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Teaching Cataloguing and Classification at the University of Pretoria: Thinking Preferences of Second Year Students

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The information profession has changed drastically in the last few years. The core requirements for information workers have also changed because the workplace needs specific qualities and skills. The necessity of continuing to teach cataloguing and classification is questioned, and many library schools have discontinued teaching these subjects. Many experts, however, believe that cataloguing and classification are still among the basics of information work. The subject still forms part of the curriculum at the University of Pretoria. At the beginning of 2000, funds were obtained to use the Herrmann Brain Dominance Instrument to establish the preferences of the second year Library Science students taking cataloguing. The result showed that their preferences do not really correspond to those of cataloguers. They specifically do not like the analysing and mastering the technical details required in cataloguing. As these skills are required for cataloguing, teaching methods will have to be adapted to equip students for the workplace.

Introduction

The library and information profession as a whole and the work of cataloguers in particular has changed significantly in the last few years. There are a number of reasons for these changes. Among these are the increase in electronic publishing, digitising conventional library materials, the advent of the Internet, the availability of information in many new formats and the extensive use of technology in the organisation and retrieval of information, as well as in most other operations in library and information organisations (Ayres 1999, 3). All this seems to make cataloguing if not superfluous then less important than before.

Information workers also had to adapt to meet the information needs of a varied clientele. Sheila Corral, as quoted by Garrod (1999, 194) argues that, in the hybrid library of today, "content professionals", who specialise in information handling, as well as "conduit professionals", who specialise in IT (information technology) and computing are needed. To discover how the information professional of the future must be educated and trained, it is essential to look at the environment in which these future professionals must function.

What does the workplace require of information workers?

Most library and information science students receive a general undergraduate education, including a variety of subjects and skills, to enable them to be able to function adequately in different environments. Few know at the end of their studies which direction their careers might take. They therefore need a general background when they qualify. Much of their further development depends on the in-service training they receive in the workplace. Thus, when designing a core curriculum for graduate education, it is essential that the requirements of the profession be known and met as far as possible.

The aim of this study is to establish whether cataloguing (which includes bibliographic de-

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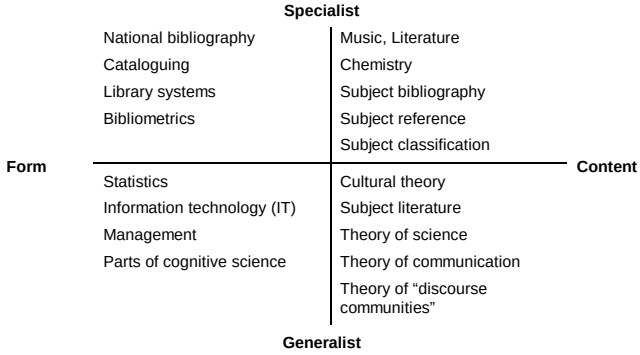
scription and access, classification and providing subject access to information) is still a required skill for library and information workers and if so what consequences this should have for curricula. It is accepted that all students studying library and information science, must possess certain characteristics and skills but this study will attempt to establish if a specific group of students taking courses in cataloguing at the University of Pretoria possess the specific skills cataloguers need to be effective.

Figure 1: Library and information science disciplines placed in Olsson's model for professional strategies (Hjørland 2000, 508)



Core competencies required of all information workers

Much has been written about the most desirable characteristics that candidates for information work should possess and also which subjects and skills should be included in a curriculum.

Future information workers should possess the following characteristics, according to Buttlar & Du Mont (1996, 44) and Wojcik (1999) to enable them to adapt and be successful in most working environments:

- Integrity when working with information at the request of others; sharing information; and providing improved access to information
- Versatility to be able to adapt to different environments like public libraries, college / university libraries, school / media centre environments, the private sector and corporate libraries.
- Mobility / flexibility to apply basic skills and expertise almost anywhere.

The following skills are identified by some authors as essential for information workers:

- Interpersonal skills
- Technological skills
- Business skills
- Managerial skills
- Knowledge of reference and information sources
- Communication skills
- Materials and collection development skills
- Critical thinking skills (Abell 1999, 591; Buttlar & Du Mont 1989, 13–14; 1996, 44, 47; Garrod 1999, 187; Hjørland 2000, 502–503, 515; Wojcik 1999, 1).

