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## Lecture 5 and 6

### Assessment for Career Guidance

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#### Intended Learning Outcome

At the end of this module, it is expected that the participant will be able to:

1. Explain key concepts related to intelligence
2. Explain the unitary and non-unitary theories of intelligence.
3. Distinguish between intelligence and aptitude.
4. Describe the intelligences approach to assessment for career guidance.
5. Articulate the importance of an undergirding theoretical framework for career guidance.
6. Describe how psychological tests can be classified.
7. Explain what culture fair tests are.
8. Distinguish between the quantitative, qualitative and mixed approaches to assessment.

### CONCEPTUAL FOUNDATIONS

#### 4.1. The Purpose of Assessment

A significant proportion of the engagement between the client and the career counsellor in many forms of counselling is devoted to gathering information about the individual that would promote *self-awareness* to aid the career decision-making process. While the methods employed to collect this information would rely on the paradigmatic persuasions of the career counsellor, assessment (i.e., the collecting, structuring, and interpreting of information about the client in some form or the other), lies at the heart of most systems of career guidance and counselling. Historically, a variety of factors have been the target of measurement to promote self-awareness. Three main constructs that have been typically understood to be pivotal to career choice: interests, needs/values, and abilities.

#### 4.2. The Intelligences Approach to Assessment

Interest and Aptitude are both essential aspects of assessing an individual to know his/her potentials. But as we have seen, culture plays a strong mediating role. Certain occupations may be accorded lower prestige by a certain culture and therefore, interest for this occupation within that culture maybe low. In a similar vein, interest is dependant exposure and the availability of opportunities. It is unlikely for example, for a young person who has never seen the sea will develop an interest careers related to the sea.

Another point to be considered is that contemporary schooling is such that assessment focuses on a certain set of cognitive abilities (e.g., analytical thinking, mathematics). Students who don't do well on these abilities are considered to be "less" intelligent. However, contemporary research findings demonstrate that intelligence is not a single, unitary construct. It is multidimensional and a person's intelligence is manifested in many ways.

Given below is a broad overview of the various ideas that surround intelligence.

#### 4.3. Understanding Intelligence

Intelligence comes from the Latin verb *intelligere*, to comprehend or perceive. Discussions pertaining to intelligence have a long and controversial history. Our interest is to understand intelligence from the point of view of guidance and counselling.

Intelligence has been defined in many different ways including, capacity for logic, abstract thought, understanding, self-awareness, communication, learning, emotional knowledge, memory, planning, creativity and problem solving. A description of intelligence that is accepted today is that it is:

*The ability to perceive information and retain it as knowledge to be applied towards adapting one's behaviour to effectively meet the demands of an environment.*

Therefore, intelligence is a broad mental capability. It does not emerge merely from book learning. It reflects the person's capability for comprehending his/her surroundings—"catching on," "making sense" of things, or "figuring out" what to do.

#### 4.3.1. The "g" and "s" factors of Intelligence

Charles Spearman (1863 - 1945) tried to set out to calculate the intelligence of 24 children in his village school. He discovered a relationship between each child's performance in a number of domains (including teachers' ratings of 'cleverness' and ratings by other students of their 'common sense out of school') In other studies, he found strong associations between scores on examinations in different subject areas such as classics and maths. Linking together these strands of evidence, Spearman concluded that there was a 'general' intelligence underlying performance on these very different tasks. He regarded general intelligence, or "g", as a unitary, biological and inherited determinant of intelligence.

Spearman also noted that there were some "specific" abilities', such as musical aptitude, that contributed to performance in specific areas and seemed less related to performance in other disciplines. But his finding of a **general** feature that underlies performance in many areas was so radical that it became the hallmark of his work. Spearman likened g to mental energy – a limited resource available to all intellectual tasks. The idea was that individuals differ in general intelligence because they have different "amounts" of this mental energy to process information.

#### 4.3.2. Developmental Stages and Intelligence

Alfred Binet (1857–1911), took a different path, to understand human intelligence. He proposed that we all pass through certain developmental stages (e.g., infancy, childhood, adolescence, adulthood, old age), and that to understand these stages we should consider the "higher faculties" of the mind rather than merely how the nervous system works. Binet laid an emphasis on what he referred to as:

"...judgement, otherwise called good sense, practical sense, initiative, the faculty of adapting oneself to one's circumstance".

For Binet, the capacity for reason and judgement was an indication of intelligence. In

1904, Binet was commissioned by the Parisian authorities to develop tests that would identify children in need of special education, without relying on the subjective reports of parents or teachers. Binet's technique for constructing the first test was based on an important insight: *whatever intelligence is, we can be sure that it changes (develops) with age.* So the first intelligence test was based on the central idea that the age at which the "average child" can succeed at a particular problem is an indication of the difficulty of that problem. Using this yardstick, children can be characterized as average, advanced or delayed in their rate of development compared to their peers. Binet and his associate Théodore Simon compiled a range of tasks in their first intelligence tests called the Binet-Simon Scale. These included around 30 items of increasing difficulty, beginning with simple items that even children with intellectual disabilities were able to complete (such as following a lighted match with your eyes and shaking hands with the examiner). More complex tasks included pointing to body parts and defining commonly used words such as 'house' or 'wheel', and tasks that were harder still, such as repeating back strings of digits and constructing sentences involving several specified words.

Binet was also the first psychologist to specify that such tests must be:

1. administered and scored in a careful and standardized manner if comparisons between children's performance are to be valid and reliable;
2. presented in the same order to all children and in order of increasing difficulty so that each child can pass as many tests as possible; and
3. administered in a one-to-one setting and only where the examiner has first established a friendly rapport with the child.

Most research investigating "general intelligence" versus "specific intelligences" show that specific intelligences closely correlate with general intelligence. That is: higher the "g", higher seems to be "s"

Binet used the idea of the average age at which a task was mastered to derive a child's mental age. Chronological age (CA), is the person's actual age in months and years. Mental age (MA) is derived from the person's performance on intelligence tests. So a child scoring better than the average child of his age would have a higher MA than CA, and a child scoring lower than average would have a lower MA than CA.

