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Academic Literacy, the pteep, and the prediction of academic success

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CHAPTER THREE
ACADEMIC LITERACY

With current moves to widen participation, a more diverse student body is entering higher education. In this context, a key challenge is assisting learners to develop academic literacy, so as to enable their deeper engagement with university study. This entails making transparent to students the knowledge-making and communicative practices of the subject area (Warren, 2003). According to Yeld, Cliff and Hanslo (2002) the language-related work contexts in which successful candidates are expected to perform in formal education have several distinct characteristics, which have become known collectively as academic literacy. Thus tests of academic literacy in the higher education context must be based on a coherent understanding of learning and knowing relevant to higher education, and the role of language within this. Academic literacy which is closely measured by the present study's construct (PTEEP) can be broken up into cognition and language. Thus cognitive skills as well as language skills are part of academic literacy, which is the umbrella concept. The PTEEP test proposes to measure both language skills and cognitive skills. The question that arises however is to what extent is the PTEEP test a real measure of academic literacy and its cognitive and language domains? Thus the relationship between language and cognition and the relevant theories, are necessary to discuss, and will be explored separately in this chapter, even though they are components of academic literacy. Furthermore, cognitive developmental theory in young adulthood is also explored in this chapter as it forms a theoretical basis upon which to understand the make up of students' academic literacy skills as well as students' cognitive development levels when entering university.

3.1. Academic Literacy

Academic literacy may be defined as the complex of linguistic, conceptual and skills resources for analysing, constructing and communicating knowledge in the subject area (Warren, 2003). According to Yeld (2003), academic literacy includes the ability: to comprehend information presented in various modes, to

paraphrase, to present information visually, to summarise, to describe (e.g. ideas, phenomena, processes, changes of state), to write expository prose (e.g. argument, comparison and contrast, classification, categorisation), to develop and signal own voice, to acknowledge sources, and to form basic numerical manipulations. Thus, it seems theoretically that the PTEEP test mirrors the characteristics of an ideal academic literacy test.

Learning in higher education involves engagement with new and different ways of knowing and writing, values and beliefs. Hence, students need to become familiar with the specialist concepts, theories, methods, rules and writing conventions of specific disciplines or fields of study (Ballard & Clanchy, 1988; Flower, 1990; Gee, 1990; Lea & Street, 1998). ‘Epistemic cognition’, that is, understanding how subject knowledge is created and challenged is thus crucial for accessing academic texts and tasks. History, for example, introduces such epistemic knowledge as a means for developing students’ critical thinking, reading and writing in the discipline. The importance of addressing epistemology as an aspect of academic literacy development is highlighted by studies of student writing. Hounsell (1987) found that some students conceive of essay-writing as being an arrangement of facts and ideas, while others recognise it as a matter of presenting a cogent argument (as demanded in academic work). He suggested that these different notions may be connected, respectively, to surface and deep approaches to study. The PTEEP represents this aspect of critical thinking, reading and writing in the essay writing domain of the test. However, even though this aspect is measured by the PTEEP, the problem comes in when many of the difficulties experienced by students arises from conflicting requirements for writing in different subjects/modules, requirements that are frequently left implicit. Lea and Street (1998) established that although students were often supplied with general guidelines on writing techniques, they struggled to apply these at the level of writing a particular text in a specific disciplinary context. Thus where there is a wide gap between students' and tutors' conceptions of writing, it is more likely to exclude and disadvantage (non-traditional) students who do not enter with 'essayist literacy’ acquired through formal education (Lea & Street, 1998). Therefore, even though this construct is measured by the PTEEP, it

affects academic success when it is not able to be carried through in different classes with different tutors. Thus implying that integrating the development of students' academic literacy into subject-based teaching and learning may be more productive.

