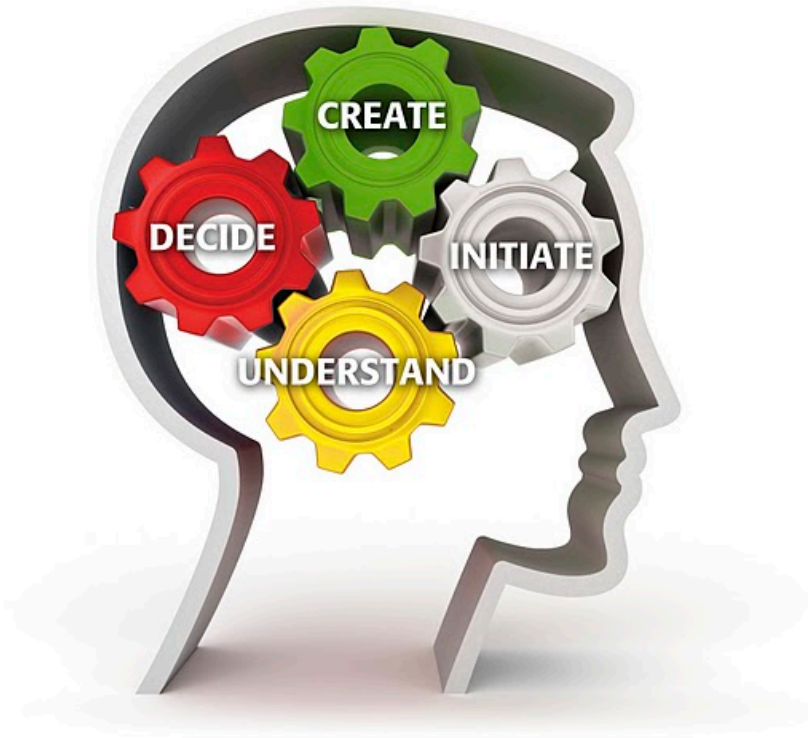
The Impact of Student Thinking Skills on Success



An Investigation Into The Thinking Styles of at Risk Students and the Implications for Student Success

Prepared by Bob Wiele, M.Ed. and Lisa Wiele, BA.

INTRODUCTION

In 2008, Hanne Nielsen, Principal of the Adult and Continuing Education division of Ontario's Simcoe County District School Board decided to pilot the use a new program to use with her students. The intent was to find better ways to build the 21st century skills of thinking, problem solving, communication and collaborative group work into the curriculum they offered their students. The realization was that conventional teaching methods with a focus on knowledge acquisition was failing to equip students at risk with the mental and emotional skills they need to succeed in a rapidly changing world.

These students range in age from 18 to 50+ with the majority 18 to 25. They had all dropped out of High School for a variety of reasons. The students returned to the Simcoe County District School Board's adult Learning Centres to complete the academic credits needed to achieve their High school Diploma. Some students plan to use their diploma as their entry to post-secondary education. Others want to use their high school diploma as a means to find employment. Many of the students are at risk, due to factors that include family history, economic poverty, mental health, justice and social issues. The six Learning Centres are located in the communities of Alliston, Barrie, Bradford, Collingwood, Midland and Orillia within Simcoe County Ontario.

OneSmartWorld has developed a breakthrough blended learning platform to enable people to develop a deep understanding of their own thinking styles, an appreciation for how others think, a common language and a portfolio for expanding their own capabilities to improve self management, self efficacy, creative, analytical and critical thinking, problem solving and collaboration.

The SCDSB selected OneSmartWorld's Smart Skills educational program and 4D-i toolkit to use with their students. Over the past five years there has been an increasing level of adoption and use of the Smart Skills system across the six Learning Centres. The SCDSB teachers and coordinators have developed many leading edge applications of the Smart Skills system that have made a significant impact on teaching and on student success.

The online 4 Dimensions Inventory/4D-i is based on first, profiling thinking and emotional preferences and second, developing 21 learnable strategies in high performance thinking – viz. 6 strategies in creativity – 4 in creative thinking and 2 in creative intuition; 6 strategies in understanding – 3 in analytical thinking and 3 in compassion; 6 strategies in decision-making – 4 in critical thinking and 2 in emotion-based decision-making and 3 strategies in resilient personal spirit. See Appendix.