#### 4.3.3. Intelligence Quotient (IQ)

William Stern (1871 - 1938), developed this idea to create a formula to calculate "intelligence quotient". IQ therefore can be calculated using the classical formula,

$$IQ = MA/CA \times 100.$$

The scores obtained by a person on intelligence tests is called the "raw score". These raw scores are converted to mental age through the use of standardised tables. The chronological age is the person's real age. If a person is able to do everything that he/she is expected to for her age and nothing higher, then MA and CA will match. Here we would see an average IQ of 100. If a person is able to do more than what is expected of his/her age, then the MA will be higher than the CA. For example if a person is 20 years old right now, but she can do what an average 30-year old can do, then this person is 10 years ahead of schedule. Here the IQ would be 150 – a very high IQ. On the other hand if a person is 20 years old, but can only do what the average 10-year old can do, the IQ would be 50 and Binet would say that this person's development is delayed and therefore he/she would have a low IQ.

Stern's formulation separated the two different approaches to studying intelligence – the individual differences method (concerned with IQ differences among peers), and the developmental method (concerned with the relationship between MA and CA).

It was during this time that intelligence tests were created. One of the most reliable and widely used intelligences tests today are the scales created by David Weschler. Weschler scales are available for children as well as adults.

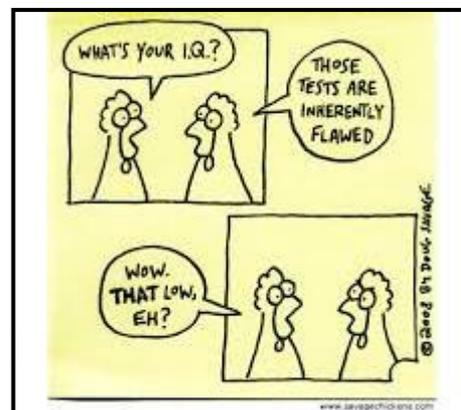
Binet's conception of intelligence has dominated tests that are used in the Western world today. The Binet–Simon scale was even selected by the prestigious journal *Science* as one of the 20 most significant discoveries and developments of the twentieth century.

Lewis Terman developed this scale further at Stanford University to produce the Stanford–Binet Test, a test still widely used today. This has been adapted for India by V.V Kamat and is called the Binet-Kamat Test of Intelligence.

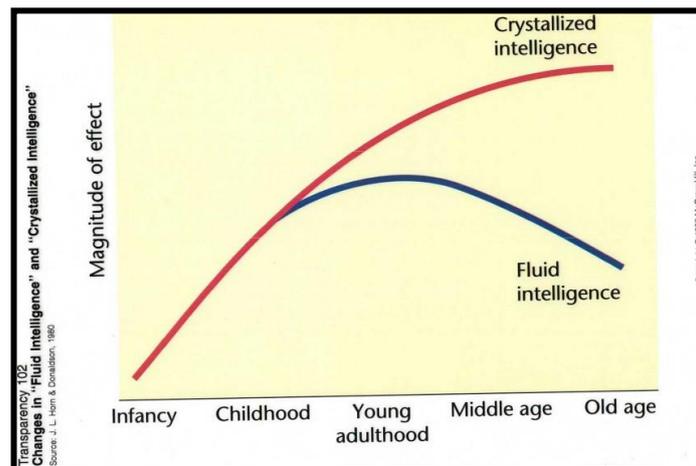
#### 4.3.4. Fluid and Crystallised Intelligence

Until this point in the history of understanding intelligence, it was thought to be a single (unitarian) entity, as shown by a person's IQ. Gradually scholars began to argue that intelligence is not a single entity. As shown in the figure below, Raymond Cattell (1905 – 1998) identified two factors, which he labelled as fluid intelligence (Gf) and crystallized intelligence (Gc).

**Fluid Intelligence** (Gf) seemed to represent something akin to Spearman's g, namely an overarching processing capacity. It is the innate and inherent learning capacity of all individuals. It does not depend on one's education, learning and experience. It reflects biologically influenced mental abilities. Gf pertains to one's capacity to think and reason. It also governs memory capacity, attention and information processing and analysis. Examples of the use of fluid intelligence include solving puzzles and coming up with problem-solving strategies. Fluid intelligence peaks during childhood and adolescence then starts to decline. The decline in Gf is attributed to the age-related degeneration of the brain.



## Fluid and Crystallised Intelligence



**Crystallised Intelligence (Gc)** is the expertise resulting from the lifelong process of learning and skill accumulation. It covers capacities that a person has acquired through knowledge and expertise. It is a lifetime's worth of information, amassed through schooling and everyday activities. This type of intelligence is based upon facts and rooted in experiences. It represents the things that you 'know.' It also covers the application of such information to problem solving. Situations that require crystallized intelligence include reading comprehension and vocabulary exams. Similar to fluid intelligence, crystallized intelligence develops during the childhood and adolescent years. Compared to Gf, Gc continues to improve until late adulthood. As we age and accumulate new knowledge and understanding, crystallized intelligence becomes stronger. It is usually maintained throughout the years, until it starts to decline by age 65.

Crystallized intelligence does not affect an individual's fluid intelligence. However, Gf can alter one's Gc. In fact, those with better Gf rates acquire more knowledge at a faster rate. What this means is the Gf represents a person's learning capacity.

Fluid and Crystallized Intelligence are discrete, but they work together. For example, the speed at which you are processing this lecture, your ability to remember key points, listen to the lecture with a critical mind are examples of your fluid intelligence. At the same time, you would use your crystallized intelligence to recall past lectures, continue your learning and accumulate your knowledge.

Therefore, the quality of a person's fluid intelligence qualifies the person's ongoing learning and development. In other words, the quality and quantum of comprehension of information and experiences through fluid intelligence creates long-term memory which composes a part of crystallized intelligence.

### 4.3.5. Age and Intelligence

If the formula for IQ presented above is correct, then IQ should go on increasing with age! However, this is not the case. In the 1940s pioneering intelligence researchers J. C. Raven and David Wechsler, relying on radically different kinds of intelligence tests, showed that raw scores on intelligence tests peak between ages 13 and 15 and decline after that throughout life. As shown in the graph, current consensus is that fluid intelligence generally declines with age after early adulthood, while crystallized intelligence continues to grow for a much longer period of time. It seems therefore that cognitive abilities peak during the teenage years and it is during this period that learning is most rapid. The rest of one's life is about learning from and processing experience.

