THE COMPLETE GUIDE TO COGNITIVE SKILLS AT WORK

Understanding how cognitive skills evolve with job roles and skills

MERCER | mettl

CONTENT

INTRODUCTION

Cognitive intelligence is the most powerful factor that determines if an applicant possesses the aptitude to perform well at work. It determines how much an employee is capable of up-skilling, cross-skilling and taking up leadership roles.

However just bunching together numerical, verbal and reasoning ability questions is not what makes an effective cognitive assessment. Allow us to throw light on the gray matter.

DID YOU KNOW?

"The correlation between cognitive ability (IQ) and work performance is 84%. No wonder ~80% of fortune 500 companies make use of IQ tests to screen applicants."

1. SCIENCE OF COGNITION

1.1) UNDERSTANDING HUMAN INTELLIGENCE

Human intelligence is the mental quality that consists of the abilities to learn from experience, adapt to new situations, understand and handle abstract concepts, and use knowledge to manipulate one's environment. In simpler words, it is the ability to acquire and apply knowledge and skills.

- -

Intelligence = Cognitive Intelligence + Emotional Intelligence

- -
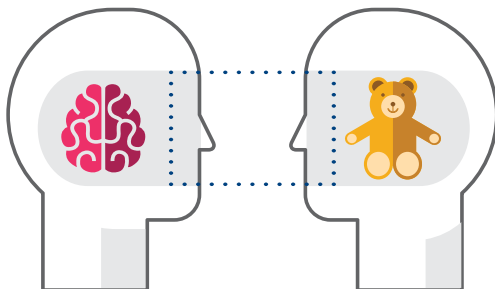
Cognitive Intelligence

Intelligence involving the ability to read one's own and others' emotions and use this reading to manage one's own thoughts and behaviors.

Emotional Intelligence

It is a form of intelligence involving the ability to read one's own and others' emotions and use this reading to manage one's own thoughts and behaviors.

1.2) UNDERSTANDING COGNITIVE INTELLIGENCE

One of the earliest and most reliable research to quantify cognitive intelligence was carried out by Charles Spearman in the early 20th century. Spearman established that there must be one central factor that influences our cognitive abilities. He termed this central factor as general intelligence (g).

'G' Factor

General Intelligence factor is a variable that is required in all tasks that require intelligence.

The definition of 'g' was further expanded and bifurcated into two by Raymond Cattell, who proposed that 'g' consists of two parts: Fluid and crystallized Intelligence.
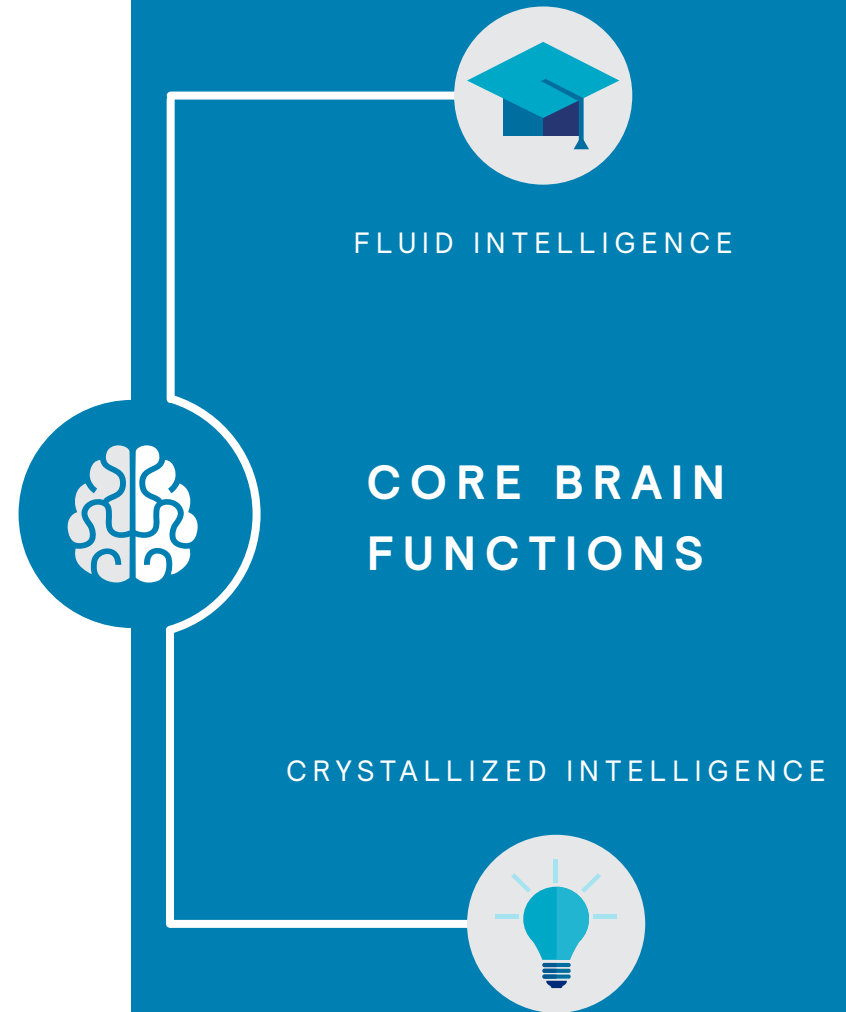
A) Fluid Intelligence:

Ability to store and manipulate new information. Fluid intelligence can be defined as the ability to solve unfamiliar problems, by making use of logical reasoning. This ability is not dependent on prior learning, life experience or education.

B) Crystallized Intelligence:

Ability to retrieve and use information that has been acquired throughout a lifetime. Crystallized intelligence is composed of all the knowledge that we acquire during our lifetime.

How strong our fluid and crystallized intelligence is, depends upon the cognitive brain processes/functions that power them. As discussed before, there are 4 core cognitive brain processes that power our cognitive intelligence, namely: **Speed, Memory, Attention and Perception/ Visualization.**

Hence there are three factors that contribute towards the formation and manifestation of our Cognitive Intelligence: **Fluid Intelligence, Crystallized Intelligence, and Core brain functions**

FLUID INTELLIGENCE

CORE BRAIN FUNCTIONS
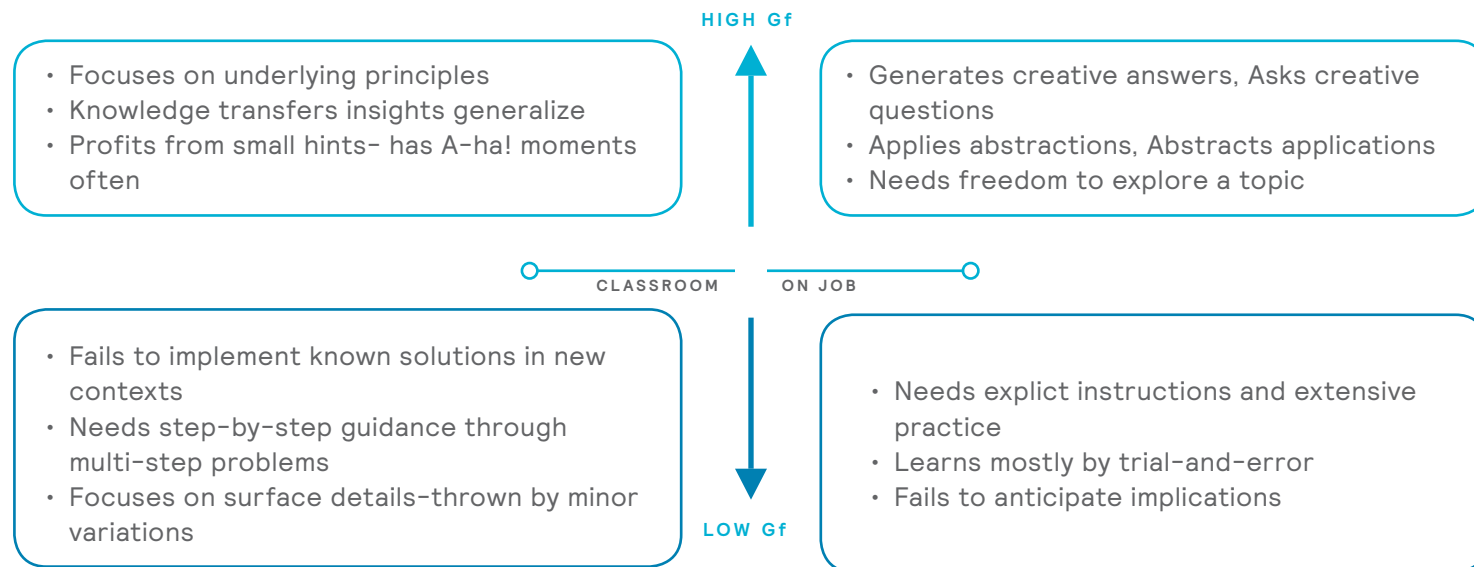
CRYSTALLIZED INTELLIGENCE

A) FLUID INTELLIGENCE:

Fluid intelligence can be defined as the ability to solve unfamiliar problems, by making use of logical reasoning. This ability is not dependent on prior learning, life experience or education.