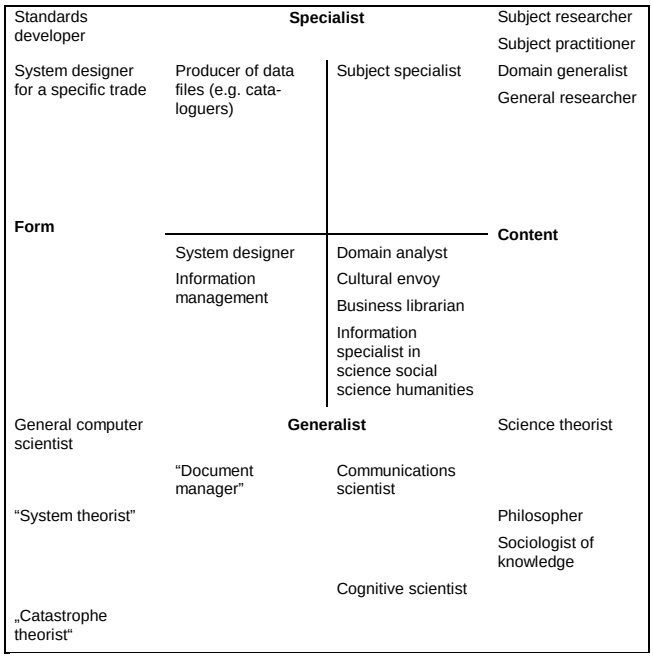
All prospective information workers should acquire the above-mentioned general skills. Although there is a need for specialised information workers, it is important to realise that many will have to operate within a "hybrid" library where a "generalist" information worker, as described by Hjørland (2000, 503) is needed. This highlights the need for lifelong learning to acquire new skills and adapt to changing conditions (Garrod 1999, 191). Because the focus of this study is on the education for cataloguing, we will show where cataloguing fits into the bigger picture of education for information workers.

Olsson, according to Hjørland (2000, 503) identifies various professional strategies (see Figure 1), giving an indication of the possible scenarios in which an information professional might have to function. Hjørland then uses this model to group library and information science disciplines in four quadrants.

The first dimension (horizontally) is form vs. content. This is characterised by a differentiation between technical form on the one side and content of knowledge, information or subject matter on the other side. The other dimension attempts to differentiate between specialist and generalist (Hjørland 2000, 503).

Figure 1 gives an indication of the core subjects in the curriculum according to Olsson. Hjørland (2000, 508) (see Figure 2) is of the opinion that the central subjects are related to both form and content. Subjects related to cataloguing such as bibliography tends to be form-oriented in a national bibliography, but more content-oriented when it comes to a theory of subject bibliography and search strategies in online retrieval (Hjørland 2000, 508). Classification is form-oriented in sys-

Figure 2: Hjørland's model (Hjørland 2000, 504)



tems, in software for knowledge organisation and in formal kinds of knowledge organisation, but content-oriented in the analysis of subject-structures, interdisciplinary relations, and information structures in disciplines (Hjørland 2000, 508). Reference work is generally more content related than bibliography. It is difficult to construct a theory of reference work without some basic knowledge about knowledge organisation (Hjørland 2000, 508). According to this model cataloguing deals with both form and content and can be regarded as a specialist discipline.

Education of cataloguers

Now we take a brief look at cataloguing and its status at present in the workplace. Library schools must take this into account to decide if cataloguing should be a part of present curricula as a core competency or as an elective, and how much time should be devoted to this aspect of library and information work.

Cataloguing in its broadest sense, including describing, indexing, classifying and controlling library materials bibliographically, is considered part of technical services (Hill & Intner 1999: 1). A century ago it formed the biggest part of library schools' curricula.

The advent of computers necessitated the acquisition of other skills, such as computer skills. These skills were often included as part of the teaching of cataloguing. As a result, cataloguing changed from a required to an elective course. Information science emerged as a separate discipline. Cataloguing however, remained part of the library science curriculum. The division between technical and public services also took place, with cataloguing regarded as part of technical services (Hill & Intner 1999, 3).