### 4.3.6. Culture and Intelligence

One of the main controversies that have surrounded intelligence testing is that the data obtained about intelligence is entirely the result of the *items* of an intelligence test. Since the majority of research related to intelligence has originated from the West, test construction has been based on Western notions of what intelligence is. If we were to take the idea of "general" intelligence (g) or "fluid" intelligence for example, it may be true that this is an

indication of a person's general capacity. However, the manifestation of this capacity may be strongly influenced by culture. For example the ability to view two different objects and point out the similarity between the two of them is a common item in intelligence tests. To test this capacity an item in one of the most famous tests of intelligence for children (the Weschler Intelligence Scale for Children) shows the child a picture of beer and wine. The child is then asked to say what the similarity is between beer and wine. While the child may be developmentally mature enough to identify similarities she may never have seen beer or wine in her cultural environment. Hence a child who has not had this experience would "fail" this test, while the child who has had this experience would "pass" this test.

Culture is a peoples' way of life. It influences our views, experiences, and engagement with our lives and the world around us. It is shaped by the political, social, and environmental contexts in which we live. It is here that the ideas of Lev Vygotsky (1896 - 1934) are important to note. He is the founder of a theory of human cultural and bio-social development

commonly referred to as cultural-historical psychology. According to this theory, the development of higher cognitive functions in children occurs through *practical activity in a social environment*. He argues that universal cognitive processes (such as the "g" factor and Fluid intelligence), are mediated by cultural practices. Children develop their cognitive abilities from social interactions with adults or older children and people. Older people provide scaffolding, or tools that help children improve their cognitive abilities. Different cultures will define intelligence differently than other cultures. Therefore, what one culture considers a "sign" of intelligence may not be considered as such by another culture. As we have seen above, Binet came to the conclusion that certain behaviours emerge at certain stages in the person's development. However, it may be that in another culture this same behaviour emerges at another stage. Hence, culture becomes a medium through which intelligence develops. Given in the box below is an example of how developing a deep understanding of a child's capabilities can fail if that child's culture is not taken into account.

**Box 1**  
**"They are all below average..."**  
**Excerpt from personal diary (Arulmani, February, 1993)**

Some years ago very soon after I completed a high level degree in Clinical Psychology, I was invited to assess the children of tribal families to identify their potentials based on which they could be given scholarships for further education. The invitation was from the 86 year old head of the erstwhile royal family of the region who were owners of vast iron ore mines in the area. The fathers of these children were unskilled labourers in these mines and the mine owner's desire was to support the further education of the children so that their talents and potentials could be fruitfully realised. Brimming over with my new found knowledge about intelligence I set off with my tests of intelligence, aptitude, interest and temperament. The tests were all administered in a "standardised" manner and the test instructions were meticulously followed. However, even during the administration of the tests, I noticed that almost all my young test-takers were "underperforming". Most of them could not use the various blocks and cards in my testing kit, their drawings were not "age appropriate". In fact they could not even correctly hold the pencils that I supplied. The tests were scored. As anticipated almost the entire group recorded a "below average" performance. I wrote up the intelligence test reports for each of the students and handed them over. A few days later I was asked to meet the person who had commissioned the project. "From your reports it seems none of my children are worthy of a scholarship", he said to me. "Perhaps you are correct because you have taken a highly scientific approach. But before we come to this conclusion, could you visit these children in their homes and then tell me what your impressions are?" I didn't understand why that was necessary, since after all I had taken a "highly scientific approach". Anyway, I set off to the remote hamlets that were home to these children. As I approached, I began to see, scribbled on the rocks, examples of the most attractive child art – cavorting animals, soaring birds, twirling plants, dancing humans – executed in sophisticated (entirely age appropriate) detail. The children and their families were thrilled to see me and I was treated as an honoured guest. Still amazed by the drawings I asked who had made the drawings and with what. Three of the "artists" in the group shyly came up and showed me lumps of iron ore – their drawing tools! These were the very ones who "underperformed" on my paper-pencil tests! Further, all around me I noticed an almost seamless involvement of children in what would be considered adult duties in urban environments: keeping the yard clean, caring for the livestock as well as their younger siblings, stoking the fire, were all activities that the children were quite naturally involved in. I was introduced to one of their "board" games (the board being the floor) the complexity of which required the intellectual prowess of a chess master! I could go on with my description of what I saw in that little hamlet. But gradually the wisdom of these children's 86 year old benefactor dawned on me: my tests had "underperformed" and not these bright eyed children.

### 4.3.7. Biological Basis for Intelligence

#### A. *Speed of information processing as a measure of intelligence*

Arthur Jensen (1923 – 2012) investigated the possibility that general intelligence (“g”) is based on the speed with which we process information. Jensen thought that the latter might be measured without asking any of the conventional questions found in intelligence tests, thereby avoiding concerns about cultural bias. He found that individuals with higher IQs respond faster and are more consistent in the speed of their responses. Therefore reaction time emerged as another indicator of general intelligence. In parallel with these studies, there has been challenging research on the physiological correlates of intelligence.

Hans Eysenck (1916 - 1997) found correlations between IQ and brain evoked potentials and cerebral glucose metabolism. Considered together with the evidence from reaction time studies it is argued that intelligence is reflected in the speed or efficiency with which information is transmitted in the nervous system.

Research such as this takes the notion of intelligence beyond culture. For example the rate at which glucose is metabolised in the brain, or the person’s capacity to respond to the stimulus of a light being flashed, is likely to exist across all cultures. The hypothesis that biological variables might form the basis of general intelligence has received increasing support.

### 4.3.8. Non-Unitary Theories of Intelligence

The discussion above has been around the idea that intelligence is related to a person’s “general” mental capacity. This has been referred to as the “g” factor or “fluid” intelligence. These ideas give us the impression that intelligence is a “single” entity as revealed by a person’s IQ. The proponents of general intelligence (e.g., Galton, Spearman, Binet, Stern, Cattell, Jensen, Eysenck) say that there is a single factor that determines intelligence. This “unitary” notion of intelligence has been extensively questioned, particularly keeping in mind the interaction between intelligence and culture.

The non-unitary idea of intelligence proposes that there is more than one single type of intelligence. According to this thinking, there are different kinds of intelligences, each uniquely different from the other. The earliest

thinking along these lines comes to us from Spearman – the same person who gave us the idea of the “g” factor. Spearman also noted that there existed specific abilities and referred to these abilities as the “s” factor. Louis Thurstone (1887 – 1955) argued that, rather than a single general intelligence, there are seven ‘separate and unique’ primary mental abilities: word fluency, number facility, verbal comprehension, perceptual speed, associative memory, spatial visualization and inductive reasoning.