Example: The true use of fluid intelligence is exemplified by early men who used instincts, logical reasoning and problem solving skills to survive. They did not have any education or access to any form of knowledge that would help them to meet their day to day needs of food, shelter and protection from predators.

HIGH Gf

- Focuses on underlying principles
- Knowledge transfers insights generalize
- Profits from small hints- has A-ha! moments often

- Generates creative answers, Asks creative questions
- Applies abstractions, Abstracts applications
- Needs freedom to explore a topic

CLASSROOM   **ON JOB**

- Fails to implement known solutions in new contexts
- Needs step-by-step guidance through multi-step problems
- Focuses on surface details-thrown by minor variations

- Needs explict instructions and extensive practice
- Learns mostly by trial-and-error
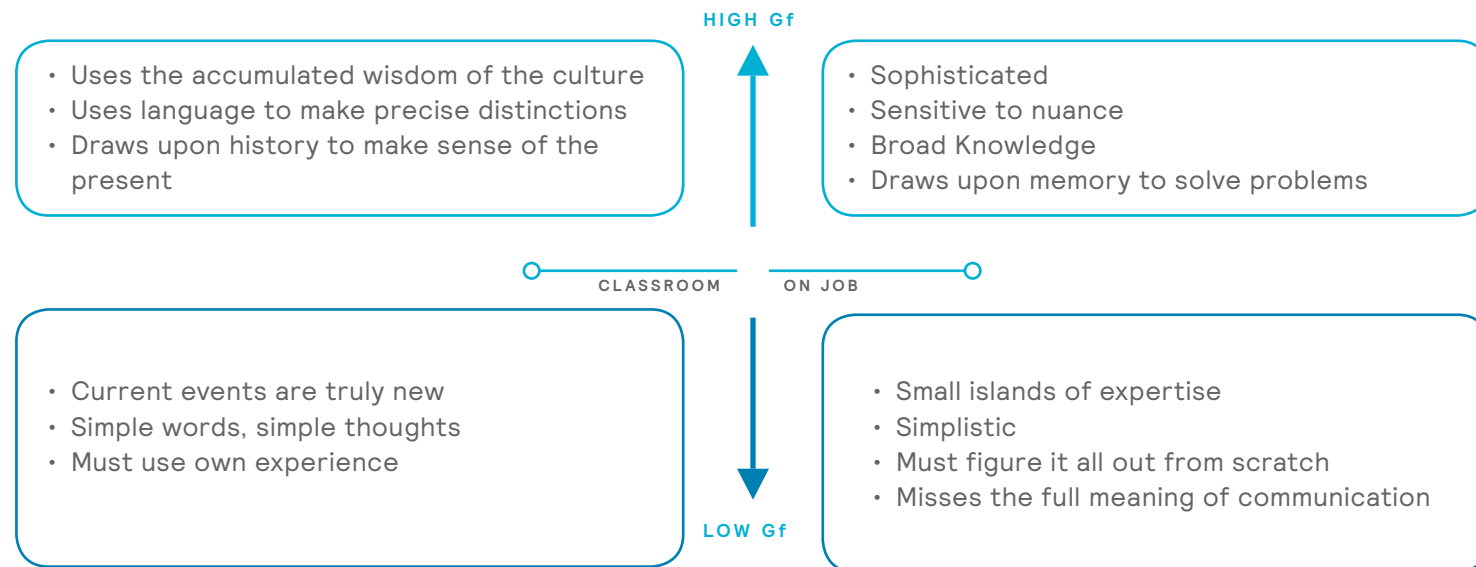- Fails to anticipate implications

LOW Gf

B) CRYSTALLIZED INTELLIGENCE

Crystallized intelligence is defined as the ability to use learned knowledge and experience.

Example: When we are using formulas to solve mathematical problems or applying rules of grammar to make sentences and write, we are using crystallized intelligence. The learning and understanding of grammar and mathematics involves fluid intelligence, using that knowledge to solve problems or write, involves use of crystallized intelligence. Same goes for driving, once learned, we rely on crystallized intelligence to drive.

HIGH Gf

- Uses the accumulated wisdom of the culture
- Uses language to make precise distinctions
- Draws upon history to make sense of the present

- Sophisticated
- Sensitive to nuance
- Broad Knowledge
- Draws upon memory to solve problems

CLASSROOM   ON JOB

- Current events are truly new
- Simple words, simple thoughts
- Must use own experience

- Small islands of expertise
- Simplistic
- Must figure it all out from scratch
- Misses the full meaning of communication

LOW Gf

C) CORE COGNITIVE BRAIN PROCESSES

Core cognitive brain functions are the most important and highest order brain processes that are responsible for collecting and processing information. These brain functions are the fuel that power fluid and crystallized intelligence. Any disruption or injury to a part of brain that is responsible for performing any of these functions directly impacts our fluid and/or crystallized intelligence.

ATTENTION

It is the cognitive process of focusing on the important details and ignoring futile aspects of information. This can further be categorized as Sustained Attention, Alternating Attention, Attention to Details.

MEMORY

Memory is a cognitive function that allows us to encode, store, and effectively recover previously learned experiences and information. Memory can be divided into two subparts: Short term memoery & Long term memory

SPEED

It is the cognitive process which can be defined as time it takes for a person to do a mental task. In other words, time between receiving and responding to a stimuli.

VISUALIZATION

Visual-perceptive functions are the functions that allow us to recognize and distinguish between different stimuli. They help us in interpreting, attributing, and associating things that we see into known categories and embed them into our

2. 12 CORE COGNITIVE COMPETENCIES

2.1) WHAT IS 'COMPETENCY'?

In order to measure intelligence, we need to identify the cluster of abilities or skills, in the form of which intelligence manifests itself. These skills and abilities cluster is called a 'competency'.

We have identified the key competencies that help in accurate measurement of our fluid intelligence, crystallized intelligence and core cognitive brain functions.

By measuring the level of these competencies in a candidate, HR's can easily decide if the candidate is right for a job role or not.

Benefits of Basing Assessments on 'Competencies'

Basing cognitive assessments on competencies help in customizing them for different job roles and job levels. It also helps in standardizing and structuring hiring process.

It also helps in identifying training needs in employees as cognitive assessments help in identifying the cognitive competencies that an employee is weak in or lacks.

On the flip side, by helping identify employees who are strong in certain cognitive competencies, they can be selected for advanced training and even help in the identification of high potentials for succession planning and leadership development.