The demise of cataloguers in libraries was heralded in the mid-seventies, and courses in cataloguing were cut from library school curricula and the content was changed. A perception that the profession itself must train cataloguers in the workplace emerged. This had a deleterious effect on the image of cataloguers (Steinhagen & Moynahan 1998, 5). Even in those courses in cataloguing still presented, practical training was reduced. Fewer and fewer students applied for cataloguing positions even when they were qualified (Hill & Intner 1999, 5).

During the 1980s much was written about the crisis in cataloguing. In her book *Academic librarians and cataloging networks: visibility, quality control and professional status*, Ruth Hafter discusses the perceived and actual deprofessionalisation of cataloguers. She states that the most dominant effect of automation and co-operative networks was on cataloguers. As result of standardisation, cataloguers were able to use each other's work. Although their work became more visible, it affected their status negatively (Hafter 1986, 1–10). The control of cataloguing processes shifted to administrators, who insisted that less time be devoted to creating complex bibliographic records. Consequently a large part of cataloguing was left to library assistants. Many thought that the need for professional cataloguers would become even less in the future (Hafter 1986, 125).

It became clear that the reduced need for cataloguers in the 1970s and 1980s was not permanent. Vast segments of library collections consisted of non-book material, for which cataloguing copy was not available. The perception that the computer "had everything, did everything, knew everything" proved not to be correct. New formats were appearing continuously and the lines between formats were blurring. The catalogue itself was changing as it contained records for

material not owned. Libraries no longer functioned in isolation, increasing the need for standardisation and good quality bibliographic data. A relatively small number of cataloguers were doing the work to be used by many institutions. Cataloguing also became increasingly complex and expensive (Hill & Intner 1999, 6–7).

Cataloguers survived automation and adapted. Cataloguers must now do things differently but the product they create is still essential for good library services (Steinhagen & Moynahan 1998, 3). Catalogue construction is now so complex that only a small minority in the profession fully understands the standards on which construction is based or the problems that the standards seek to overcome or control. The need for this complexity has little to do with requirements of the user (Ayres 1999, 4). Steinhagen & Moynahan (1998, 5) declare that "A good catalogue is the foundation of a good information delivery system." Pat Oddy (1996, x) calls the catalogue "the heart of the library".

Because cataloguing is the tool used to organise and manage access to library collections, the need for knowledge of this aspect of information work, will not disappear soon. It can play an important role in knowledge management, because cataloguers know how to organise knowledge (Hill & Intner 1999, 7–8).

Abilities and skills required of cataloguers

Technology and economics have had tremendous impacts on cataloguing operations within recent years and on the requisite skills of cataloguing professionals. The catalogue requires design, input and maintenance by professionals with a high level of understanding of bibliographic control and information retrieval skills. Also a wide range of other skills and qualities, such as adaptability and problem-solving skills is essential.

To be able to educate and train cataloguers, it has to be established which abilities and skills they must possess to be able to function effectively. According to Hill (1997, 75–83), the following skills and abilities are essential for good cataloguers

- Adaptability to new ideas and concepts in bibliographic control
- Ability to use judgement and make decisions
- Good problem-solving skills
- Ability to manage time and prioritise tasks
- Computer literacy
- Ability to anticipate and appreciate catalogue user needs
- Supervisory skills
- Good research skills
- Understanding library economics
- Good communication skills
- Good Internet skills
- Flexibility
- A foreign language proficiency.

To meet present demands curricula should also take changes in cataloguing practice into account that cataloguing functions should be defined by new concepts, namely,

- from the present pre-co-ordinate activity, it should shift to a post-co-ordinate activity
- authority control should shift from the cataloguing stage to the search stage
- uniform titles are needed as linking mechanisms (Ayres 1999, 3).

In the United States the Programme for Co-operative Cataloging Standing Committee on Training, developed a training model to support their programme. This model assumes that it is important to:

- maintain an adequate supply of original cataloguing
- accept the concept of a national cataloguing standard
- increase acceptance of cataloguing copy
- avoid duplicative cataloguing
- increase timeliness of contributions to national cataloguing databases (Swanekamp 1998, 51).