In contemporary times, these ideas are best developed in the work of Howard Gardner. Whether we are considering intelligence in terms of processing capacity, or considering Thurstone’s primary mental abilities, or reviewing the tasks that are routinely included in intelligence tests, Gardner believes that we typically only focus on a narrow range of logico-mathematical abilities. His theory of multiple intelligences accounts for the diverse range of important adult capacities by considering a diverse range of abilities, each of which he values as highly as traditional conceptions of intelligence. Gardner lists these autonomous intelligences as linguistic, musical, logical-mathematical, spatial, bodily-kinaesthetic and personal. Each is manifested, suggests Gardner, in culturally endorsed ‘intelligent’ behaviours, with normal adults having differing *profiles* of relative strengths and weaknesses across these intelligences.

### 4.3.9. “General” Intelligence or “Multiple” Intelligences? Who’s right?

Proponents of multiple-intelligence theories often claim that “g” is, at best, a measure of academic ability. In response, “g” theorists have pointed out that “g’s” predictive validity has been repeatedly demonstrated, for example in predicting important non-academic outcomes such as job performance. No multiple-intelligences theory has shown comparable validity. That is, people with higher “g” perform at higher levels of excellence at work than those with lower “g”. These theorists also point out that proponents of multiple intelligences have not disproved the existence of a general factor of intelligence. The fundamental argument for a general factor is that test scores on a wide range of seemingly unrelated cognitive ability tests (such as sentence completion, arithmetic, and memorization) are positively correlated: people who score highly on one test tend to score highly on all of them. *This suggests that the tests, although they are unrelated, all tap a common factor.*

Applying these theories to guidance and counselling Arulmani (2015) argues that both general and multiple intelligences exist. He presents the idea that general intelligence is manifested or shown in different ways and that there is an interaction between general and multiple intelligences, within the matrix of culture.

#### 4.3.10. Intelligence and Aptitude

Our interest is related to guidance and counselling. Hence, more than “intelligence” it is aptitude that we are interested in. Intelligence and aptitude are closely related.

Aptitude is usually defined as a natural or inherent talent for a certain skill or activity. Aptitude is a competency, whether innate, acquired or developed, for a certain type of work and this competency can be physical or mental. In our discussion of intelligence, we saw that there are unitary and non-unitary ideas of intelligence. These views are the opposite of each other. The unitary view argues that intelligence is a “single” factor, while the non-unitary view argues that intelligence is “multiple” in nature. Aptitude represents both these opposing views. In other words, IQ denotes intelligence as a single, measurable trait whereas aptitude breaks that intelligence down into several different characteristics that are relatively independent of each other. Interestingly, however, despite the two terms representing opposing views of intelligence, test scores invariably show them to be highly correlated.

At the same time, it must be noted that *aptitude tests are not intelligence tests* – in fact, two individuals that achieve the same IQ score may have widely different aptitude test profiles. The IQ score refers more to level of a person’s general mental abilities whereas aptitude score reflects specialised abilities. IQ is a single number indicating how high the person’s general mental capabilities are. According to the Weschler system of intelligence testing for example, an IQ of 90-109 shows “average” intelligence, while an IQ of 130 and above shows a “very superior” IQ. On the other hand, an aptitude test and provides a profile of strengths and weaknesses across different abilities, which help to predict a person’s performance in a specific discipline or career.

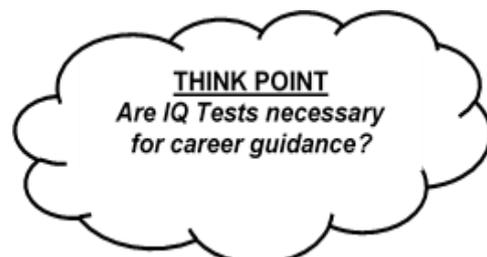
Aptitude therefore is the individual’s *inclination* for a certain task. It is the individual’s competence to perform a certain kind of task at a certain at a certain level of proficiency. The

competency with which the individual can perform a certain task is related to the person’s general intelligence. Take the example of 2 individuals. Assume that one of them has a higher general intelligence (higher IQ) than the other. Assume that both these individuals also show an aptitude for Linguistic tasks. The person with the higher general intelligence could show a higher capacity for Linguistic tasks, than the person with the lower general intelligence. Hence differences between individuals on specific intelligences could be the result of differences between them on their general intelligence. This information could be highly useful from the applicational view point, to help people understand themselves better and make effective choices.

An important target for career counselling is to enhance the individual’s awareness of his or her talents and abilities. Therefore, it is vital that the personhood of the career chooser is firmly kept at the heart of career counselling. An individual possesses talents for more than one career. If this is not acknowledged, then large numbers of career aspirants (the majority perhaps) whose interest and aptitude profiles do not match prevailing demands from the labour market, may not find their place in the sun. Instead, they may be driven to choose careers that are popular – forsaking careers for which they might have a higher suitability. Being equipped with the methodology to strike this essential balance is the hallmark of effective career counselling.

#### 4.4. The Importance of an Undergirding Theoretical Framework

Effective career guidance and counselling require the coming together of multiple units of information. This includes information not only about the individual and the world of work but also about *intra-individual* factors and *intra-world-of-work* factors. It is essential that each of these information units contributes meaningfully and substantially to the process of career guidance and counselling. A career counselling system that is undergirded by a culturally and economically relevant theoretical reference point can facilitate this integration of information.



A commonly encountered situation, particularly in contexts where the scientific practice of career counselling is in its infancy, is one where information about the

The objective of assessment for career guidance is not only to provide insights into interests and aptitudes. It is to reliably use this information to help the person make career choices.

individual is collected through tools and devices that are each based on *different theoretical persuasions*. It is common in India, for example, to see on a career report, information from a battery of tests such as the Strong Interest Inventory for data pertaining to interests, the Differential Aptitude Test for information about aptitudes, and the Cattell's 16 Personality Factors Questionnaire for data about personality. While they may be independently useful, it would be difficult to *reconcile the information* that is gathered into a coherent description of the individual's personal profile since each of these instruments originate from different theoretical frames of reference.

Simultaneously, theoretical consistency is also required in reference to the individual *and* the world of work. The usefulness of a device that generates information about the individual but does not find a close corollary in an occupational classification system would be limited.

*Effective career counselling requires the concurrent analysis of two sets of data: information about the person and information about the world of work.*

If this is to be achieved, the career counselling system must rest on a theoretically-validated framework that uses comparable constructs, terminology, and methods for assessment and classification. The absence of such a theoretical platform would affect the extent to which information about the person and information about the world of work could inform each other and thereby lead the individual toward effective career decision making.