BENEFITS OF BASING ASSESSMENTS ON 'COMPETENCIES'

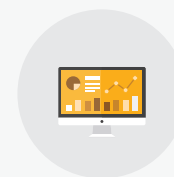| ADVANCED TRAINING | LEARNING AGILITY | LEARNING & DEVELOPMENT | JOB PERFORMANCE | GROWTH | HIRING | ABILITY TESTING | HIGH POTENTIAL IDENTIFICATION |
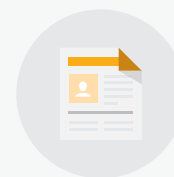
CORE COMPETENCIES TO MEASURE COGNITIVE INTELLIGENCE AT WORK

2.2) MEASURING FLUID INTELLIGENCE

ABSTRACT REASONING

Abstract reasoning evaluates lateral thinking skills or fluid intelligence of a candidate's to swiftly identify logical rules, patterns and trends to formulate meaningful information for solving problems. Candidates with strong Abstract Reasoning ability are likely to be creative while solving novel problems. They are likely to be capable of integrating data logically to arrive at decisions.

It assesses an individual's capability to reason logically and identify patterns and similarities between shapes, figures and data.

On-The-Job Application

- Helps in identifying logical rules, patterns and trends to formulate meaningful information for solving problems.
- Enhances the ability to solve novel problems.
- Increases the capability of integrating data logically to arrive at decisions.

Tools To Measure Competency

The Raven's Progressive Matrices

SPATIAL REASONING

Spatial reasoning is the ability of a candidate to visualize and manipulate two-dimensional and three-dimensional shapes or patterns or designs. Candidates with strong spatial reasoning abilities are able to quickly analyze and work on complex set-ups in designs and spatial elements in jobs.

Spatial Reasoning involves creating a mental image of an object in order to reach a certain conclusion.

On-The-Job Application

• Triggers innovative discovery and simple problem-solving.
• Enhances the ability to visualize and reason spatially.
• Displays the ability to draw conclusions about an object with limited information.

Tools To Measure Competency

Mirror and Water Image Questions

CREATIVITY

Creativity tests measure specific cognitive processes such as thinking divergently, making associations, constructing and combining broad categories, or working on many ideas simultaneously. However, they are best thought of as measures of creative potential because creative achievement depends on additional factors not measured by creativity tests, such as technical skill, knowledge of a field, mental health, or even opportunity.

On-The-Job Application

• Create and manipulate models such as process models or data . models
• Think outside the box to solve business problems and strategize
• Interpret data in a way that helps in achieving business goals

Tools To Measure Competency

Guilford's test of Divergent Thinking – Alternative Uses Task, Remote Associates

Torrance Test of Creative Thinking – Incomplete Figures, Artistic-Assessment Tests, Self-Assessment Tests

2.3) MEASURING CRYSTALLIZED INTELLIGENCE

NUMERICAL REASONING

Numerical reasoning refers to a candidate's speed and accuracy while solving simple arithmetic problems that involve the use of operations like addition, subtraction, multiplication and division.

On-The-Job Application

- Interpreting and analyzing numerical data to draw out logical conclusions and make reasoned decisions in a business environ ment.
- Deriving information for a business to monitor its progress and performance.
- Efficiently collect, understand, study, and present data to solve problems.

Tools To Measure Competency

Averages, BODMAS, Percentage

VERBAL ABILITY

Verbal Ability assesses a person's capability to understand verbal and written communication. This includes being able to understand words. This essentially means not only knowing what words mean in general but what their contextual meanings are. Verbal Ability also includes using correct grammar and punctuation while writing anything from emails to reports. Being able to process large amounts of information by possessing good reading skills is also an essential part of Verbal Aptitude.

On-The-Job Application

- Communicating with customers, clients, coworkers and management.
- Knowing how to construct grammatically correct content. Ex   . pressing oneself with ease, accurately and precisely
- Taking less time to understand and process information
- Understanding client and organizational needs and delivering them
- Managing people and relationships

Tools To Measure Competency

Sentence Correction, Sentence Completion, Audio Questions, Essay Writing, Precise Writing, Email Writing, Reading Comprehension.

DATA ANALYSIS

Data Analysis refers to the ability to structure observations that are obtained from different data sources. This skill checks whether a candidate is able to interpret a large amount of data and whether is able to draw logical conclusions from that. This skill is required to analyze data to identify trends, which can be used to take future courses of action. A candidate who is good at Data Analysis is able to logically think and identify the market demand, identify the problems that may be plaguing the organization by noticing upward and downward trends of product sales etc.

On-The-Job Application

- Structure observations that are obtained by different data sources
- Be skilled in breaking down a big problem into smaller parts for better understanding of the problem
- Follow a structured approach to solve the problem efficiently
- Accurately measure and monitor the business growth

Tools To Measure Competency

Graphs, Charts, Tables

CRITICAL THINKING & LOGICAL REASONING

Critical Thinking & Logical Reasoning refers to the ability to analyze a situation in order to form a judgement. It is based on logical reasoning and evidence. A candidate's ability to think out-of-the-box to arrive at innovative solutions to a problem. The sub-skills required for critical thinking include the ability to evaluate arguments, draw inferences, interpret information, recognize assumptions etc.

On-The-Job Application

- Have the ability to use steady and consistent approach to arrive at a conclusion
- Be good at structuring problems, situations and facts in order to conceive a solution
- Have a strong thinking and understanding process

Tools To Measure Competency

Watson Glaser Critical Thinking Appraisal, Critical Reasoning

DECISION MAKING

Decision Making refers to the ability of the person to take right decisions. It identifies the ability of a candidate to choose between a given set of alternatives. It tests whether a candidate can take the most rational decision when faced with difficult choices. The sub-skills include identifying the cause and effect, drawing conclusions and identifying the best course of action.

On-The-Job Application

- Making better usage of resources
- Facing the organizational challenges and problems
- Dealing with business growth
- Increasing overall efficiency
- Achieving objectives
- Innovating new ideas
- Motivating the employees

Tools To Measure Competency

Statement Conclusion, Statement-Course of Action

PROBLEM SOLVING

Problem Solving refers to a person's ability to reason and provide systematic solutions to a given problem. Effective problem solving involves four basic steps: identifying the problem, looking for suitable replacements, substitutes or solutions, evaluating and finalizing solutions and executing the best solution.

On-The-Job Application

- Problem-solving skills have a deep impact on our career as a fundamental part of every job is to identify ways and means to solve various problems
- Problem-solving skills of a candidate are also essential for maintaining interpersonal relationships.
- It helps measure decision making ability, reasoning skills and numerical reasoning skills of candidates.

Tools To Measure Competency

Arrangements (Ranking, Circular, Linear), Analogies (Verbal, Semantic, Number and Letter)

2.4) MEASURING CORE BRAIN FUNCTIONS

ATTENTION TO DETAIL

In business aspect, **Attention To Detail** definition includes the ability to concentrate on every minute detail of a task. It is very critical for organizations to recruit resources with good attention to detail ability, especially for profiles that require one to work on huge data maintaining concentration level, and sustain focus in order to ensure quality work without any errors.

On-The-Job Application

• Reduce errors in the job that requires high level of concentration
• Ensures that the employee does not make too many mistakes with details and cross check their work

Tools To Measure Competency

Comparison based questions on texts, number, images and visuals.

MEMORY TEST

Memory tests measure how strong our short term and long term memory is by making us observe a variety of objects, texts, shapes and other objects and then assessing how much of that information were we able to accurately retain and recall later.

On-The-Job Application

Memory tests are important in jobs where an employee has to observe a large plethora of things on a daily basis and retain and recall them accurately later. E.g. Police force, Doctors

Tools To Measure Competency

Visual Images

PERCEPTUAL SPEED TEST

Perceptual Speed is defined as the time it takes an individual to complete a mental task. It is linked to the speed at which an individual can understand and react to the information they receive, whether it be auditory (language), visual (letters and numbers) or motor (movement). In simple words, processing speed is the time taken to receive and respond to a stimulus.

On-The-Job Application

- The faster the processing speed, the more efficient a person is in their ability to think and learn.
- If a person's processing speed is poor, it adversely impacts their ability to make decisions, behave rationally, and carry out instruc tions correctly.

Tools To Measure Competency

Classic Conners (CPT) test and the direct and indirect digits test from the Weschler Memory Scale (WMS)

3. READY TO USE COGNITIVE COMPETENCY FRAMEWORKS FOR EVERY JOB ROLE

As is not possible to create a competency framework for each job role in existence. We decided to explore if there are certain job roles that require the same cognitive abilities and would therefore have the same competency framework.