University degrees and diplomas cannot prepare learners for specific jobs. It is necessary to find a basic set of core competencies, augmented by the possibility of specialisation. In the article by Birger Hjørland (2000, 503–504), he still sees cataloguers in a meaningful role in the profession (see Figures 1 and 2) and in LIS education. He places cataloguing in the quadrant of specialists in form, together with other producers of data files. Subject cataloguing is placed in the specialist in content quadrant.

Is it still necessary to include cataloguing in library and information science courses?

Authors like Hill (1997, 75–83) and Spillane (1999, 223) expressed concern because the number of cataloguing courses have been reduced by most library schools during the last number of years. In recent years a number of experts on cataloguing have expressed themselves in favour of the value of retaining cataloguing in the LIS curriculum: Doris Clack as quoted by Saye (1993, 127) declares "cataloging is the centrality, the core, the heart of education for technical service." According to Spillane (1999, 223), "cataloguing has been an important element of library education and remains one today .... it is also an important part of library operations ... it is the function that creates the bibliographic record, the core of a library's catalog." According to Clack (1993, 7), "Cataloguing is one of the primary functions of librarianship. It is the core of the profession, the cohesive force that binds the library into a unified whole" and also "Cataloging has been the core of the library education programme. It will remain so in the future, although not necessarily in the form as we know it today. Since it focuses on the intelligibility of bibliographic records and the findability of material, a study of cataloging is beneficial to the success of every library function."

The perception that only cataloguers need to know about cataloguing is also not true. It is needed for design, implementation and customisation of information systems, as well as for the input of data into them (Hill & Intner 1999, 7). Although the number of people actually doing cataloguing is fewer than before, many experts argue that every information worker should know how to organise information and how retrieval tools work. The information worker will in future not only need the basic core of traditional skills and professional knowledge, but a number of new competencies to be competitive in the changing working conditions (Buttlar & Du Mont 1996, 44; Hjørland 2000, 501–502).

Teaching cataloguing at the University of Pretoria

A number of library and information schools in South Africa have closed in the last few years. Some have changed their names, because the inclusion of the word "library" in the name is seen as detrimental to attracting students enrolling for courses in these departments. Traditional content, previously regarded as essential to prepare students for careers in the information world, is gradually being phased out of courses. Consensus seems to be that the availability of computer systems has made knowledge of the traditional skills redundant. It is a debatable point. Although technology has largely eliminated the duplication of effort in the field of bibliographic control by taking over many administrative and routine tasks, staff with this knowledge and skills is still essential even if fewer people are required.

The Department of Information Science at the University of Pretoria is the department with the largest number of staff and students in this field in South Africa. The number of students enrolling for a degree in Library and Information Science has remained fairly consistent at between 25 and 30 per year. Curricula are revised on a regular basis, trying to deliver students able to find jobs and do the work required of them competently. Traditional content like cataloguing and reference work is still taught although time allotted to teaching these skills has been reduced. The range of jobs for which students must be equipped is very wide in a country like South Africa, which is regarded as a developing country, with a sophisticated first world sector as well as a large third world sector. Students have to be prepared for jobs ranging from advanced computer applications to community information services. At present core modules like information retrieval, information organisation, management of information organisations, and user studies are taught within the curriculum for a degree course, with elective modules in more specialised topics that could address the various interests of students and the needs of the marketplace.

Thinking styles of educators and students: Utilising the Herrmann Brain Dominance Instrument (HBDI)

At the beginning of 2000 an experiment was conducted in which 1000 first-year students in the Human Sciences faculty were tested using the Herrmann Brain Dominance Instrument (HBDI). It formed part of the Academic Skills Programme which was designed to assist students in know-

ing themselves and their abilities through discovering their thinking preferences, thus enabling them to improve required skills, if these skills were not part of their thinking preferences.

At the beginning of 2000, funds were obtained to establish what were the thinking preferences of second-year students enrolled for a degree in library and information science. The aim of this experiment was to adapt teaching methods to take their thinking preferences into consideration. Their preferred thinking styles should be addressed by teaching the lesser preferred thinking styles and skills required by the profession.