Within the Jiva system, assessment devices are based on the multiple potentials framework

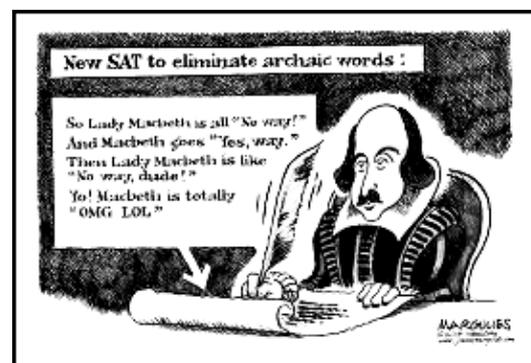
which is an adaptation of Gardner's (1983) theory of multiple intelligences

#### 4.5. Multiple Potentials: A frame of reference for career counselling

Gardner in his later work has gone on to expand on his initial theory. Our experience in using the theory has indicated that 5 of the intelligences described by Gardner are most relevant for guidance and counselling.

##### 4.5.1. The Linguistic Potential

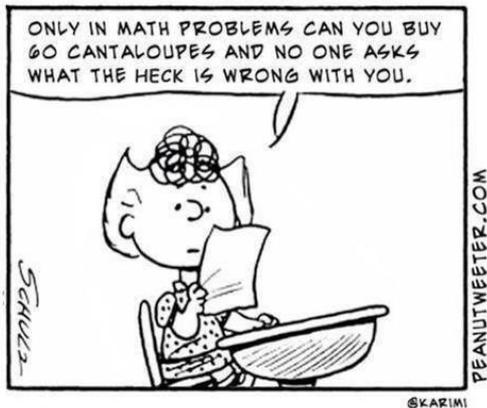
This potential area reflects the fluency of language. It is the ability to manipulate words and expressions. A person with a high linguistic ability is sensitive to the meaning of words, and to the skill of using words effectively to communicate. Linguistic ability may be manifested in the spoken form. The public speaker who is able to hold an audience at rapt attention or the counsellor who is able to accurately reflect the client's sentiments and emotions are examples of the linguistic ability at the spoken level. The linguistic potential may also manifest itself in the written form. Powerful essays that changed the history of nations, poetry that captures the sound of raindrops, or the presentation of a news item in the daily newspaper are examples of the linguistic potential in the written form.



##### 4.5.2. The Analytical-Logical Potential

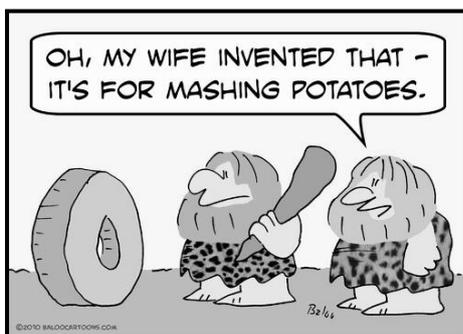
The person's ability to think logically, analyse, understand cause-effect relationships and solve problems is reflected by the analytical-logical potential. The ability to understand the underlying dynamics of a problem, the links between components and identify solutions are related to the human ability to analyse and apply logic. Similarly, the ability to extract information from a mass of data,

make sense of this information, identify trends and patterns and make predictions, all rest on the analytical-logical potential. An important point to be noted is that this potential is often associated with science and mathematics. This is an erroneous linkage. A large range of human endeavour requires logical ability. The archaeologist who is able to tell us about the dressing habits of a civilisation based on her extrapolations from a comb discovered on site uses logical skills as much as another person involved in abstract mathematics.



#### 4.5.3. The Spatial Potential

This potential relates to the sensitivity to space and the ability to manipulate space at the two dimensional level or at the three dimensional level. Activities linked to design draw heavily from the spatial potential. The architect who can 'place' a building on a vacant plot of land in his mind's eye or the sculptor who 'releases' an image from a block of stone use their spatial talents and abilities. The sensitivity to colour is another manifestation of the spatial potential. The interior designer who transforms the ambience of a drab room by merely changing the colour of the curtains uses her spatial ability. Creativity is concept that is often confused with the spatial potential. Creativity is a fundamental human quality that is required by almost all aptitudes and potentials. We are often confronted by non-creative artists and designers,



who can only copy the works of others. Alternatively a creative writer or a creative logician brings originality to their respective aptitudes. It is important that creativity is understood as a core human trait and not as an aptitude.

#### 4.5.4. The Personal Potential

The knowledge of self and the sensitivity to others reflect the personal potential. People exhibiting this potential would have a high degree of control and awareness over their own feelings and values. A person with a high personal potential is sensitive to the moods and emotions of others. These are people who can understand others and are attuned to the forces that

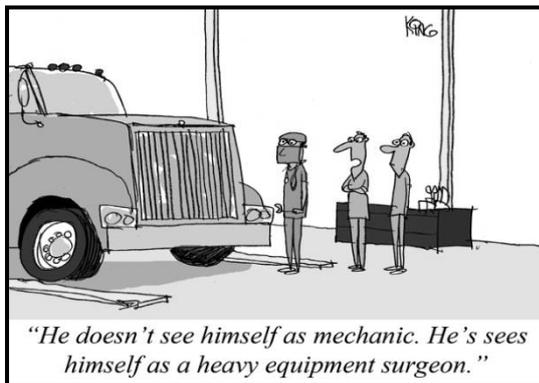


influence and mould human behaviour. A common misunderstanding is that people who are 'extraverted' have high personal skills. The ability to make others laugh or be the soul of a party reflects the personal intelligence as much as the capacity to quietly understand others, their moods, thoughts and behaviour. Most importantly, the person with a high personal potential would be able to logically arrive at the reasons behind a unit of behaviour and would be able to influence and mould human behaviour.

#### 4.5.5. The Physical-Mechanical Potential

Some of us are especially fluent in the use of our bodies. The physical-mechanical potential is linked to the mastery over the motions and expression of the body. It is the fluency of movement. The dancer who is able to 'show' us the agony of a tree being felled, the actor

who transforms a corner of the stage into the heaving deck of a ship simply by the way he moves his body both use their bodies to communicate feelings, moods, emotions and messages. Careers that require stamina and strength also require the physical-mechanical potential. Sports persons, protection service specialists would require the physical-mechanical potential. This potential is also linked to the person's mechanical ability.