Our research yielded that yes there in fact are job roles that require the same cognitive abilities.

For example Customer Service, Receptionist and Sales Executive all require basic communication skills and performing the same kind of task day after day.

What are Cognitive Assessments?

Cognitive assessments assess if a candidate possess the cognitive competencies that are needed to perform the job role which he/she is being hired for.

In order to create a cognitive assessment, two tasks are required:

Grouping of competencies into 'Competency Frameworks':

Each job role requires execution of a certain type of tasks. Completing these tasks require a specific set of competencies. These specific set of competencies that are required to execute all the required tasks in a specific job role is called a competency framework.

Grouping of job into 'Job Categories':

Each job role that requires the same type and level of cognitive competencies are part of the same job category.

3.1) METTL'S JOB CATEGORIZATION FRAMEWORK:

BASIS FOR CREATING COGNITIVE COMPETENCY FRAMEWORK FOR EACH JOB ROLE

To make the task of identifying job roles that require the same set of cognitive competencies easier, we created a 'Job Categorization Framework'. On the Basis of this framework, we can bucket any job role in 5 separate job categories. The 5 job categories are : level 1, level 2, level 3, level 4 and level 5.
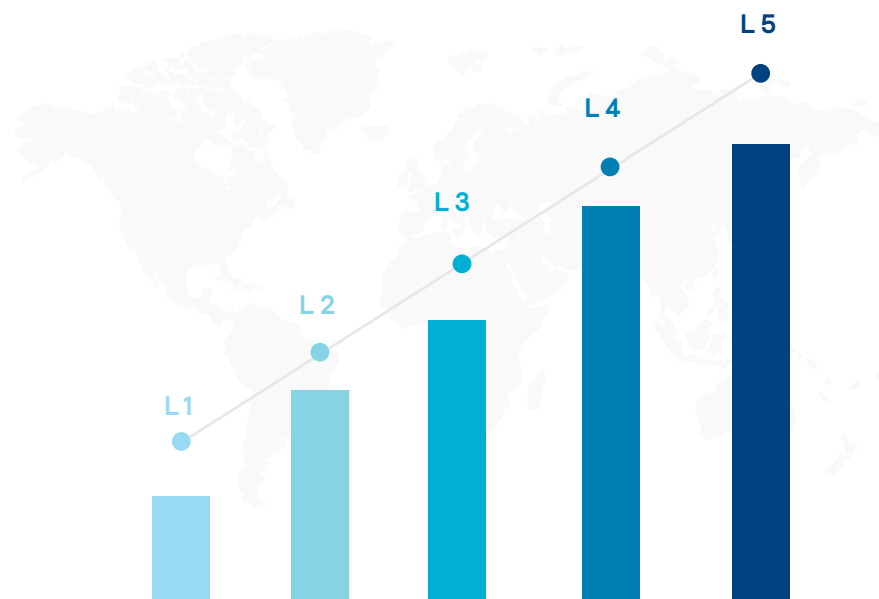
The next question that comes to mind is-

So how do we bucket jobs into one of these 5 job categories?

A job category contains job roles that are similar in nature and require the same set of cognitive competencies to perform them. In other words, each job category has its own distinctive cognitive competency framework, that applies to all the job roles falling inside that category.

Now we know that every job requires completing some designated tasks. The tasks can be:

Repetitive	Novel
Easy	Complex
Low Impact	High Impact

The job family that your job role falls in depends on the nature of the tasks that you are expected to complete in your job role on a day-to-day basis. In other words, the nature of tasks determines the nature of your job. Your job can be very data centric (requires information processing) or strategic (require solution generation or decision making). The tasks can be required to be performed in low/high volumes and at varying frequency (seldom/often)

The nature of your job hence is dependent on 3 broad competency categories(information processing, solution generation and decision making) and two factors pertaining to these competency categories (frequency and level).

The 3 competency categories are:

INFORMATION
PROCESSING

SOLUTION
GENERATION

DECISION
MAKING

Information Processing: Refers to a person's proficiency is carrying out numerical, analytical and critical reasoning

Solution Generation: Refers to a person's ability to think out of the box by making use of creativity and abstract reasoning competencies

Decision making: Refers to a person's ability to solve problems and take well thought out, rational and accurate decisions

The two factors pertaining to each competency category are:

Frequency: How many times in a day does an employee need to make use of a particular competency.

Level: How difficult are the tasks involving use of a particular competency, which will determine if an employee needs to have basic knowledge of a competency or be proficient in it.

METTL'S JOB CATEGORIZATION FRAMEWORK

Decision making
Frequency: High
Level: High

Solution Generation
Frequency: High
Level: High

Information Processing
Frequency: High
Level: High

F   F

L   L

F   L

- Information Processing
- Solution Generation
- Decision making
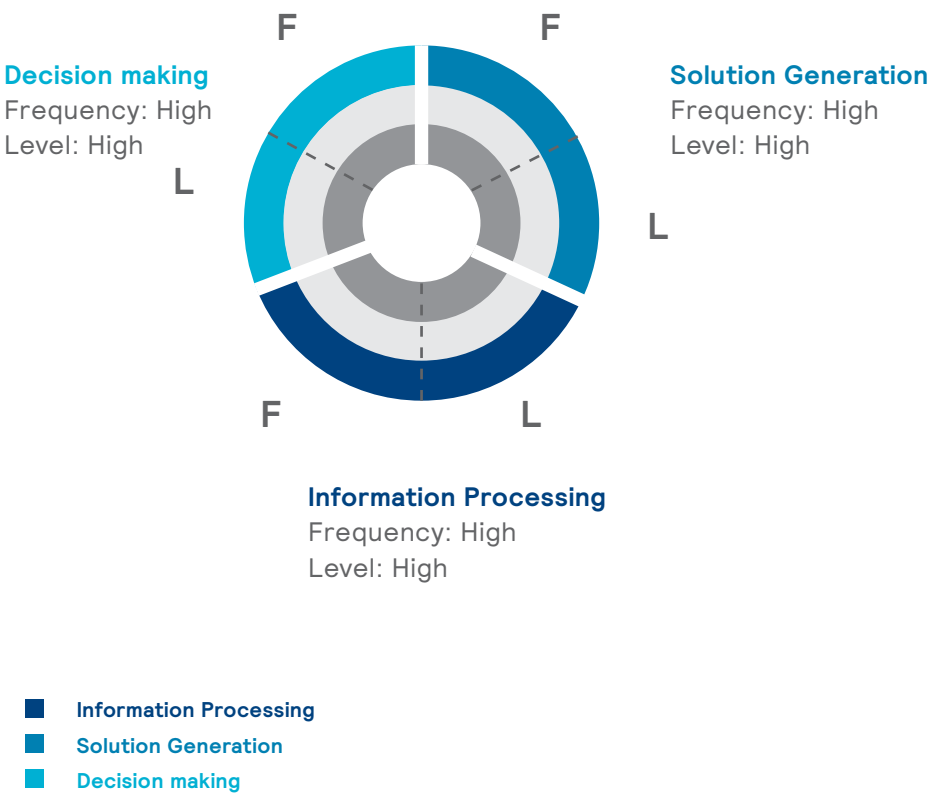
Core Competency Type	Frequency	Levels
Information Processing	Low Volume	Simple
	Medium Volume	Moderately Difficult
	High Volume	Difficult
Solution Generation	Infrequently Required	Incremental
	Often Required	Mid Radical
	Continuously Required	Radical
Decision making	Infrequently Required	Low Impact
	Often Required	Medium Impact
	Continuously Required	High Impact

3.2) COGNITIVE COMPETENCY FRAMEWORK FOR JOB FAMILIES

Mettl's Job role categorization framework has identified five different pools of job roles that differ from each other in the nature of the job and the cognitive competencies required. We call this pool of job role as a 'job family'. Each job family contains job roles that are similar in nature and require the same set of cognitive competencies to perform them. In other words, there is one cognitive competency framework for each job family.