The purpose of this report is to explore the implications of the results of a survey of the thinking style preferences of 907 continuing education students across the six Adult Learning Centres on retention and long term student success. The report looks at the data from the students who completed OneSmartWorld's 4D-i in the entry phase of enrolling in the Adult Learning and Continuing Education program at the SCDSB.

EXECUTIVE SUMMARY

Summary and Patterns in the Findings:

In a nutshell, our research shows that the students who have struggled in school and in life show four overall patterns:

1) A BIAS AGAINST ANALYSIS AND METHOD The students do not choose to think first as a coping strategy, to work their way through issues of self-management, relationships and task accomplishment. The consistent pattern across all 6 learning centres showed that students select the use of Analytical Thinking as their least preferred way of operating.

2) A RELIANCE ON EMOTIONAL BASED DECISION-MAKING the students are approximately 2X or twice as likely to rely on using quick reaction-like, emotion-based decision-making over analytical thinking strategies. Students across all six Learning Centres showed the strongest preference for using emotion-based decision-making first, preferring to go with their Gut Intuition and use their values and beliefs to drive behaviour, rather than first generating options, empathizing or using their critical thinking, to determine what to do.

3) A PREFERENCE FOR USING EMOTIONAL STRATEGIES OVER COGNITIVE STRATEGIES OF ANALYSIS AND LOGIC The students consistently demonstrated a preference for using the 7 emotion-based strategies more than using the 11 thinking strategies. This consistent reliance on the non-cognitive strategies, without a corresponding preference for the cognitive strategies, puts the students further at risk and in a deficit position in the conventional academic programs. These programs stress the use analytical and critical thinking.

4) A LOWER LEVEL OF RESILIENCE these students show a significantly lower than average level of resilience, as measured by the personal spirit dimension in the 4D-i. A lack of a sense of control and a reluctance to take initiative will contribute to drop outs and undermine long-term student success in life, work and relationships. Students across all 6 Learning Centres have an average score in personal spirit in the 36th percentile, well below the norm.

The results from in the data from the 4D-i show patterns of under-developed thinking that can be detrimental to student success in school, in the community and in the workplace. This pattern can lead to students not having the mental tools to cope with academic work and to a loss of a sense of self-efficacy. This pattern of low analytical thinking coupled with a focus on acting impulsively means they make decisions quickly without gathering enough information, exploring options, clarifying the facts or thinking through consequences. The good news is that all 21 strategies are learnable skills.

IMPLICATIONS

Today's education system is primarily based on information and knowledge acquisition. Education in the knowledge economy rewards students who have a natural preference for or who have acquired the skills of knowledge acquisition and memory using their Analytical Thinking. The ability to systematically gather data, analyze it, structure the data and ensure its accuracy and then retain and regurgitate that information on exams and in multiple-choice tests, is crucial to success in secondary and post secondary education. The educational system's focus on delivering knowledge through lectures and the student's ability to capture that knowledge to meet test requirements has shaped both the curriculum and the behaviors that are rewarded in North American education. Students who have a preference for using their creative thinking or their critical thinking and who show a deficit or lack of interest in analytical thinking will struggle to succeed in the existing education system.

Given the increasing inequities and disparities in our society, students and schools need to invest in building all 4 dimensions of total intelligence in their students. This will give students an opportunity to compete on a more level playing field. The more they can develop the core essential skills of thinking, problem solving and working collaboratively with others, the better the chance they will have to compete and succeed. The knowledge economy is changing. We are in and intelligence economy – one that rewards people for their abilities to think well, problem solve and collaborate effectively with others – as much as it rewards how much one knows. Given the challenges at risk students face, it is more crucial than ever that the education expands its focus to equip students with these essential 21st century skills.

