

## Table of Contents

Metaari's Organizational Enterprise Licensing Model.....	2
Table of Contents .....	3
List of Tables .....	6
List of Figures .....	8
About Metaari .....	10
About the Analyst .....	10
What is Cognitive Learning? Metaari's Definition of Cognitive Learning .....	11
The Foundation of Cognitive Learning is Neuroplasticity .....	13
Learning and Behavior Modification are Identical .....	14
Embodied Cognition is Identical to Cognitive Learning .....	17
The Eight Types of Cognitive Learning Products .....	19
Towards a Formal Neuropedagogy: Metaari's Cognitive Learning Pedagogical Framework .....	20
The Demographics are Huge .....	22
Empirical Evidence on the Effectiveness of Brain Training Products ....	27
Executive Overview: Revenues More than Double by 2023....	31
The Evolving Business Models .....	33
US FDA Approval Raises the Value of Cognitive Learning Products .....	34
Brief Overview of Primary Catalysts Driving the Global Cognitive Learning Market .....	36
Leading Indicators: Private Investment in Cognitive Learning Firms Remains Steady .....	38
Brain Entrainment: Next-Generation Cognitive Learning Products Alter the Competitive Landscape.....	38
AI and Cognitive Computing are Game Changers .....	39
Advanced VR-based Cognitive Learning Products Hit the Market.....	40

Over 560 suppliers operating in 122 countries are cited in this report to help suppliers identify partners, distributors, and resellers.

## Metaari's 2018-2023 Global Cognitive Learning Market

Cognitive Learning Games for Children with Special Needs Gain Traction..	41
Rapid Adoption of Specialized Mental Training Apps for Athletes, First Responders, and Military Personnel .....	42
What You Will Find in This Report .....	44
Where are the Buyers?.....	45
Who is the Buyer?.....	47
What are They Buying? .....	49
Sources of Data on the Global Cognitive Learning Market .....	51
The 2018-2023 Global Cognitive Learning Market .....	56
Metaari's Cognitive Learning Pedagogical Framework.....	56
The Cognitive Spectrum: Carroll's Three-Stratum Theory of Intelligence .....	57
The Response to Intervention (RTI) Model.....	61
Applied Behavior Analysis Therapy (ABA) .....	63
Cognitive Behavior Therapy (CBT) .....	66
Contingency Management .....	69
Biofeedback and Sensory Stimulation Technologies .....	70
Neuromodulation (Brain Stimulation).....	71
Spaced Repetition.....	73
Dual N-Back.....	75
Elaborate Encoding .....	77
Global Cognitive Learning Demand-side Analysis.....	78
Detailed Demand-sided Analysis of the Primary Catalysts Driving the Global Cognitive Learning Market.....	78
Steady Investments Made to Cognitive Learning Companies .....	79
Brain Entrainment: Next-Generation Cognitive Learning Products Alter the Competitive Landscape.....	82
Brain Trainers for Kids Hit the Market .....	84
Brainwave Entrainment is the Foundation of a New Type of Learning .....	86
Biofeedback and Sound and Light Stimulation: Training the Brain with Sensory Stimulation .....	88
Neuromodulation (Brain Stimulation) Technologies.....	95
AI and Cognitive Computing are Game Changers .....	101
Cognitive Computing .....	103
Emotion AI: Emotion Recognition and Sentiment Analysis .....	103
VR-based Cognitive Learning Products are New Learning Technology Types .....	106
Cognitive Learning Products for Kids with Special Needs Drive the Market .....	111

## Metaari's 2018-2023 Global Cognitive Learning Market

Rapid Adoption of Specialized Mental Training Apps for Athletes, First Responders, and Military Personnel .....	114
<b>Worldwide Demand-side Analysis by Seven Regions .....</b>	<b>121</b>
Africa.....	122
Asia Pacific .....	125
Eastern Europe .....	131
Latin America.....	133
The Middle East .....	136
North America.....	139
Western Europe .....	142
<b>Global Demand-side Analysis by Six Buyer Segments (For All Seven Regions Combined) .....</b>	<b>148</b>
Consumers.....	149
PreK-12 Schools.....	151
Solving the 2 Sigma Problem.....	154
Tertiary and Higher Education .....	156
Federal Government Agencies .....	159
Local, State, Provincial, & Prefecture Agencies .....	164
Corporations and Businesses .....	167
<b>Global Cognitive Learning Supply-side Analysis by Eight Product Types</b>	<b>171</b>
Cognitive Fitness Games and Brain Trainers .....	173
Mental Training Apps for Athletes, First Responders, and the Military .....	178
Cognitive Health and Mental Wellness Apps.....	182
The Wellness Wheel: The Eight Dimensions of Wellness .....	183
Emotional Wellness Apps Gaining Traction .....	186
Mindfulness Online Courses, Mobile Apps, and Online Programs .....	190
Cognitive Learning Products for Children with Special Needs.....	195
Digital Mental Health Treatment Products .....	197
Digital Addiction Intervention Products and Services.....	204
Cognitive Disability Therapy and Rehabilitation Products .....	207
<b>Index of Suppliers .....</b>	<b>214</b>