Here, we disclose our famed cognitive competency framework for each job category/level.

LEVEL 1

Can perform routine tasks that have a clear mandate & don't involve decision making or analytics.

ADMINISTRATIVE AND CLERICAL ROLES

Job role examples

Data Entry Operator, Receptionist, Entry Level Clerk, Constrained Back Office Roles

F **L**
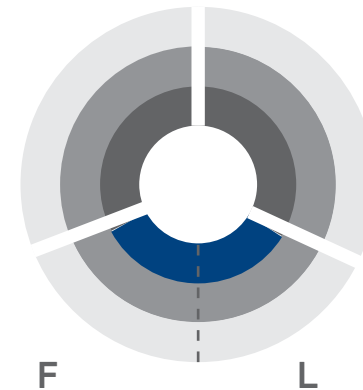
Information Processing
Frequency: Low
Level: Low

COMPETENCIES:

Fluid Intelligence	Crystallized Intelligence	Core Brain Functions
ABSTRACT REASONING	NUMERICAL REASONING	ATTENTION TO DETAIL
Basic	Basic	Medium to High
	VERBAL ABILITY	
	Basic	

LEVEL 2

Able to learn a trade in a hands-on manner and perform tasks involving analytical abilities.

EXECUTIVE ROLES

Job role examples

Customer Service, Receptionist, Sales Executive, Entry Level Accounting, Business Supervisors

COMPETENCIES:

Fluid Intelligence	Crystallized Intelligence	Core Brain Functions
NA	NUMERICAL REASONING	ATTENTION TO DETAIL
	Medium	Medium to High
	VERBAL ABILITY	
	Basic	
	DECISION MAKING	
	Basic	

Decision making
Frequency: Low
Level: Low
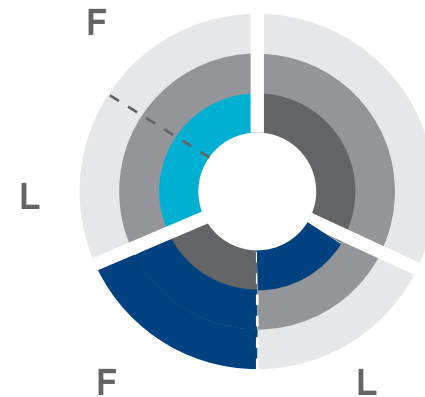
Information Processing
Frequency: Medium to High
Level: Low

LEVEL 3

Learns and infers. Can perform advanced cognitive functions like problem-solving or decision making.

FUNCTIONAL AND SUPERVISORY ROLES

Job role examples

Engineers, Sales Managers, Senior Accountants, QA Roles, Entry Level Developers, Teachers

Decision making
Frequency: Low
Level: Low
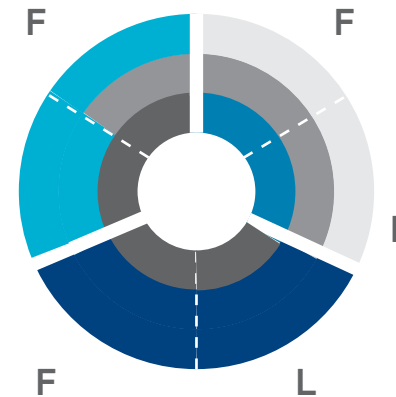
Solution Generation
Frequency: Low
Level: Low

Information Processing
Frequency: Medium to High
Level: Medium to High

COMPETENCIES:

Fluid Intelligence	Crystallized Intelligence	
ABSTRACT REASONING	NUMERICAL REASONING	DECISION MAKING
Basic	Medium	Medium
	VERBAL ABILITY	PROBLEM SOLVING
	Basic	Medium
	CRITICAL REASONING	
	Medium	

LEVEL 4

Able to make key decisions and inferences from observed data and experiences.

SENIOR MANAGERIAL & BUSINESS HEAD ROLES

Job role examples

Research Scientists, CXO Suite, Data and Research Analysts, Venture Capitalists, Product Managers, Strategy Consultants, Architects, Stock Market Traders

COMPETENCIES:

Fluid Intelligence	Crystallized Intelligence	
ABSTRACT REASONING	NUMERICAL REASONING	DECISION MAKING
Medium to Complex	Complex	Medium to Complex
CREATIVITY	VERBAL ABILITY	PROBLEM SOLVING
Low to Medium	Basic	Medium to Complex
	CRITICAL REASONING	
	Complex	

Decision making
Frequency: High
Level: High
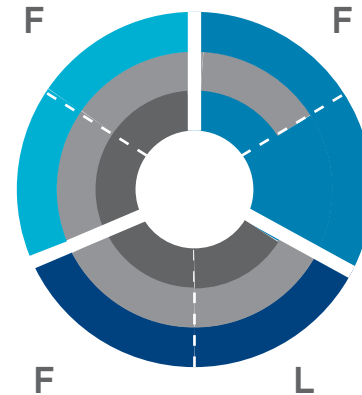
Solution Generation
Frequency: High
Level: Medium to
High

Information Processing
Frequency: High
Level: High

LEVEL 5

Can deal with ambiguity and make intelligent decisions. High learning and problem solving ability.

LEADERSHIP AND STRATEGIC ROLES

Job role examples

Startup Founders, Product Innovators, Stock market Traders

Decision making
Frequency: High
Level: High

Solution Generation
Frequency: High
Level: High

Information Processing
Frequency: High
Level: High

COMPETENCIES:

Fluid Intelligence	Crystallized Intelligence	
ABSTRACT REASONING	NUMERICAL REASONING	DECISION MAKING
Medium to Complex	Complex	Medium to Complex
CREATIVITY	VERBAL ABILITY	PROBLEM SOLVING
Complex	Basic	Medium to Complex
	CRITICAL REASONING	
	Complex	

4. TOOLKIT TO TEST ACCURACY OF COGNITIVE ASSESSMENTS

Having created a cognitive competency framework that can be molded to identify the cognitive ability demands of any job role, we have successfully completed the 1st and 2nd step of creating effective cognitive assessments.

Once we identify which type and level of cognitive abilities are required in a specific job role, we create a question bank that contains questions on all the different cognitive abilities included in the competency framework for a particular job role.

The question type (MCQ, Guesstimates, case studies etc.) is dependent upon the competency we are trying to assess. For example, case studies are a great way to assess decision-making and problem- solving competency. Similarly, MCQs are effective for numerical and verbal ability assessment, whereas guesstimates are useful for assessing analytical thinking.

Once the assessment has been created for a particular job role, its effectiveness in selecting the right talent in an organization needs to be tested. To have a cognitive assessment adept in identifying the right talent we fine-tune three parameters: The assessment mean score, difficulty index and, discrimination index.

Effective Cognitive Assessment Creation Toolkit

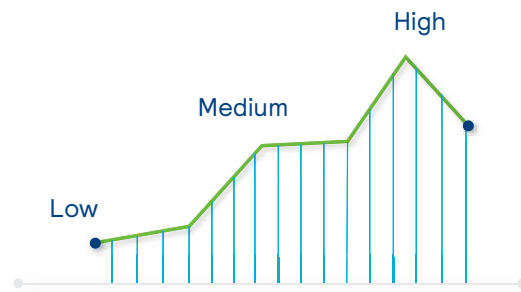Step 1) Identify cognitive competencies

Step 2) Create Competency Framework

Step 3) Decide Question Types

Step 4) Test assessment accuracy

4.1) ASSESSMENT MEAN SCORE

Mean Score is the average score that candidate pool giving the same cognitive assessment achieved.

Low Mean Score

Low Number of Filtered Candidates with Above Average IQ

High Mean Score

High Number of Filtered Candidates with an Average IQ

Low mean score signifies that less number of candidates from the talent pool were able to score high on the aptitude test.

Medium mean score means that moderate number of candidates were able to score high on the aptitude test

High mean score means that majority of candidates from the talent pool were able to score high on the aptitude test.

The ideal mean score for you depends upon what level of candidates you are looking for **e.g**. Out of your talent pool, If you want to select candidates with the highest cognitive intelligence, your cognitive assessment should have a very low mean score. .