GETTING SMARTER: THE NEW VIEW OF INTELLIGENCE

The Smart Skills System is focused on helping students understand that, with deliberate practice, they can get smarter. This approach is grounded in 5 premises about the new understanding of intelligence, based on the recent brain based findings from neuro-science and neuro-plasticity. The implications for teaching and learning are highlighted in *New Kinds of Smart, How the Science of Learnable Intelligence is Changing Education,* by Bill Lucas and Guy Claxton. We now know that intelligence is:

- *Expandable* – people can get smarter. Intelligence is not fixed or hard wired. People can get smarter by expanding their mental skills
- *Multi-dimensional* – people are smart in different ways and in more ways than are managed in conventional educational settings
- *Distributed* - intelligence is distributed everywhere across ages, backgrounds
- *Social* – intelligence happens in a context. Intelligence emerges from a supportive social-emotional climate that encourages expression and it is suppressed in an unsupportive climate or authoritarian environment.
- *Practical* - intelligence is primarily something people do and exhibit in a context of dealing with real life issues, not simply an abstract construct.

5 ESSENTIAL 21ST CENTURY EMPLOYABILITY SKILLS

The Smart Skills system focuses on helping students develop one or more of 5 essential 21st century employability skills:

1) Resilience
2) Thinking skills- creative, analytical and critical thinking
3) Problem solving
4) Inter-personal communication
5) Working collaboratively with others

These skills are developed in high engagement classroom environments where students – working on their own and in a variety of interactive one to one and group tasks – take ownership and responsibility for their own learning.

The 4D-i gives progressive educators a set of precision tools to differentiate instruction – not by how much a student knows about a subject, but more about how the student uses their mind to learn and success. The 4D-i is the only assessment that pinpoints strengths in preferences and specific thinking skill deficits, that if addressed and turned into skills, can address the roots of poor performance. Students use the universal SmartSkills platform to learn the disciplined smart track processes of effective problem solving, communication and collaborative teamwork

8 BENEFITS OF THE SMART SKILLS SYSTEM

In the Continuing Education program of the Simcoe County District School Board, teachers use the results of the 4D-I as baseline information to differentiate instruction, build a more emotionally supportive classroom experience and to improve student achievement, by specifically targeting turning deficits highlighted by the 4D-i, into conscious competencies.

The Smart Skills system offered the students at SCDSB a set of eight benefits:

1) INCREASED SELF AWARENESS: A deeper self-awareness and self-understanding into how they are smart (not how smart they are) Students use their online results from the 4D-I 24/7 to gain their own assessment of the particular mindsets and strategies they like to use the most. This empowers them to explore how to improve their own self-management skills.

2) A PORTFOLIO OF 21 LEARNABLE STRATEGIES: The Smart Skills system is based on a portfolio of 21 learnable mental strategies. Students can use the portfolio as a personal planning map to expand their capabilities and effectiveness in all 4 dimensions of high performance thinking – creativity – creative thinking and creative intuition; understanding –analytical thinking and compassion; decision-making – critical thinking and emotion based decision-making – values driven and gut intuition and personal spirit – outlook, sense of control and initiative.

3) APPRECIATION OF DIVERSITY AND A REDUCTION IN CONFLICT The 4D-i offers students a new and non-judgmental way to develop an appreciation for their own style and for the importance and impact of cognitive style diversity. They learn to understand how others see and operate in the world. They learn that people think differently – and that's beneficial and all right too. This opens up new conversations that can reduce conflict. It builds an appreciation of how they can draw on and rely on other people's strengths.

4) A COMMON LANGUAGE TO IMPROVE COMMUNICATION The Smart Skills system is based on a simple, colour-coded common language that is easy to remember and use. It uses a traffic light as a metaphor and mnemonic device – green for go and create; yellow for slow down to understand and red for stop and decide. This helps identify the appropriate shift one's mindset to think, communicate and collaborate better with others.

5) TEMPLATES AND PROCESSES FOR SOLVING PROBLEMS The Smart Skills system gives students a set of templates or thinking processes, called 'smart tracks'. Students use these templates and tracks to master using these step-by-step procedures to ensure they think through issues and challenges more effectively, instead of going with their gut or first response. Students use the templates in class to get on the same page with others in one-to-one work and to work more effectively in group project work.