## *List of Tables*

Table 1 - 2016 World Health Organization (WHO) Global Mental Health Statistics.....	25
Table 2 - The 122 Countries across the Seven Regions Tracked by Metaari.....	45
Table 3 - 2018-2023 Global Cognitive Learning Revenue Forecasts (in US\$ Millions).....	56
Table 4 - 2018-2023 Global Cognitive Learning Revenue Forecasts by Seven Regions (in US\$ Millions).....	121
Table 5 - 2018-2023 Cognitive Learning Revenue Forecasts for Africa (in US\$ Millions).....	122
Table 6 - 2018-2023 Cognitive Learning Revenue Forecasts for Asia Pacific (in US\$ Millions).....	125
Table 7 - 2018-2023 Cognitive Learning Revenue Forecasts for Eastern Europe (in US\$ Millions).....	131
Table 8 - 2018-2023 Cognitive Learning Revenue Forecasts for Latin America (in US\$ Millions).....	133
Table 9 - 2018-2023 Cognitive Learning Revenue Forecasts for the Middle East (in US\$ Millions).....	136
Table 10 - 2018-2023 Cognitive Learning Revenue Forecasts for North America (in US\$ Millions).....	140
Table 11 - 2018-2023 Cognitive Learning Revenue Forecasts for Western Europe (in US\$ Millions).....	143
Table 12 - 2018-2023 Global Cognitive Learning Market by Six Buyer Segments (in US\$ Millions).....	148
Table 13 - 2018-2023 Global Consumer Cognitive Learning Revenue Forecasts (in US\$ Millions).....	149
Table 14 - 2018-2023 Global PreK-12 Cognitive Learning Revenue Forecasts (in US\$ Millions).....	151

Table 15 - 2018-2023 Global Higher Education Cognitive Learning Revenue Forecasts (in US\$ Millions) .....	156
Table 16 - 2018-2023 Global Federal Government Cognitive Learning Revenue Forecasts (in US\$ Millions) .....	160
Table 17 - 2018-2023 State and Local Government Cognitive Learning Revenue Forecasts (in US\$ Millions) .....	164
Table 18 - 2018-2023 Corporate Cognitive Learning Revenue Forecasts (in US\$ Millions).....	167
Table 19 - 2018-2023 Revenue Forecasts for Eight Types of Digital Cognitive Learning Products (in US\$ Millions) .....	172
Table 20 - 2018-2023 Revenue Forecasts for Cognitive Fitness and Brain Training Games (in US\$ Millions).....	173
Table 21 - Top Twenty Best-selling Educational Apps Dominated by Three Educational Game Types (as of January 2019).....	176
Table 22 - 2018-2023 Revenue Forecasts for Mental Training Apps for Athletes (in US\$ Millions) .....	178
Table 23 - 2018-2023 Revenue Forecasts for Cognitive Health and Mental Wellness Apps (in US\$ Millions).....	182
Table 24 - 2018-2023 Revenue Forecasts for Mindfulness Online Courses, Mobile Apps, and Online Programs (in US\$ Millions) .....	190
Table 25 - 2018-2023 Revenue Forecasts for Cognitive Learning Products for Children with Special Needs (in US\$ Millions) .....	196
Table 26 - 2018-2023 Revenue Forecasts for Self-paced Digital Mental Health Treatment Products (in US\$ Millions) .....	198
Table 27 - 2018-2023 Revenue Forecasts for Digital Intervention Products and Services (in US\$ Millions).....	204
Table 28 - 2018-2023 Revenue Forecasts for Cognitive Disability Therapeutic and Rehabilitation Software (in US\$ Millions) .....	208

## *List of Figures*

Figure 1 – Metaari's Defines Cognitive Learning as Neuropedagogy.....	12
Figure 2 – Reciprocal Learning: Bandura's Social Cognitive Theory.....	16
Figure 3 – Domains of Human Embodied Cognition.....	18
Figure 4 – The Eight Cognitive Learning Product Types Grouped in Two Broad Categories .....	19
Figure 5 – Metaari's Cognitive Learning Pedagogical Framework.....	21
Figure 6 - Primary Catalysts Driving the 2018-2023 Global Cognitive Learning Market.....	37
Figure 7 – Situated Cognition: Endsley's Model of Situational Awareness.....	43
Figure 8 – 2018-2023 Cognitive Learning Growth Rates by Seven Regions .....	46
Figure 9 - 2018-2023 Global Five-year Growth Rates for Digital Cognitive Learning Products by Six Buyer Segments .....	48
Figure10 - 2018-2023 Global Five-year Growth Rates for Cognitive Learning Products by Eight Content Types.....	50
Figure 11 - Metaari's Actionable Competitive Intelligence Methodology.....	52
Figure 12 - Carroll's Three-Stratum Theory of Intelligence .....	57
Figure 13 – Types of Human Memory .....	59
Figure 14 - Three-tiered Response to Intervention (RTI) Model.....	61

Figure 15 - 1997 to 2018 Investments Made to Global Cognitive Learning Companies (in US\$ Millions) ..... 79

Figure 16 - Ten Neuromodulation (Brain Stimulation) Technologies Used in Cognitive Learning Products ..... 96

Figure 17 – Cognitive Tutors Can Exceed the 2 Sigma Shift ..... 155

Figure 18 - The Wellness Wheel: The Eight Dimensions of Wellness..... 183

Figure 19 – Domains of Emotional Intelligence (EQ) ..... 187