These are people who demonstrate an innate sensitivity to the laws of mechanics and are good at the use of tools. Typically, engineers, technicians and others involved with machines and equipment demonstrate a well-developed physical mechanical ability.

#### 4.5.6. Multiple Potentials Profile

These potentials characterise all human beings. All of us for example demonstrate the ability to use words and speak a language. All human beings have the ability to apply logic and spatial skills. The personal, physical and mechanical skills similarly characterise the behaviour of all human beings. The point to be noted is that some of these potentials develop to higher levels than other potentials within the profile of a given individual. It is this profile that a career counselling programme is interested in. Observations and suitable testing techniques enable us to identify areas in which an individual demonstrates a higher potential. These 'highs' and 'lows' provide a framework within which career counselling can progress. The same theoretical framework is used to assess potentials as well as to classify careers.

All of us have all the five potentials. But each potential may have developed differently in different people

#### 4.6. Assessment and Career Guidance

Historically, the formalization of vocational guidance in the 1900s was largely in response to the pressing demand from the rapidly industrializing labour market to appropriately match workers with jobs. The need at this time was to assess abilities and ascertain a person-job fit as accurately as possible. In the beginning, perhaps the very purpose of career guidance was to obtain correct measurements of ability and aptitude. Methods of assessment grew increasingly sophisticated and gave rise to a wide range of assessment devices such as the General Aptitude Test Battery (GATB) and the Differential Aptitude Tests (DAT).

- General Aptitude Test Battery (GATB): [https://www.onetcenter.org/dl\\_files/Develop\\_GATB\\_EF.pdf](https://www.onetcenter.org/dl_files/Develop_GATB_EF.pdf)
- Differential Aptitude Tests (DAT): <https://us.talentlens.com/store/ustalentlens/en/Store/Ability/Differential-Aptitude-Tests-for-Personnel-and-Career-Assessment/p/100000364.html>

The scope of assessment was broadened to include *vocational interests* as a part of assessment for career development. The Holland model is an example of an interest based approach. The Strong Interest Inventory is another famous interest assessment tool: <https://eu.themyersbriggs.com/en/tools/Strong-Interest-Inventory>.

The inclusion of interest as a part of assessment for career guidance formed a comprehensive whole as it were, since it drew the wishes and desires of the career decision-maker more firmly into the career decision-making process.

Yet, by the 1960s the value placed on the assessment of abilities and aptitudes declined and faded from favor. Remarking on this in her review of the literature, Gottfredson (2003) asked, "Why did the field no longer pay much attention to one of the twin pillars in person-job match? Why did the career literature say so little about abilities and their role in counselling?"

To "test or not to test" is more often politically motivated than it is person-centered

She went on to answer her question by pointing to developments in political stances particularly since “civil rights and women’s movements had made counselling psychologists reluctant to tell counselees they could not become whatever they wished to be”. It is perhaps difficult in a culture that celebrates the individual to tell someone that they have “lower *abilities*” for something. Commenting on lower levels of *interest* for a certain set of activities is perhaps easier because it does not place the individual at a lower status or capability level. In addition, philosophic paradigm shifts that occurred in the world of education caused trait-factor theories to fall into disfavour. A corollary was a decline in the importance placed upon psychometric testing, since the issues surrounding standardization, development of meaningful norms that had equivalence across cultures remained hard to resolve.

#### 4.7. Psychological Testing

Psychological testing can be defined as the process of examining a *sample* of behaviour to understand the *whole* behaviour. All psychological tests require a person to perform some behaviour—an observable and measurable action. The behaviour an individual performs is used to measure some personal attribute, trait, or characteristic. For example, the test taker might be given items that require him/her to define a set of words. His/her responses would be taken as the level of his/her vocabulary and thereby his/her proficiency for that language and this in turn this could be taken as a “measure” of verbal ability. At another level, an individual’s capacity for predicting outcomes based on data provided, could be taken as an indication of analytical-logical ability. Similarly a person’s responses to a set of questions during a structured job interview could be taken as predictive of his/her ability to perform a certain job function. In summary, a psychological test is something that measures a person’s performance on a set of items in order to measure some personal attribute, trait, or characteristic or to predict an outcome.

Tests may be classified into types based on different criteria:

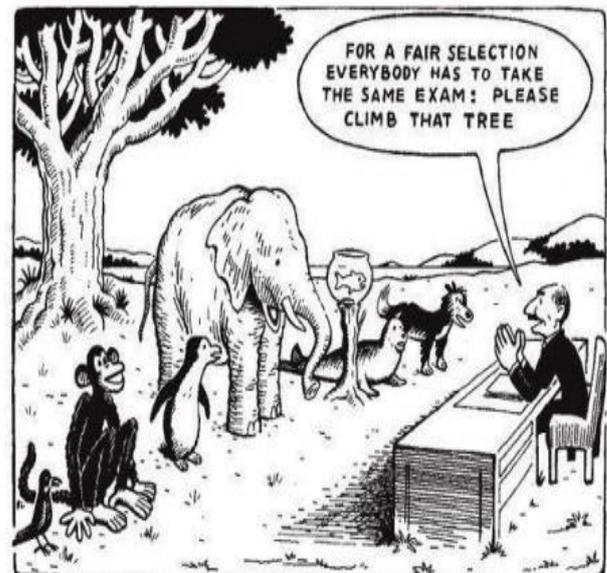
##### 4.7.1. Classification based on Structure

One such criterion is based on structure. Structured tests require test takers to respond to structured true/false questions, multiple-choice questions, or rating scales. What the test taker must do is clear, for example, answer true

or false, circle the correct multiple-choice answer, or circle the correct item on the rating scale. On the other hand are unstructured tests. These tests require test takers to respond to unstructured or ambiguous stimuli such as incomplete sentences, inkblots, and abstract pictures. Unstructured tests are also called as projective tests since it is assumed that test takers “project” themselves into the task they are asked to perform and that their responses are based on what they believe the stimuli mean and on the feelings they experience while responding. These tests tend to elicit unconscious thoughts or personality characteristics. The Thematic Apperception Test is an example of a projective test.

##### 4.7.2. Classification based on Item Format

Another way of classifying tests is based on item format. A psychological test may consist of multiple-choice items, binary items (agree/disagree items, true/false items), open-ended questions, or some mix of these.