6) HIGH ENGAGEMENT LEARNING EXPERIENCES The Smart Skills system offers teachers a suite of high engagement classroom methods. These are designed to deliberately engage the different types of thinkers in the class. They also help students to develop the essential 21st century skills of thinking, problem solving and working collaboratively.

7) HIGH QUALITY RELATIONSHIPS AND A SUPPORTIVE LEARNING ENVIRONMENT The Smart Skills high engagement class gives teachers easy to use tools and techniques for their students to build positive and supportive relationships with each other. The supportive learning environment makes it easier for students to connect, seek and offer emotional and social support to each other. Students can feel more comfortable to experiment with new behaviors and different ways of thinking and operating.

8) INCREASED SELF EFFICACY Students gain a greater appreciation of their strengths and an appreciation for what they need to do to expand their capabilities as thinkers. This newfound self-awareness can increase their sense of self-efficacy and resilience through greater self-awareness and mental self-management skills.

HIGHLIGHTS OF THE DATA ANALYSIS FROM THE SIX LEARNING CENTRES

A. THE BARRIE LEARNING CENTRE: Please note that the scores represented below are an average of all students who have completed the 4D-i at this Learning Centre. See Appendix A for more details. All numbers are expressed in percentiles

Total Subject Pool: 438

Personal Spirit Scores: See Appendix Graph 1 – Personal Spirit

- Outlook – 39
- Initiative – 38
- Sense of Control – 44

Dimensions: See Appendix Graph 2 - The 4 Dimension of Thinking

- Highest Dimension: Decision-Making - 56
- Lowest Dimension: Understanding - 45

Mindsets: See Appendix Graph 3 – The 7 Mindsets

- Highest Mindset: Beliefs Based Decision-Making - 61
- Lowest Mindset: Analytical Thinking - 37

Strategies:

The 3 Most Preferred Strategies:

1) Rely on Experience – 62
2) Values Driven – 61
3) Trust Your Heart gut intuition - 59

The 3 Least Preferred Strategies: ANALYTICAL THINKING

1) **Clarify Understanding – 36**
2) **Structure Information- 37**
3) **Scan the Situation - 38**

B. **THE COLLINGWOOD LEARNING CENTRE:** Please note that the scores represented below are an average of all students who have completed the 4D-i at this Learning Centre. See Appendix B for more details. {Collingwood}

Total Subject Pool: 105

Personal Spirit Scores: See Appendix Graph 5– Personal Spirit

- Outlook – 39
- Sense of Control – 42
- Initiative – 38

Dimensions: See Appendix Graph 6 - The 4 Dimensions of Thinking

- Highest Dimension: Red - 56
- Lowest Dimension: Yellow - 43

Mindsets: See Appendix Graph 7 – The 7 Mindsets

- Highest Mindset: Beliefs Based Decision Making - 62
- Lowest Mindset: Analytical Thinking - 33

Strategy: See Appendix Graph 8 – The 18 Strategies

3 Most Preferred Strategies:

1) Rely on Experience – 64
2) Values Driven – 62
3) Envision Possibilities - 61

3 Least Preferred Strategies: ANALYTICAL THINKING

1) **Scan the Situation – 32**
2) **Clarify Understanding – 33**
3) **Structure Information– 35**

C. THE ALLISTON LEARNING CENTRE C: Please note that the scores represented below are an average of all students who have completed the 4D-i at this Learning Centre. See Appendix C for more details. {Alliston}

Total Subject Pool: 94

Personal Spirit Scores: See Appendix Graph 9 – Personal Spirit

- Outlook – 32
- Sense of Control – 34
- Initiative – 30

Dimensions: See Appendix Graph 10 – The 4 Dimension of Thinking

- Highest Dimension: Decision-Making - 57
- Lowest Dimension: Understanding - 39

Mindsets: See Appendix Graph 11 - The 7 Mindsets

- Highest Mindset: Gut Intuition - 65
- Lowest Mindset: Analytical Thinking - 31

Strategy: See Appendix Graph 12 – The 18 Strategies

3 Most Preferred Strategies:

1) Trust your Heart - 65
2) Rely on Experience – 63
3) Get in the Flow – 63
4) Values Driven – 62

