Morgado et al., 1994; Niederman et al., 1991; Pervan, 1996; Pervan, 1993; Soneke, 1996; Watson, 1989; Watson and Brancheau, 1991) investigating the key issues in IS have used the Delphi technique to rank and rate the relative importance of the issues. The Delphi method was retained for its value in surfacing new issues and moving study participants toward consensus (Delbecq et al., 1986).

A traditional Delphi study starts with an open-ended statement and asks participants to respond to the statement. The information is collated and statistics calculated. A second questionnaire is sent out which includes the revised statements and information obtained from the first round questionnaire asking respondents to revise their opinions about the original statement. The process is repeated until the respondents have reached consensus or the facilitator identifies that they have acquired sufficient data for their purpose (Brancheau et al., 1996). In practice, however, the researcher frequently decides to end the process after two or three rounds, by which time firm trends have generally emerged.

A modified form of the Delphi technique as suggested by Watson (1989) was used. Watson (1989) in his study of the key issues in information management modified the Delphi technique by having the respondents rate rather than rank the issues. Miller (1956) suggests that when the number of items to be ranked is large (greater than 10) that humans have difficulty in processing the information. Watson (Morgado et al., 1994; Watson, 1989; Watson and Brancheau, 1991) also sent round two questionnaires to the non-respondents from round one of their studies. This has become the standard method of using the Delphi technique in all subsequent key issue studies and has been found to produce reliable results in the previous generic attribute surveys (Soneke and Underwood, 1998a, 1998b, 1999) that formed part of this study. Participants, in this study, were asked to rate each of the generic competencies as distinct from ranking them. Space was provided at the end of the questionnaire for respondents to make any comments they desired or to add additional competencies that they thought should be included.

The questionnaires were sent via e-mail asking respondents to use the reply function on their e-mail package to complete the questionnaire. This allowed for a short turn...
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