Both educators and students have diverse thinking styles. As more research in this field continues to be published the findings may suggest solutions to overcome the difficulty of teaching students in traditional ways (Lumsdaine & Lumsdaine 1995, 193, 202). Educators should take the different thinking styles of students into consideration and design a curriculum incorporating a full spectrum of approaches and perspectives for learning opportunities, acknowledging the diversity in preferences (Leonard & Straus 1997, 111–112).

In their research Leonard & Straus (1997, 111–112) point out that the so-called cognitive differences that exist could also be varying approaches to perceiving and assimilating data, making decisions, solving problems, and relating to other people. These approaches are synonymous with preferences and should not to be confused with skills or abilities. Preferences are not rigid (Lumsdaine & Lumsdaine 1995, 193). Most people can draw on a mixture of approaches and do not live their lives within narrow cognitive boundaries. They often stretch outside the borders of preferred operating modes if the conditions are right and the stakes are high enough. People tend to have one or two preferred habits of thought that influence their decision-making styles and their interaction with others (Leonard & Straus 1997, 112).

The most widely recognised cognitive distinction since the early seventies is between left-brained and right-brained ways of thinking. This categorisation, although based on physiological evidence, is metaphorical, because it captures radically different ways of thinking (Herrmann 1989, 8–15, 31–34). An analytical, logical, and sequential approach to problem framing and solving (left-brained thinking) clearly differs from an intuitive, values-based, and non-linear approach (right-brained thinking) (Leonard & Straus 1997, 112).

Thinking preferences are also revealed in different work styles, including decision-making and communication activities. Some people prefer to work in a group to solve problems, whereas others prefer to gather, absorb, and process information by themselves. Abstract thinkers, for instance, assimilate information from a variety of sources, such as books, reports, videos, and conversations, and prefer learning about something this way rather than experiencing it directly. Experiential people, in contrast, get information from interacting directly with people and things (Leonard & Straus 1997, 112; Lumsdaine & Lumsdaine 1995, 202–203). Some people evaluate evidence and make decisions through a structured, logical process, whereas others rely on their values and emotions to guide them to the appropriate action (Leonard & Straus 1997, 112).

Various diagnostic tools and descriptive analyses of human personality have been developed to identify diverse categories of cognitive approaches. All the instruments agree on the following (Herrmann 1989, 15–23; Leonard & Straus 1997, 113; Lumsdaine & Lumsdaine 1995, 202):

- Preferences are neither inherently good nor inherently bad. They are assets or liabilities depending on the situation.
- Distinguishing preferences emerge early in our lives, and strongly held ones tend to remain relatively stable through the years.
- We can learn to expand our repertoire of behaviours, to act outside our preferred styles, but that is difficult.
- Understanding others' preferences helps people to communicate and collaborate.

Instruments with credibility such as the Myers-Briggs Type Indicator (MBTI[R]) or the Herrmann Brain Dominance Instrument (HBDI) help educators not only to understand their own thinking style preferences, but that of their students as well. Communications should be tailored to the receiver instead of the sender. In a cognitively diverse environment, a message *sent* is not necessarily a message *received*. Some people respond well to facts, figures, and statistics. Others prefer anecdotes. Still others digest graphic presentations most easily. Information must be

Table 1: Learning and Design considerations (Herrmann 1989, 419)

A - UPPER LEFT		D-UPPER RIGHT	
Learns by:	Learners respond to:	Learns by	Learners respond to:
• acquiring and quantifying facts • applying analysis and logic • thinking through ideas • building cases • forming theories	• formalized lectures • data based content • financial / technical case discussions • text books and bibliographies • programme learning • behaviour modification	• taking initiative • exploring hidden possibilities • relying on intuition • self discovery • constructing concepts • synthesizing content	• spontaneity • free flow • experiential opportunities • playfulness • future oriented case discussion • individuality • aesthetics • being involved
B-LOWER LEFT		**C-LOWER RIGHT**	
Learns by:	Learners respond to:	Learns by	Learners respond to:
• organizing and structuring content • sequencing content • evaluating and testing theories • implementing course content	• through planning • sequential order • organizational and administrative case discussions • text books • behaviour modification • programme learning • structure • lectures	• listening and sharing ideas • integrating self experience with self • moving and feeling • harmonizing with content • emotional involvement	• experiential opportunities • sensory movement • music • people oriented case • discussions • group interaction

delivered in the preferred "language" of the recipient if it is to be received at all (Leonard & Straus 1997, 114).