3 Least Preferred Strategies: ANALYTICAL THINKING

1) **Structure Information - 28**
2) **Scan the Situation – 31**
3) **Clarify Understanding- 35**

D. THE ORILLIA LEARNING CENTRE: Please note that the scores represented below are an average of all students who have completed the 4D-i at this Learning Centre. See Appendix D for more details. {Orillia}

Total Subject Pool: 75

Personal Spirit Scores: See Appendix Graph 13 – Personal Spirit

- Outlook – 35
- Sense of Control – 44
- Initiative – 35

Dimensions: See Appendix Graph 14 – The 4 Dimensions of Thinking

- Highest Dimension: Decision-Making - 57
- Lowest Dimension: Understanding - 41

Mindsets: See Appendix Graph 15 – The 7 Mindsets

- Highest Mindset: Gut Intuition - 65
- Lowest Mindset: Analytical Thinking - 35

Strategy: See Appendix Graph 16 - The 18 Strategies

3 Most Preferred Strategies:

1) Trust your Heart - 65
2) Values Driven – 64
3) Rely on Experience – 61

3 Least Preferred Strategies: ANALYTICAL THINKING

1) **Structure Information- 31**
2) **Clarify Understanding - 36**
3) **Scan the Situation- 37**

E. THE BRADFORD LEARNING CENTRE Please note that the scores represented below are an average of all students who have completed the 4D-i at this Learning Centre. See Appendix E for more details. {Bradford}

Total Subject Pool: 98

Personal Spirit Scores: See Appendix Graph 17 – Personal Spirit

- Outlook – 33
- Sense of Control – 36
- Initiative – 32

Dimensions: See Appendix Graph 18 – The 4 Dimension of Thinking

- Highest Dimension: Decision-Making - 56
- Lowest Dimension: Understanding - 43

Mindsets: See Appendix Graph 19 - The 7 Mindsets

- Highest Mindset: Beliefs Based Decision Making- 56
- Lowest Mindset: Analytical Thinking - 37

Strategy: See Appendix Graph 20 - The 18 Strategies

3 Most Preferred Strategies:

1) Rely on Experience – 63
2) Validate Conclusions - 59
3) Get in the Flow – 57

3 Least preferred Strategies: ANALYTICAL THINKING

1) **Structure Information – 35**
2) **Scan the Situation – 36**
3) **Clarify Understanding - 39**

F. THE MIDLAND LEARNING CENTRE F: Please note that the scores represented below are an average of all students who have completed the 4D-i at this Learning Centre. See Appendix F for more details. {Midland}