Academic literacy is directly related to higher education and is found to be critical in fostering academic success (Yeld, 2003). As mentioned before, academic literacy consists of both cognition and language and thus encompasses an inter-related set of competencies. A growing trend that can be observed in the development of achievement tests is that they assess learning outcomes with respect to knowledge and cognitive processes. If cognitive processes are built into the design specifications it is possible to not only compute an overall score for the test but also for each of the content areas, as well as, for each of the cognitive processes, which adds to the utility of the test information (Foxcroft, 2004). According to Foxcroft (2004) some of the fundamental sub-domains of academic literacy include:

- Making meaning from (understand) academic texts.
- Understanding words and discourse signals in their context.
- Summarizing and synthesizing information.
- Identifying the main and supporting ideas in a passage.
- Identifying main from supporting ideas.
- Identifying and tracking academic arguments.
- Understanding and evaluating the evidential basis of argument.
- Extrapolating and drawing inferences and conclusions from what is stated or given.
- Reading critically (e.g. distinguishing between fact and opinion, detecting an author’s bias).
- Generating hypotheses on the basis of information in a passage.
- Understanding information presented visually (e.g. graphs, tables, flow-charts).
- Understanding basic numerical concepts and information used in text.
- Reporting facts or narrating events.

- Structuring their writing so that it moves beyond formulaic patterns and reflects original, critical thinking.

These ideas seem to somewhat mirror the reading and thinking approaches that the PTEEP language test aims to assess. The next section in this chapter addressed the relationship between language and cognition, as well the theories of Piaget and Vygotsky as a basis upon which to understand the development of cognition and language. Furthermore, looking at the theories presented in the next section might be helpful in having a broader understanding of the complex construct that the PTEEP is trying to measure.

3.2. The relationship between language and cognition

Cognitive psychology, as a speciality of the discipline of psychology, focuses on “higher” mental processes, such as memory, reasoning, information processing, language, problem solving, decision making, and creativity. Language, more specifically, exists in a psychosocial context: it is a common form of human social behaviour that allows us to communicate with others through the production of meaningful utterances and the ability to understand what people are saying to us. A certain amount of knowledge is required to understand and produce language; this knowledge is represented internally (Louw & Edward, 1993). Thus language is a natural concern of cognitive psychology. Cognitive psychologists are interested in identifying the cognitive processes underlie language production and language comprehension. Thus, even though language falls within the domain of cognitive psychology, theoretically language and cognition is often difficult to differentiate.

According to Weiten (2001) cognition refers to the mental processes involved in acquiring knowledge. In other words, cognition involves thinking or conscious experience and includes our thoughts, ideas, convictions, understanding and knowledge. Cognitive approaches to learning emphasize the changes which take place in the cognition of a subject during the learning process (Louw & Edwards, 1993). Cognitive learning therefore entails

obtaining knowledge and understanding and need not necessarily be reflected in observable behaviour.

The target population in this study raises the following interesting questions: How are cognitive processes and skills affected by learning more than one language (majority of the present study's sample is bilingual)? Research shows that when middle-class bilingual subjects who are fluent in both languages are studied, they tend to score somewhat higher than monolingual subjects on measures of cognitive flexibility, analytical reasoning, selective attention, and 'metalinguistic awareness'(the ability to reflect on the use of language) (Bialystok, 1999; Campbell & Sais, 1995; Lambert, 1990). Research does not support, however, the assumption that bilingualism has a negative effect on language development or on cognitive development (Weiten, 2001).

Language may *influence* how we think about the world, but not actually *determine* how we think about the world. We acquire a worldview as we acquire language. What our language allows us to talk about determines the way in which we perceive the world. Thinking determines language, and vice versa, language determines thinking. Meyers (1989) expressed it very simply: 'Thought influences our language, which in turn influences our thoughts.' It is because of this process that it can become challenging to separate cognition and language. Cognitive theories assert that language development is simply an important aspect of more general cognitive development – which depends on both maturation and experience (Meltzoff & Gopnik, 1989; Piaget, 1983). Social communication theories emphasize the functional value of interpersonal communication and the social context in which language evolves (Bohannon & Warren-Leubecker, 1989; Farrar, 1990). Two theorists have influenced these ideas in different ways, namely, Jean Piaget and Lev Vygotsky.

According to Piaget, cognitive development is determined by a complex interaction of genetic, psychological, and environmental factors (Louw &

Edward, 1993). Piaget divides human cognitive development into four periods, namely:

- The sensory-motor period (from birth to two years)
- The pre-operational period (from approximately two to seven years)
- The period of concrete operations (from approximately seven to eleven years)
- The formal operational period (adolescence: from approximately eleven years). This period of development will be discussed further in the next section of this chapter, and it focuses more on understanding the cognitive development of adolescents and young adults – the sample group of this study.