Note: You can adjust the mean score to adjust the number and IQ level of candidates. For example, if you want to select the top 5 percentile of the talent pool, you should aim for an aptitude test with mean score of 5%. It is a tool used for benchmarking an aptitude test as per an organization's requirement.

Disclaimer: The kind of talent you end up with depends on the quality of the talent pool in general. If your talent pool quality in general is poor, selecting even the top 1 percentile may not provide you with high IQ candidates. Vise-a -versa, if your talent pool quality is too high, even lower percentile candidates may turn out to be high in IQ as the average IQ of the talent pool is high.

4.2) DIFFICULTY LEVEL OF EACH QUESTION

Difficulty level is also a tool used for benchmarking an aptitude test as per an organization's requirement.

Difficulty level of a question is considered high if majority of the candidates (50%+) were not able to answer the question correctly. Difficulty level is inversely correlated with mean score. High difficulty index signifies that majority of the candidates will perform poorly/fail the test, whereas high mean score signifies that most candidates were able to score high and hence passed the test.
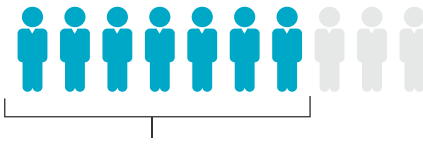
High Difficulty Level

Low Number of Filtered Candidates with Above Average IQ

If the average difficulty level of all the questions in a cognitive assessment is high, it means that on an average the questions included in the assessment are difficult. This means that candidates, on average, will fail the test. However those few who pass will have high IQ as they were able to clear a test deemed difficult by most. So a cognitive assessment with high difficulty level questions will churn out a pool of candidates that is low in number and high in intelligence.

Low Difficulty Level

High Number of Filtered Candidates with an Average IQ

If the average difficulty level of all the questions in a cognitive assessment is low, it means that on an average the questions included in the assessment are easy. This means that candidates, on average, will pass the test. However the IQ of these candidates will not necessarily be very high as they were able to clear a test deemed easy by most. So a cognitive assessment with low difficulty level questions will churn out a pool of candidates that is high in number and low in intelligence.
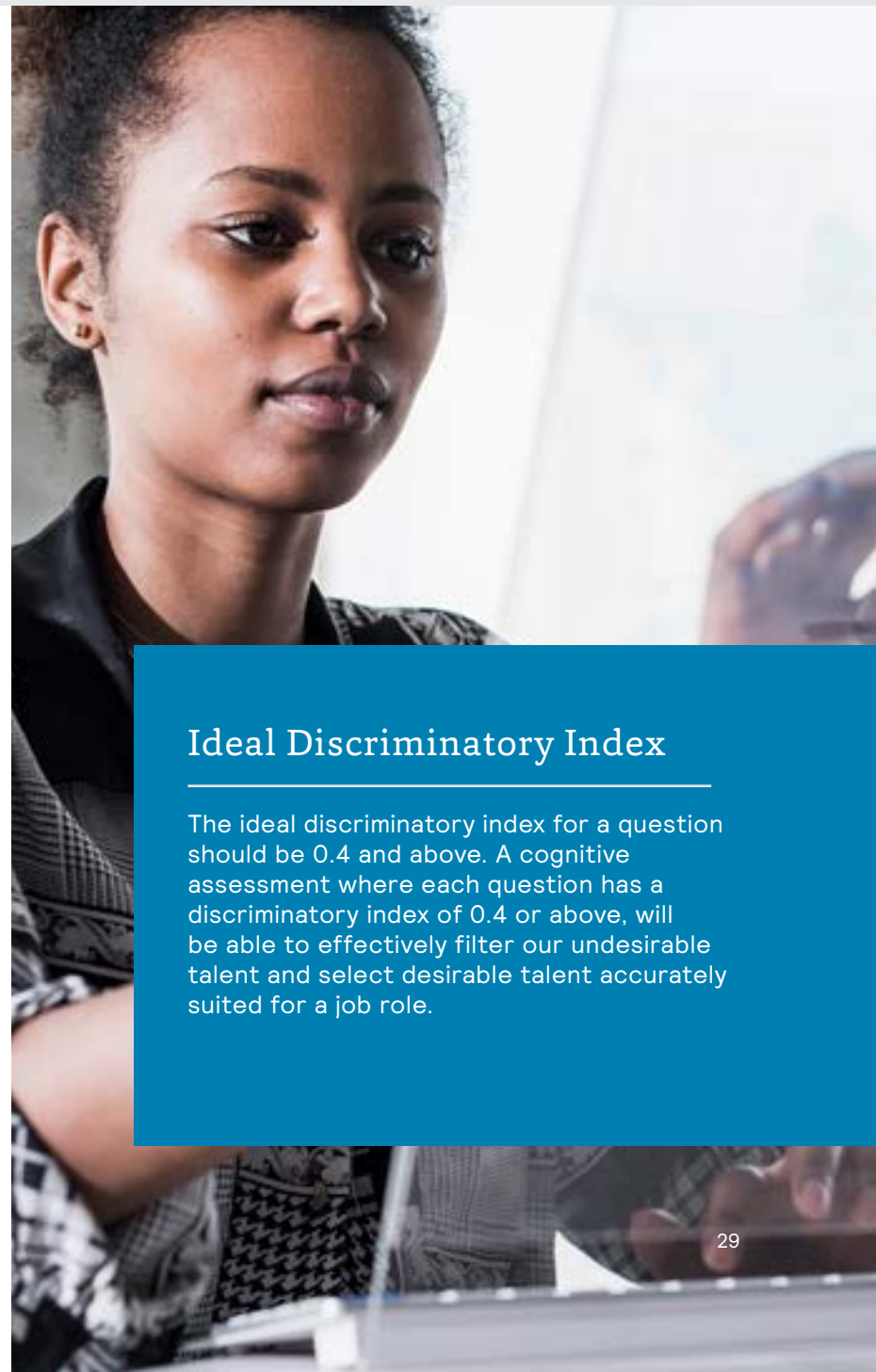
4.3) DISCRIMINATION INDEX OF EACH QUESTION

Discrimination is the degree to which candidates with high overall score in a cognitive assessment also answered a particular question correct. It is an index of a question's effectiveness at discriminating those who know performed well in the test from those who did not.

This index tells us if each question included in the cognitive assessment is able to accurately identify candidates with high cognitive intelligence and filter out those candidates with low cognitive intelligence. It determines if a cognitive assessment is valid or not.

Note: Unlike mean score and difficulty index, discrimination index is not a benchmarking tool. It's a validation tool which is critical to determine if an aptitude test is usable or not.

LEVEL OF DISCRIMINATION

INDEX RANGE	DISCRIMINATION LEVEL	ACTION
0.19 AND BELOW	POOR ITEM	SHOULD BE ELIMINATED OR NEED TO BE REVISED
0.20-0.29	MARGINAL ITEM	NEEDS SOME REVISION
0.30-0.39	REASONABLY GOOD ITEM	FOR IMPROVEMENT
0.40 AND ABOVE	VERY GOOD ITEM	RETAIN

Ideal Discriminatory Index

The ideal discriminatory index for a question should be 0.4 and above. A cognitive assessment where each question has a discriminatory index of 0.4 or above, will be able to effectively filter our undesirable talent and select desirable talent accurately suited for a job role.

4.4) THE METTL ADVANTAGE: ADDRESSING SPECIAL CIRCUMSTANCES

How does Mettl customize and benchmark assessments to ensure accurate talent assessment?

By matching the talent pool available with the job role requirement.