##### 4.7.3. Classification based on Method of Administration

A test can be administered verbally i.e., through the medium of language. Such tests may be in the paper-pencil format or in the oral presentation format. Other tests may require the test taker to perform a well-defined task such as arranging blocks from smallest to largest, tracing a pattern, or completing mathematical problems.

Some tests use scales to elicit information about the attribute being measured. A scaled test rests on the assumption that a response

can be manifested along a gradation. A scale uses an arbitrary set of numbers, the distance between which is assumed to be equal, to measure the strength of a response.

#### 4.7.4. Culture Fair Tests

Another important consideration when selecting items for a test is whether the items are culture fair. Culture fair tests are those that can be answered without relying on knowledge specific to any individual cultural group. These tests are not influenced by verbal ability, cultural climate, or educational level. They are independent of social or cultural advantages, or disadvantages, that a person may have due to their upbringing. Culture fair tests are usually non-verbal, pictorial or performance-based.

#### 4.8. Approaches to Assessment

There are two broad approaches to assessment: the quantitative approach and the qualitative approach.

##### 4.8.1. The Quantitative Approaches to Assessment

Based on trait-factor theory, the older, quantitative school was established on the postulation that individuals possess a distinctive configuration of intrinsic traits and qualities which can be accurately measured and quantified. Hence, assessment methods emerging from the trait-factor position are usually quantitative-psychometric in their approach. Observations are expressed as quantities, usually in numbers (e.g., IQ = 121 or Linguistic aptitude = 23/40). Tests are administered in a “standardised” manner: testing conditions, test instructions, scoring and interpretation are expected to be uniform across test-takers and testing environments.

The meaning of an individual’s score is obtained by comparing performance against a “norm”: the performance of a representative sample (e.g., a score of 23/40 on a test of Linguistic aptitude may be interpreted as “below average” according to the norms of that test).

Central to the usefulness of psychometric devices is the relevance of a test to the group on which it is used.

*Psychological tests are useful when they are:*

- standardised and statistically validated for the group for which they are intended
- age and gender appropriate

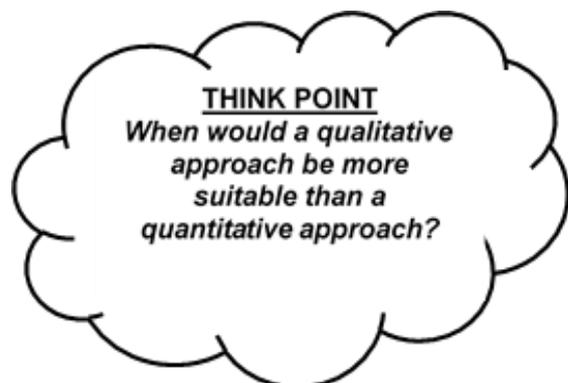
- suitable to the cultural background of those on whom the test is administered
- implemented by a person who has been trained in the administration of that test
- scored accurately and interpreted on the basis of appropriate norms

The validity and reliability of psychological tests are largely statistical and mathematical constructions and therefore require certain assumptions to be met if the results are to be valid and reliable. Quantitative tests are intentionally objective.

#### ***Critical appraisal of the quantitative approach***

The reliance of quantitative methods on *statistics* has been pointed to as a limitation. This becomes particularly obvious when tests are adapted for use in contexts outside which they were originally constructed. For example, even though many psychological tests are developed using samples composed primarily of Anglo-Americans, *normative data for the use of these devices with other racial, ethnic groups are rarely developed* (Hansen, 2005). It is not uncommon for assessment instruments to be directly translated from the American and European versions, without re-standardising the translated versions (e.g., Leong & Hartung, 2000).

Further, psychological testing today has become corporatized and is big business. A trend that can be noticed over the recent past is the loosening of the rigor with which training and licensing are provided, particularly when large psychological testing businesses move into countries where career counselling is in its infancy. Hence, while psychometric devices can be highly useful, the transport of psychological tools across cultural boundaries and the licensing of testers *without adequate training* in psychology, statistics, and the device itself, must be viewed with deep concern.



#### 4.8.2. The Qualitative Approaches to Assessment

The qualitative school, places the individual and the context, rather than the testing method or instrument at the centre of the process. Qualitative approaches focus on quality rather than quantity and aim at describing rather than measuring or quantifying. They are non-numerical and rely on verbal, non-mathematical descriptions. The qualitative observer would not say, Linguistic aptitude = 23/40 but would describe the aptitude in terms of the person's fluency with words, sensitivity to shades of meanings and so on. Where quantitative approaches are mainly cross-sectional, qualitative methods attempt to take a longitudinal perspective and where quantitative approaches rely on psychometric testing, qualitative methods take a dialogue approach. Qualitative approaches are intentionally subjective. Qualitative methods allow matters to be considered in detail and in depth.

#### ***Critical appraisal of the qualitative approach***

Interactions between the counsellor and client are not limited to a set of standardised questions, the direction of an interview can be guided and thereby more responsive to the client in real time. On the other hand, the *quality of the data obtained relies heavily on the counsellor/assessor*. There is a good chance that the biases, idiosyncrasies and preoccupations of the assessor influence the direction that the interview takes. The possibility that the assessor misses cues is strong. This can also contribute to error. In the case of quantitative methods, the error is known at least as an estimate. With qualitative approaches, error can remain unknown.

From a practical, implementational point of view, qualitative methods are well positioned to capture "real" experiences and identify subtleties and complexities. This can be more eloquent and compelling than data obtained through standardised quantitative procedures. However this *requires a highly trained and experienced assessor*, who is able to maintain objectivity while simultaneously eliciting subjective data.

Qualitative approaches can generate *large volumes of information* which must be analysed and interpreted before this information can be considered to be "data". This can be time consuming and here again, a high degree of competence is required on the part of the assessor.

Further, these methods imply intense engagements between client and counsellor which most often may be possible only at a *one-to-one level or at best in small groups*. This is a limitation that could be sharply felt in contexts where the numbers of clients who require career guidance runs into the thousands! Bringing interventions to scale, in an economical, yet rigorous manner may be difficult through qualitative methods.

#### 4.8.3. The Mixed Methods Approach

This is one of most contemporary approaches to assessment and it attempts to circumvent the shortfalls of purely quantitative or qualitative approaches. In a mixed methods approach, both quantitative as well as qualitative assessment methods are used to gather information about the individual. Thus, information collected using one method is verified and validated against information collected using the other method.

A mixed methods approach to assessment is not simply about collecting both quantitative and qualitative data, but using these in tandem to collect more comprehensive information as compared to that collected using any one of the approaches.