Piaget (1978) believed that progress in cognitive organisation is accomplished by means of assimilation and accommodation. As an individual encounters new experiences, they react to them both in terms of what they already know (assimilation), as well as revise their worldview as a result of the new information (accommodation) (Stever, 1994). Cognitions are thus in a process of constant change and reorganisation. Piaget believed that at certain points in development these reorganisations are so momentous and fundamental that they represent a whole new way of understanding the world. In evaluating this theory, Piaget has been criticised for his lack of close attention to perceptual development, as well as for spending insufficient time on social and cultural influences on cognitive development (Craig, 1996). Individuals develop many competencies as a result of the very different social and cultural contexts that they live in.

According to Piaget, the child is an “active scientist” who interacts with her physical environment and develops increasingly complex thought strategies. This active, constructing child seems to be working alone at problem solving. Increasingly, however, some social scientists emphasize that the child is a social being who plays and talks with others and learns from these interactions (Bruner & Haste, 1987). Vygotsky, for example, was interested not only in the development of the mind in the social context, but also in the

historical development of the community's knowledge and understanding. He believed that we make sense of the world only by learning the shared meanings, passed down from generation to generation, of others around us (Craig, 1996). In his view we develop understanding and expertise primarily through an apprenticeship with more knowledgeable learners. We are not only allowed to participate, we are guided in this participation, which enables us to understand more and more about our world and to develop an increasing number of skills. According to Vygotsky (1978) children acquire literacy basics while interacting with their parents, siblings, teachers, and peers. Vygotsky also believed play to be a primary means of moving children toward more advanced levels of social and cognitive skills (Rogoff & Wertsch, 1984). Therefore, intellectual activity develops through social play.

Psychologists call talking aloud to oneself 'private speech'. Some early observations of private speech among preschool children were made by Jean Piaget. He suggested that the private speech of young children indicated their immaturity. Social speech was more difficult because it required consideration of the listener's perspective. He called this talking to oneself 'egocentric speech' (Piaget, 1926). In contrast to Piaget (1926), Vygotsky (1987) observed that private speech often mirrored adult social speech and served to help in the development of inner thought and self-direction.

Vygotsky defined two levels of cognitive development. The first was the child's actual developmental level, as determined by his independent problem solving. The second was his level of potential development, as determined by the kind of problem solving the child could do under adult guidance or in collaboration with a more capable peer (Vygotsky, 1978). Vygotsky called this distance between these two points the 'zone of proximal development' (Rogoff & Wertsch, 1984). The PTEEP test is said to 'embrace Vygotsky's notion of the zone of proximal development (ZPD)' as the test will acknowledge the effects on cognitive functioning of the quantity and quality of prior mediated learning opportunities experienced by an individual, and attempt to develop and include strategies to address negative effects where possible (Yeld, Cliff & Hanslo, 2002). In other words, take seriously the impact of educational

disadvantage. This requires test designers to be cautious about making easy assumptions concerning a candidate's underlying ability from his/her test performance. The PTEEP test development process, according to Yeld, Cliff and Hanslo (2002), is particularly focused on developing methods of eliciting optimal performances from all candidates, irrespective of educational background. The Vygotskian notion of the Zone of Proximal Development (ZPD) was adapted to complement traditional approaches to the testing of academic literacy. The scaffolding approach, based on the principles of dynamic assessment, is an approach adopted by the PTEEP in its attempt to provide opportunities for candidates to engage in activities that both encourage and reveal concept and skill development. That is, by engaging with a task (a problem) under the guidance of task scaffolding, the candidate's engagement with the task will be enhanced, and his/her ability revealed more effectively than would otherwise be the case. (The scaffolding approach was also a characteristic of what a good access test should include, mentioned in Chapter Two). The next section goes into more detail about the cognitive development of the age group that is of concern in the present study, that is, first year students which consist of both adolescents, and young adults.

3.3. Cognitive Developmental theory in young adulthood

While stages of development are relatively clear in childhood and adolescence, they are not so easily defined in adulthood. Cognitive abilities, however, does continue to develop throughout life. But there is not complete agreement on which cognitive abilities change and in what fashion. Furthermore, it is clear that education and experience affect cognitive development in adulthood (Craig, 1996). For the basis of this research Piaget's (1970) adolescent stage in cognitive development as well as the stage beyond as described by Klaus Riegal (1975, 1984) will be explored. The rationale for including Piaget's 'formal operational stage' is to provide a basis for understanding the cognitive development of the participants who may still fall in this stage (18 years). The basic progression in ways of thinking during the university years will be explained by Perry's (1970) "stages of college thought".