The study of library and information science competencies by Buttlar & Du Mont (1996, 59) identified five areas needing attention in education:

- breadth of curriculum and pedagogical technology to broaden the scope of the interest of library and information science learners,
- greater attention to the external environment (e.g., government relations, societal trends, legal climate, and international development) that affects the institutions in which learners will work,
- recognition that libraries are increasingly service-orientated, and that all jobs have service implications,
- integration of curricula across functional areas, and
- additional education in interpersonal and communication skills.

It is also important to recognise the need for change in the education process (Curran 1998, 183; Shannon 1998, 172). Teachers must adapt and change to meet the changing demands of the new generation of information workers. The effective use of the information gathered by the HBDI can be used to address these issues, such as planning and preparation of a "whole brain" lecture, active participation in the class room by learners, delivery and execution of the lecture and the attitude of the teacher to recognise the various personalities "profiles" in the class (Curran 1998, 185–188). The system must be harnessed to work to the advantage of the learner (Curran 1998, 193). To ensure adherence to this it is important to work from within the framework suggested by Herrmann (1989, 419) (see Table 1).

Results of the HBDI evaluation of second year students registered for the degree – Bachelor in Information Science (Library Science)

From a class of 28 second-year students, 27 participated in the experiment. The survey was completed during a specially scheduled session. The surveys were processed and scored as a set. Some results are given in Table 2. The results were used to draw the group profile in Figure 3, which gives an insight into the thinking preferences of this group of students.

The scores in Table 2 give an indication of the primary preferences of the students. The preference codes are identified as follows:

- "1" or "Primary" A score of 67 or above indicates a quadrant which enjoys thinking. A score above 100 indicates a very strong preference, often visible to others.

Table 2: Average scores of twenty-seven second-year students

Quadrant	Upper left (A)	Lower left (B)	Lower right (C)	Upper right (D)
Preference	55	81	97	68
Choice	4th	2nd	1st	3rd
Generic code	2	1	1	1

- "2" or "Secondary" A score of 34–66 represents thinking modes that are comfortable and available as necessary with relative ease (Overview, 1999:1).

This group profile (Figure 3) is described by Herrmann (1989, 388), as a triple dominant profile (2111) with two primaries in the right mode C and D quadrants) and lower left (B quadrants). About 16% of the population fall within this profile. This group of students prefer to use the Lower Right C quadrant (97) primarily, followed by the Lower Left B quadrant (81) and then the Upper Right C quadrant (68). The Upper Left A quadrant (55) is the least preferred mode of thinking. Another important aspect concluded obtained from the information is the rank order of work elements (see Figure 4). These work elements are those elements most preferred by the group.

This profile is characterised by its multi-dominant and "generalized" nature, and fairly balanced amount of understanding and ability to use the three primary quadrants – the preferred processing modes being creative and holistic in Upper Right D, interpersonal and feeling in Lower Right C, and planning and organising in the Lower Left B. The Upper Left Quadrant A is least preferred, but the person is still typically quite functional in their use of the logical and analytical aspects of this quadrant. This profile is typical of many personnel and human resources professionals, including educators, as well as those whose occupations require an understanding and ability to function on many levels, such as social workers, executive secretaries, and supervisory nurses (Herrmann 1989, 388).

The profile (Figure 3) displays a strong preference in the C quadrant (97). This implies a strong preference for the interpersonal, feeling based, emotional and spiritual thinking modes. The second most preferred quadrant is the B quadrant (81) with a preference for controlled, structured and organised thinking modes. The D quadrant is third most preferred quadrant (68) with creative, holistic and synthesising modes. The least preferred quadrant is A (55) with a preference for analytical, rational, and logical processes.