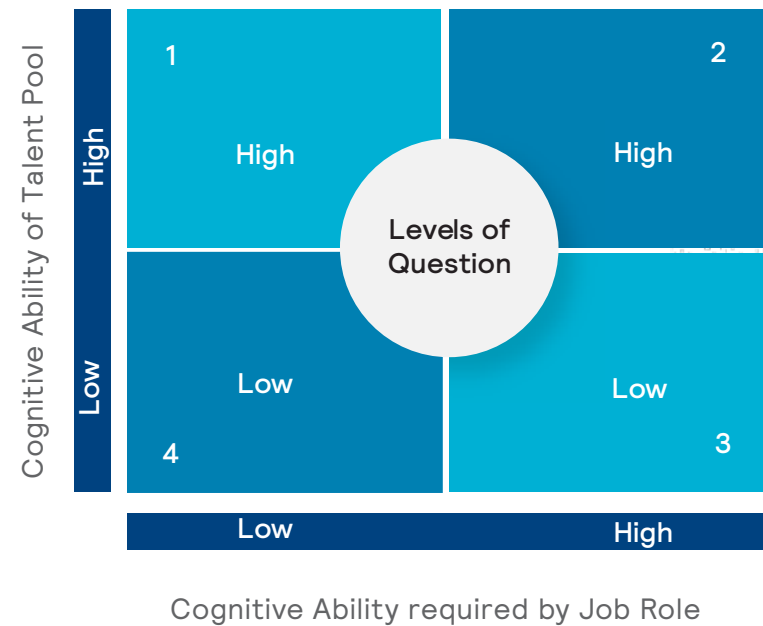**Case 1: Overqualified Talent : Step up the game (Quadrant 1)**

If the talent pool possess higher intelligence than the job role demands, chances are that the cognitive test ideal for that job role/level will be too easy for the talent pool, which means-

Higher number of candidates will ace the test The company will end up with a large pool of screened candidates.

Problem: More number of candidates than available job openings.

Solution: Pick the best, increase the difficulty level of the assessment, so that lesser number of candidates will be able to ace it. The company will go away with the cream-de la-cream of the

Suggestions: Candidates that lie in this quadrant are ideal participants for succession planning, high potential identification and leadership development.

Cognitive Ability required by Job Role

**Case 2: Underqualified talent : Mellow it down (Quadrant 2)**

If the talent pool possess lower intelligence than the job role demands, chances are that the cognitive test ideal for that job role/ level will be too difficult for the talent pool, which means-

Lower number of candidates will ace the test. The company will end up with a very small, compromised pool of screened candidates.

Problem: Less number of candidates than available job openings.

Solution: Make the best of a bad situation, decrease the difficulty level of the assessment, so that more number of candidates will be able to ace it. The company will still be able to fill its openings, even if with slightly compromised talent.

Suggestions: Candidates that lie in this quadrant are ideal participants for learning and development programs to upskill them.
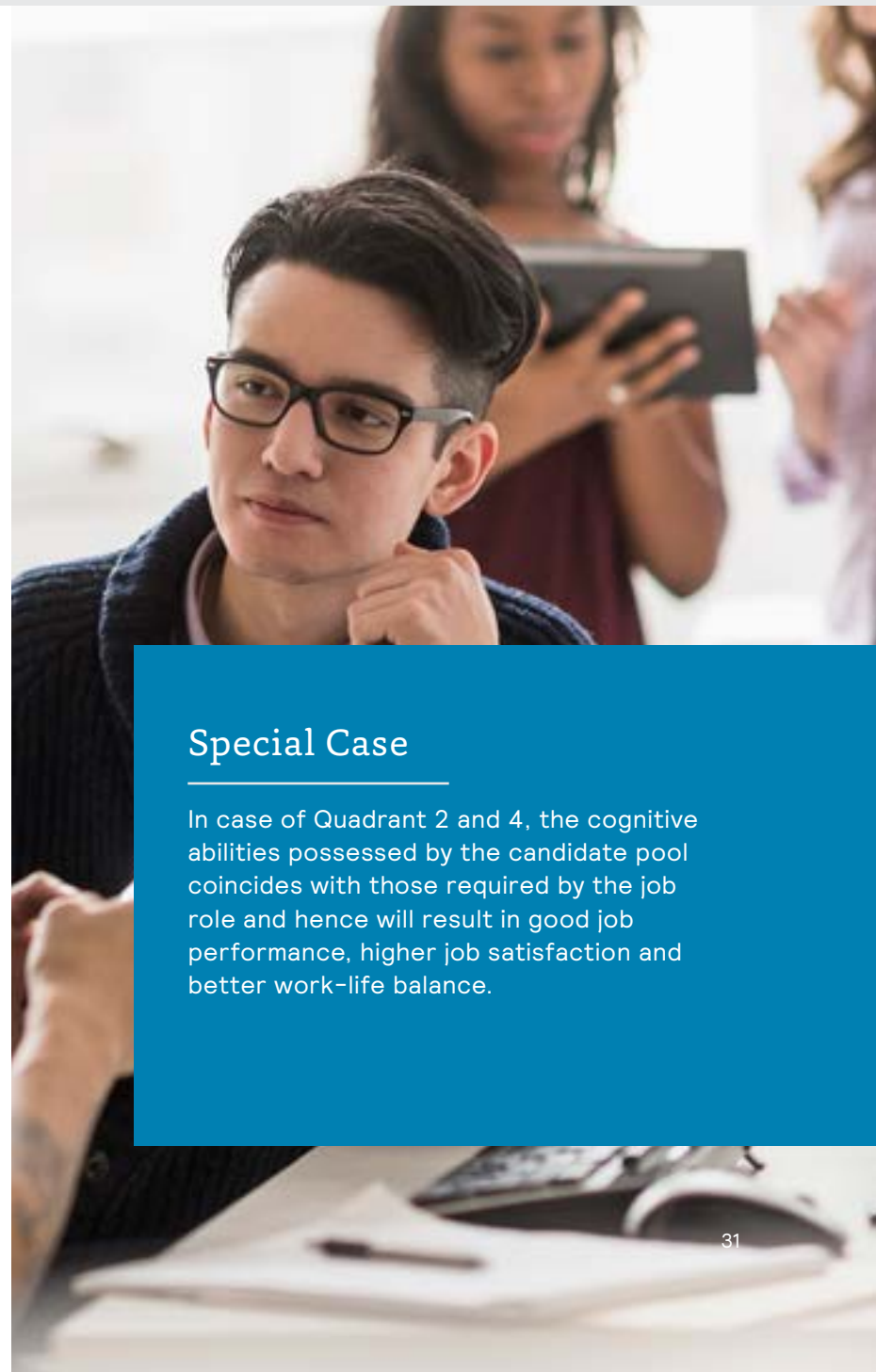
Special Case

In case of Quadrant 2 and 4, the cognitive abilities possessed by the candidate pool coincides with those required by the job role and hence will result in good job performance, higher job satisfaction and better work-life balance.

5. CASE STUDY: HOW A MNC LEVERAGED COGNITIVE TESTS TO THEIR ADVANTAGE

The correlation between cognitive intelligence and work performance is 51% (minimum) and it can go as high as 84%. High intelligence is an indicator of success on the job which is measured on the basis of :

• Evaluation of performance on tasks similar to those encountered on the job

• Performance ratings by supervisors

• Position in the occupational hierarchy

In an organizational setup, cognitive assessments help in three organizational processes;

HIRING

LEARNING & DEVELOPMENT

LEADERSHIP DEVELOPMENT

Why can measuring cognitive intelligence help in predicting success at work?

Cognitive intelligence mainly influences performance through the rate at which people learn knowledge relevant to the job – people with higher cognitive intelligence learn faster.

But cognitive intelligence predicts success even when you take account of job knowledge. With high cognitive intelligence, people are more able to go beyond existing job knowledge and make judgements in unfamiliar situations.

1. Hiring

- Identifying top talent for a job role
- Creating a structured hiring process

2. Learning & Development

- Identifying training needs
- Identifying talent that can be easily upskilled, cross-skilled
- Identifying workforce that can be trained in skills of the future
- Identifying workforce flexibility

3. Leadership Development

- Identifying high potentials
- Succession planning

34%

As per Mettl's Talent Assessment Study 2018, Cognitive assessments have seen a growth of 34% overall from 2016 to 2017.

380%

Though L&D use-case accounts for only 6% of total cognitive assessments used in 2017, it is growing at almost.