Piaget's (1970) 'formal operational thought' is a form of intellectual processing that is abstract, speculative, and free from the immediate environment and circumstances. It involves thinking about possibilities as well as comparing reality with things that might or might not be. Formal operational thought requires the ability to formulate, test and evaluate hypotheses. It involves manipulation not only of the known, verifiable elements but also of things that are contrary to fact (Craig, 1996). Adolescents also show an increasing ability to plan and think ahead. Formal operational thought, therefore, can be characterized as a second-order process. The first order of thinking is discovering and examining relationships between objects. The second order involves thinking about one's thoughts, looking for links between relationships, and maneuvering between reality and possibility (Inhelder & Piaget, 1958). Notably, three characteristics of adolescent thought are:

1. The capacity to combine all variables and find a solution to a problem.
2. The ability to conjecture what effect one variable will have on another.
3. The ability to combine and separate variables in a hypothetical-deductive fashion ("If X is present, then Y will occur) (Gallagher, 1973).

In young adulthood, there is a greater emphasis on application, rather than acquisition of knowledge. There is some evidence of a trend toward dialectical thought (ideas stimulate opposing ideas), leading to more contemplation of contradictions, pros and cons. Klaus Riegel (1975, 1984) emphasizes the understanding of contradictions as the important achievement of adult cognitive development. He calls this 'dialectical thinking' – a stage beyond the forth and final stage of Piaget. In this stage the individual considers opposing thoughts and synthesizes or integrates these thoughts. The most important aspect of dialectical thinking is the integration of the ideal and the real. The practical, everyday world (the real) serves as a dialectical correction of the artificiality of abstract, formal, operational thinking (the ideal). This, according to Riegel (1984), is the strength of the adult.

Figure 1 below is a spherical model of development, indicating four cognitive developmental orientations, incorporating Piaget and Riegel's ideas. It provides a graphic understanding of the concepts of cognitive-developmental

structures, dialectic interactions, and cognitive-developmental adaptation and change.

A spherical model of development

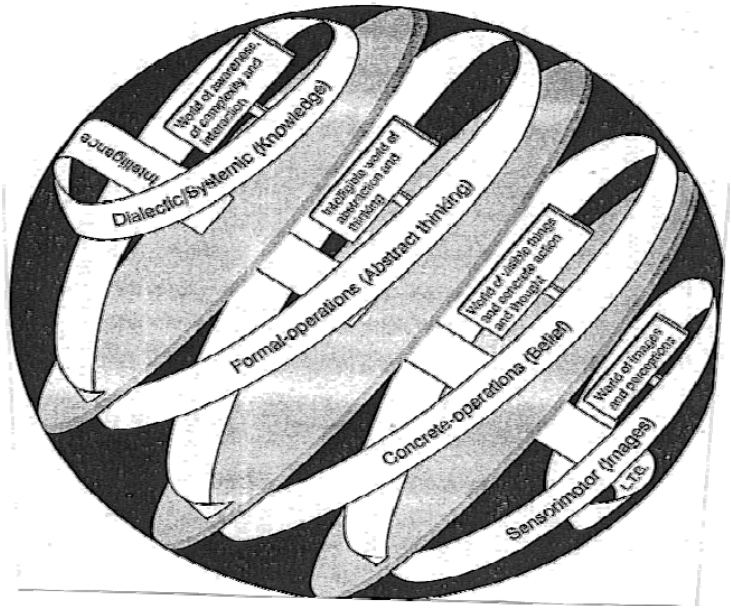


Figure 1

(Taken from Rigazio-DiGilio, Goncalves & Ivey, 2002).

The spherical model illustrates how individuals receive data through sensory modalities of seeing, hearing and touch (sensorimotor) and organise the data into a way of understanding that permits them to operate predictably in the environment (concrete-operational). They can reflect on their feelings, actions and thinking through abstract thought (formal-operational) and can also look at the total process and outcome of their interaction (dialectic/systemic) (Rigazio-DiGilio, Goncalves & Ivey, 2002).