Figure 3: Group average profile

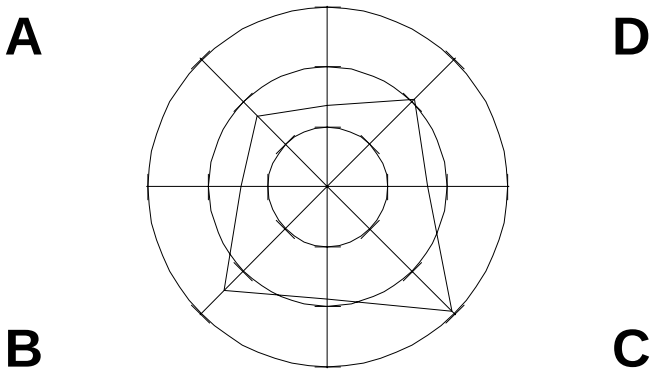
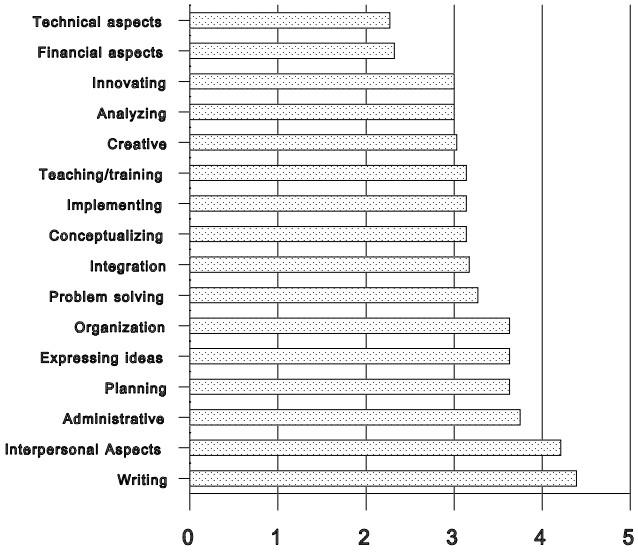


Figure 4: Rank order of work elements



A careful study of the rank order of work elements (Figure 4), together with the specific quadrant in which they are to be found, gives a clear indication that the preferences of this group of students is writing, interpersonal aspects and administrative work. It also gives an indication of which areas need specific instruction, i.e. technical aspects, financial aspects innovating and analysing.

Conclusion

The results of the HBDI when applied to the group of students identified previously, indicate that the thinking preferences of these students are not well aligned with those most useful to

those who perform cataloguing and classification. In many fields of the information profession, their preferred thinking styles will be an asset. The profile of thinking preferences of this group of students reveals that their thinking preferences are mainly associated with the B and C quadrants. Interpersonal skills are important when dealing with information users. What cataloguers and those who do subject cataloguing and classification need are analysing, problem solving, implementing and organising. Technical aspects are rated lowest, yet all aspects of bibliographic control rely heavily on technical knowledge and expertise. Knowledge of how catalogues and indexes work also forms the basis of many tasks performed by information workers. Problem solving abilities and technological proficiency are essential for most aspects of information work, but this group of students do not prefer this thinking style, but will have to acquire the requisite skills.

From the results obtained in this project above it is clear that quite a few of the thinking preferences need to receive attention in the way the subject is taught. Teaching methods (see Table 1) should be adapted to use preferences to develop needed skills. Attempts must be made to utilise preferences to master skills related to those aspects for which a low preference is shown. During the second year of the library and information science curriculum, more attention will be given to the less preferred but essential preferences. The same group will be evaluated again next year, using the HBDI, to establish whether any meaningful changes have been achieved.

The dominant quadrant of most of the learners must be determined and then from within that framework of how they learn and what they respond to must the information necessary be given. By doing this, learners can be introduced to a new way of seeing things (other quadrants), and can as a result of this engage in constructive dialogue with a reduction in the time needed for lectures and / or meetings (Whole brain 2000, 1).

The new information worker needed is likely to be a mix of skills, which tends to be a generalist with IT skills, and the traditional core competencies (Garrod 1999, 193). By using the HBDI profiles, a team can be put together where the strengths of the individual members are harnessed to increase productivity, find a common basis for the meeting and to respect the differences in thinking styles and learn to use the diversity of the team (Whole brain 2000, 2).

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