29%

On the other its use in Talent Acquisition is growing at a rate of 29%

5.2) USE OF COGNITIVE ASSESSMENTS ACROSS MAJOR INDUSTRIES

IT

Use of cognitive assessments has increased by 29% overall

Its usage during hiring has increased by 28% and during L&D by 101%. The increased usage during L&D is driven by the fact that high cognitive intelligence equals to high learning agility and as IT sector is constantly evolving, its important that the employees in this field are highly agile in learning to keep up with new technologies

BFSI

Usage of Cognitive assessments has increased by 207% overall

Increasing demand for financial analysts and wealth managers from insurance industry has led to a sudden rise in usage of cognitive assessments during hiring and L&D. These roles require high data processing power and analytics skills which can be assessed via cognitive assessments.

Pharma

Use of cognitive has increased by 411% in L&D

Cognitive assessments are the most commonly used assessments in pharma industry with 40% usage among all assessment tools. They have taken precedence over technical and psychometric with companies focusing more on subject matter knowledge and pharma manufacturing skills, which requires candidates/employees to have high cognitive abilities.

Consulting

Usage of cognitive assessments has increased by 99% overall

The surge is usage is led by increase in demand for consultants that can work across various industries and learn the tricks of the trade fast. This requires high brain processing power which can be easily tested via cognitive assessments.
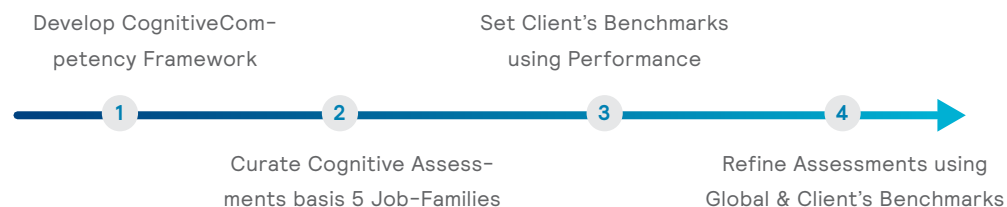
5.3) A BLUEPRINT FOR DEVELOPING FUTURE-READY WORKFORCE

How A Telecom Behemoth was Able to Build Better Teams through Mettl's Cognitive Ability Assessments

Problem: Our client was struggling with inflow of low quality talent, poor learning and development and leadership development programs.

Solution: The client company was facing these issues with identifying skill proficiency and skill gaps in potential hires as well as existing employees as it was not making use of effective cognitive assessments.

Measuring Employees' Cognitive Ability
4-step process adopted

Develop CognitiveCom-petency Framework

Set Client's Benchmarks using Performance

1 **2** **3** **4**

Curate Cognitive Assess-ments basis 5 Job-Families

Refine Assessments using Global & Client's Benchmarks

Issue with hiring: The hiring process that the client was following was not able to identify the top talent needed for a job role.

Issue with Learning and development: The company was struggling with poor ROI yielding training programs.

Issue with Leadership development: The company was not able to identify promising high potentials that they could use to create a succession pipeline.

Step 1: Mettl developed a competency framework for a telecom giant to identify the skills that the organization requires the talent to have during hiring, L&D and Leadership Development, in order for them to be high performers.

Problem Solving — Identify ways and means to solve various problems that come up as a challenge in any job/task

Commercial Acumen — Structure observations and analyze trends to take important business decisions

Decision Making — Evaluate information critically, to identify and choose alternatives based on the values and preferences

Abstract Reasoning — Quickly identify patterns and the logical rule underlying those patterns to arrive at solutions

Verbal Ability — Understand word meanings, word relationships and comprehend a large piece of written information quickly

Step 2: We further customized the cognitive assessment for different job roles and job levels within the company by making use of our job categorization framework
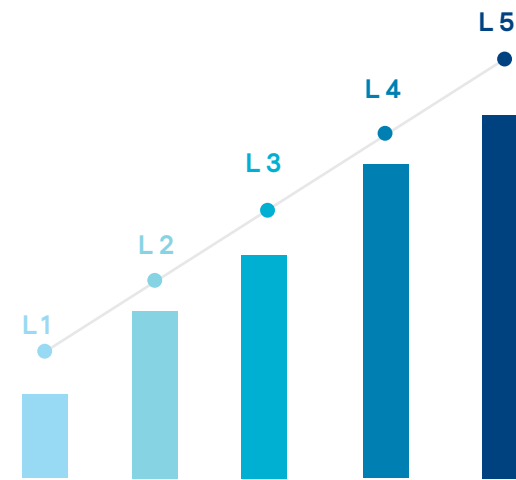
L1: Assistant Sales Manager, Sales Manager, HR Manager

**L2:** Business Analyst, Data Scientist

L3: Business Analyst, Data Scientist

L4: Network Managers, IT, Other Technical Roles

L5: Network Managers, IT, Other Technical Roles

Step 3: Mettl benchmarked the cognitive assessments for the client by making their existing employees take the assessment and then correlating these employee's job performance with their cognitive assessment score to decide if the high performers at work are achieving high score in assessment and vise versa.

This determines that the test is successful in picking out the right kind of talent that the client is looking for.
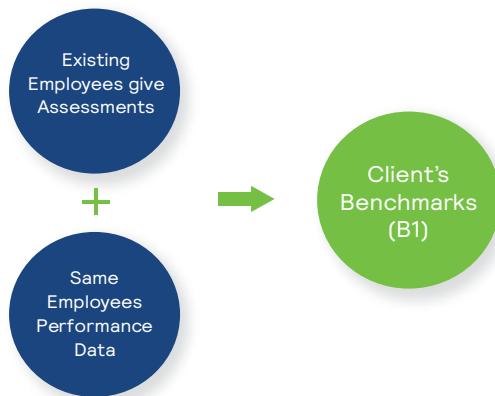
Step 4: We further refined the assessments by using global and client benchmarks to further improve the accuracy of the assessment in identifying the top talent. The competencies included in the competency framework of each job role were assigned weightages as per their importance in predicting

success at work. And after final approval from the client, the cognitive assessment was used in the client company's hiring, L&D and Leadership Development process.

- Competencies
- Weightages
- Benchmarks
- Final Recommendation

Outcome: The client was able to create a 'future ready workforce' that was high performing and learning agile by:

- Hiring the right quality talent

- Accurately identifying skill gaps in them that can be filled with appropriate training

- Successfully identifying high potentials that can be used to create the succession pipeline.

Hire for Performance

Train for Skill-Gaps

Plan for Growth

CONCLUSION

Employee knowledge and skills are the backbone of an organization. The ability to learn and apply knowledge and skills to succeed at any job role is what cognitive assessments measure. The more accurately they are able to measure a candidate's cognitive intelligence, the better quality talent an organization will end up with.

Top talent is spoiled for choice. They are limited and they are wanted. The faster you identify and on-board them, the better, as they are not available in the market for long.

Effective cognitive assessments provide organizations with the power to quickly and effectively differentiate the real talent from the fake one.

As Deloitte puts it,

IN THE WAR FOR TALENT, THE BATTLE IS OVER, AND TALENT HAS WON.

ABOUT US

Mercer I Mettl is a Saas based assessment platform that enables organizations to create customized assessments for use across the entire employee lifecycle, beginning with pre-hiring screening and candidate skills assessment, training and develoment programs for employees/students, certification exams, contests and more.

TRY FOR FREE

INDIA OFFICE

+91-9555114444
Plot85, Sector 44, Gurgaon,
Haryana, India - 122003

Australia: +61390699664
Indonesia: +6285574678938
Singapore: +6531386714

South Africa: +27875517192
UAE: +9718000320460
UK: +441422400843

US OFFICE

+1-650-614-1816
Mettl Technologies Inc. 113
Barksdale Professional Center,
Newark, Delaware 19711, USA

contact@mettl.com

Be sure to carefully read and understand all of the disclaimers, limitations and restrictions before using the assessment services, reports, products, psychometric tools or the company systems or website. Read the complete disclaimer here.

MARSH & McLENNAN
COMPANIES