According to Rigazio-DiGilio, Goncalves and Ivey (2002) the developmental sphere also describes how collective ways of understanding develop in relationships. As the sensory worlds of individuals merge, they share

perspectives, emotions, and behaviours (system exploration/formation). Repetitive experiences evolve into a collective way of understanding the relationship that serves to organise predictable ways of thinking, feeling and acting (system maintenance/consolidation). Within the formal orientation, members can reflect on and enhance this understanding (system enhancement/modification), while the dialectic/systemic orientation promotes awareness of how and in what contexts this way of understanding was constructed and how it might be transformed (system transformation).

In using this model to help us understand cognitive-developmental structures it is important to emphasize that higher is not necessarily better. What is considered most adaptive is for clients to be able to access the unique resources within each of the orientations (Rigazio-DiGilio, Goncalves & Ivey, 2002). This is also true when looking at the sample in the present study, it is not compulsory for all first year students to function or operate in the dialectical orientation only, but it is necessary for them to be able to access that mode of functioning, in order to eventually obtain academic success.

Cognitive development as Perry (1970) traces it takes place in the forms in which a person perceives his world rather than in the particulars or “content” of his attitudes and concerns. The following is an overview of Perry’s (1970) positions. The first “stages”, students interpreted the world and their educational experiences in authoritarian, dualistic terms. They were seeking truth and knowledge. The world could be divided into good and bad, right and wrong (Position 1). The faculty’s role was to teach them, and they would learn by hard work (Craig, 1996). But these students were often confronted with differences in opinion, uncertainty and confusion (Position 2). Perhaps professors presented subject matter in a way that encouraged students to learn the answers for themselves, or perhaps professors themselves had not found the right answers yet. Gradually, in the face of various points of view, students began to accept and even respect a diversity of opinion (Position 3). They began to adopt the perspective that people have the right to different opinions, and they begin to understand that one person can see the same thing in two different ways, depending on the context (Position 4 and 5). The

relavistic perspective, however, eventually gave way to the need to make some commitment of personal belief or personal affirmation (Position 6). The students first make these initial commitments in a testing, exploratory fashion (Position 7), but eventually work out for themselves commitment to and responsibility for a particular set of values, point of view, and lifestyle (Position 8 and 9). The students thus move from a basic dualism (e.g. truth versus falsehood) to tolerance for many competing points of view (conceptual relativism) to self-chosen commitment and responsibility. This, for Perry (1970), represented a type of intellectual development characteristic of the young adult. It would seem that this also represents the type of development that would happen over course of the individual's academic degree, and to lesser or greater degrees at different times in their academic degree.

In different adults, however, different cognitive abilities increase. Some skills do peak in the late teens – for example, speed-related performances, rote memory, and the manipulation of matrices. According to Craig (1996), some of these abilities may have a physiological basis, or they may simply reflect the fact that many teenagers are full-time students who practice, develop, and rely on these skills. In fact, specific disciplines are associated with specific reasoning skills. This is why, for example, psychology majors tend to develop probabilistic reasoning, while humanities majors tend to develop conditional logic (Lehman & Nisbett, 1990). This should be kept in mind when interpreting the results of this study, as students are being measured on their cognitive abilities, by the PTEEP, when they have received no special discipline training yet. Their final first year results may, however, incorporate the teachings of specific reasoning skills. Another factor to bear in mind is that the findings of Perry and Riegel were based primarily on studies of young adults in university. The changes they observed may have been specifically related to university experience rather than to the more general experiences of young adulthood (Craig, 1996). Thus, the cognitive development/changes mentioned in the present study should not be generalised to the first year student population, or individuals of similar ages. It should rather be seen as describing first year students in the Faculty of Humanities. Perry and Riegel also feel that individuals need exposure to social complexity, to different

points of view, and to the practicality of the real world to escape dualistic thinking.

Cognitive developmental theory proves to be relevant to this study in order to better understand the cognitive development and functioning of university students. Theory also plays a role in informing interventions such as bridging and foundation courses to increase students' chances of success.

3.4. Summary

The development of academic literacy is essential in order to promote academic success. In this chapter academic literacy and its language and cognitive constructs are discussed in order to understand the present study's construct, PTEEP, which academic literacy is closely measured by. Furthermore, cognitive developmental theory in young adulthood was also explored in this chapter as it forms a theoretical basis upon which to understand the make up of students' academic literacy skills as well as students' cognitive development levels when entering university. The next chapter discusses factors influencing student's academic success as well as different predictors of academic success.