Jiva takes a mixed methods approach to assessment. The Jiva method uses assessment methods that are a blend of quantitative (psychometric tests) as well as qualitative (analysis of qualitative data such as hobbies and accomplishments) methods. The method aims to tie in with the person's lived experience. It encourages the counsellor to dialogue with the client and guide him or her toward identifying and rating relevant aspects of his or her experiences. At the same time, it uses the psychometric logic of a rating scale to provide the counsellor an objective frame of reference. Arulmani (2014) adopts a profile approach in the assessment of multiple potentials.

#### 4.9. Conclusion

An assessment by itself is a one-way communication if the exercise stops at "assessing" and "telling" the client. Findings need to be interpreted and explained to the client in a way that he/she understands and finds useful. A vital task before the career counsellor therefore is to substantially help the career aspirant extract meaning from the process and results of an assessment. What is the question that guides the actions of the counsellor who assesses a client? Does the

answer to this question emerge from a philosophic stance pertaining to assessment or does it emerge from the motivation to arrive at answers that are relevant and meaningful for the client? If it were the latter, then it is critical that we acknowledge that different questions would be best answered by different methods. Some questions would respond best to a qualitative approach, while others may require measurement and quantification. An effective counsellor would place the needs of the client at the heart of the assessment process.

The primary purpose of assessment for career guidance is to improve the personal insights into self. Further, assessment merely provides insights into self, the whole purpose is not served. Comprehensive career guidance would ensure that these insights provide the career chooser with information to navigate the world of work and labour market, make career choices and ultimately develop a flexible and dynamic life plan.

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## **SELF-LEARNING EXERCISES**

**Word Limits:** All questions have word limits. This is also an assessment of your ability to express yourself concisely and with precision. Please note that you are expected to stay within the word limit.

**Originality:** All questions are designed to assess your originality. While you are welcome to refer to books, the internet and other resources, verbatim reproductions of answers will not be scored.

### **EXERCISE 1: Key Concepts of Assessment for Career Guidance**

#### **Select the most suitable answer**

1. The purpose of assessment for career guidance is to:
  - A. improve the student's knowledge of the world of work.
  - B. improve the student's knowledge of his/her interests, aptitudes, potentials and IQ.
  - C. help the student learn about him/herself, such that he/she can make an effective match with the world of work.
  - D. improve the student's motivation for better academic performance.
  
1. Radha and Samir are both good at mathematics. However, Radha is able to understand and solve sums more quickly than Samir. This could mean that:
  - A. Radha has a higher crystallised intelligence than Samir.
  - B. Samir has a lower fluid intelligence than Radha.
  - C. Samir does not have as much exposure to mathematics as Radha.
  - D. They both have equal crystallised intelligence.
  
2. Crystallised intelligence is similar to the:
  - A. "g" factor.
  - B. analytical-logical intelligence.
  - C. "s" factor.
  - D. IQ.
  
3. Alfred Binet statement: "...judgement, otherwise called good sense, practical sense, initiative, the faculty of adapting oneself to one's circumstance", reflects:
  - A. general intelligence.
  - B. specific intelligence.
  - C. linguistic intelligence.
  - D. social skills.
  
5. Binet-Simon Scale has items of increasing difficulty. This is because:
  - A. such a scale will have better psychometric properties.
  - B. such a scale will have cross cultural validity.
  - C. the scale measures the "s" factor.
  - D. measurements of intelligence must be linked to the person's age.
  
6. Intelligence tests are essential for effective career guidance.
  - A. This statement is true.
  - B. This statement is false.
  - C. Intelligence tests maybe needed if the student has history of delayed development.
  - D. Intelligence tests are not necessary for career guidance since the focus is on interest and aptitude.

7. Cultural arguments pertaining to intelligence testing are:
  - A. Intelligence is defined by culture.
  - B. The items in an intelligence test may not be culturally appropriate.
  - C. Children may not have the experience of answering intelligence tests.
  - D. Culture enhances intelligence.
  
8. Unitary Theories of Intelligence propose that:
  - A. intelligence has multiple dimensions.
  - B. culture is a medium through which intelligence develops.
  - C. practical activity in a social environment promotes the development of intelligence.
  - D. a person's IQ is an indication of his/her intelligence.
  
9. Non-Unitary theory of intelligence propose that:
  - A. there are different manifestations of the analytical-logical ability.
  - B. intelligence is seen as the person's processing capacity.
  - C. intelligence is seen in multiple, discrete forms.
  - D. fluid and crystallised intelligences work together to promote learning.
  
10. A common theoretical framework is necessary for career guidance because:
  - A. it is more student friendly.
  - B. the purpose of assessment for career guidance is to help the student navigate the world of work better.
  - C. parent can be included in the career guidance process.
  - D. the student profile will be theoretically valid.

### **EXERCISE 2: Intelligence, Interest and Aptitude**

**Given below are statements. Underline whether the statement refers to interest, aptitude or intelligence.**

1. Speed of processing information:  
Interest or Aptitude or Intelligence.
  
2. Appropriate use of accumulated knowledge to solve everyday problems:  
Interest or Aptitude or Intelligence.
  
3. Mental Age, Chronological Age:  
Interest or Aptitude or Intelligence.
  
4. A profile of strengths and weaknesses across different intelligence areas:  
Interest or Aptitude or Intelligence.
  
5. A strong desire to become a medical doctor:  
Interest or Aptitude or Intelligence.
  
6. Accumulation of knowledge and experience  
Interest or Aptitude or Intelligence.

7. Capacity for ongoing learning.

Interest or Aptitude or Intelligence.

8. Specific talents and capabilities:

Interest or Aptitude or Intelligence.

### **EXERCISE 3: Common Underlying Theoretical Framework**

What do we mean when we say a common underlying theoretical framework is necessary for career guidance? (200 words).

### **EXERCISE 4: Qualitative and Quantitative Approaches to Assessment**

List 3 features each of the qualitative, quantitative and mixed methods approaches to assessment for career guidance (200 words).

### **EXERCISE 5: Types of Psychological Tests**

Go over the paper entitled: Cross-Cultural Career Assessment: Review and Prospects for the New Millennium. In your own words describe what cultural validity and cultural specificity mean for career assessment. [Click here for the paper:](#)

### **EXERCISE 6: Appropriateness of Psychological Tests**

Go over the case study entitled, "They are all below average". What did the author learn from the experience? (200 words).