Total Subject Pool: 97

Personal Spirit Scores: See Appendix Graph 21 – Personal Spirit

- Outlook – 30
- Sense of Control – 43
- Initiative – 31

Dimensions: See Appendix Graph 22 – The 4 Dimensions of Thinking

- Highest Dimension: Decision-Making - 54
- Lowest Dimension: Understanding - 43

Mindsets: See Appendix Graph 23 – The 7 Mindsets

- Highest Mindset: Gut Intuition- 68
- Lowest Mindset: Analytical Thinking - 34

Strategy: See Appendix Graph 24 – The 18 Strategies

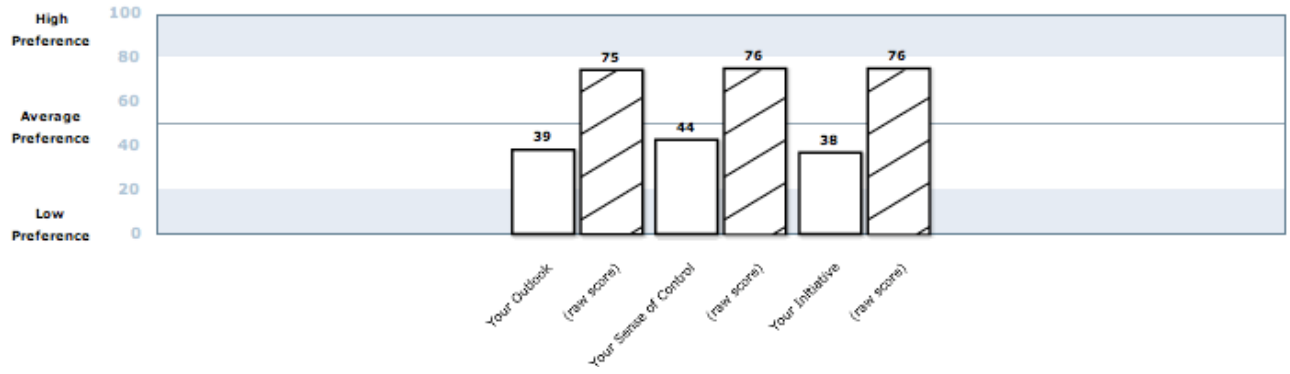
3 Highest Strategies:

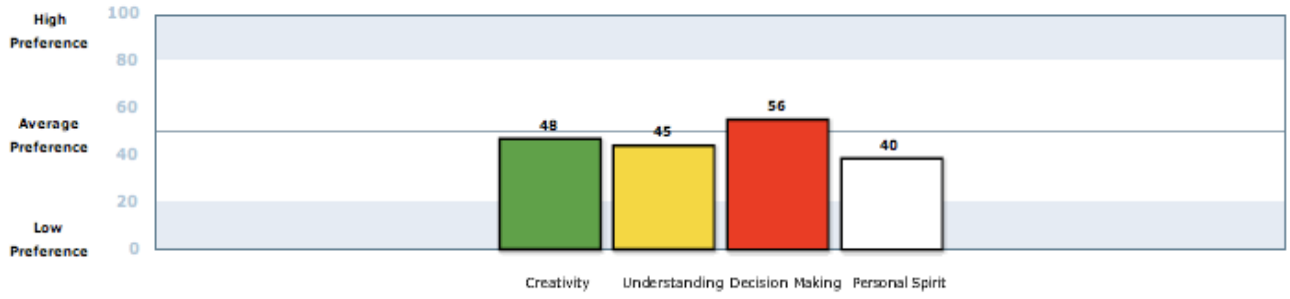
1) Rely on Experience – 62
2) Get in the Flow – 59
3) Envision Possibilities - 59
4) Gut Intuition/ Trust Your Heart - 58

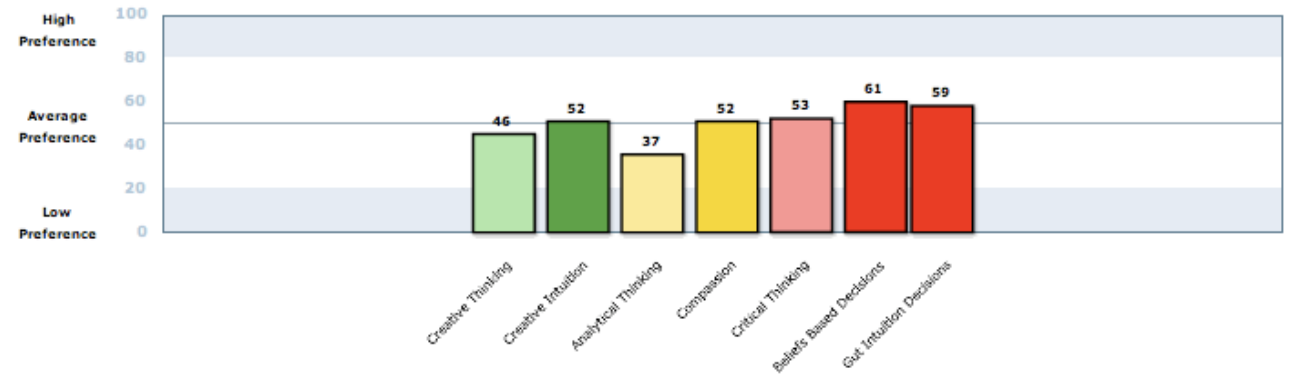
3 Lowest Strategies: ANALYTICAL THINKING

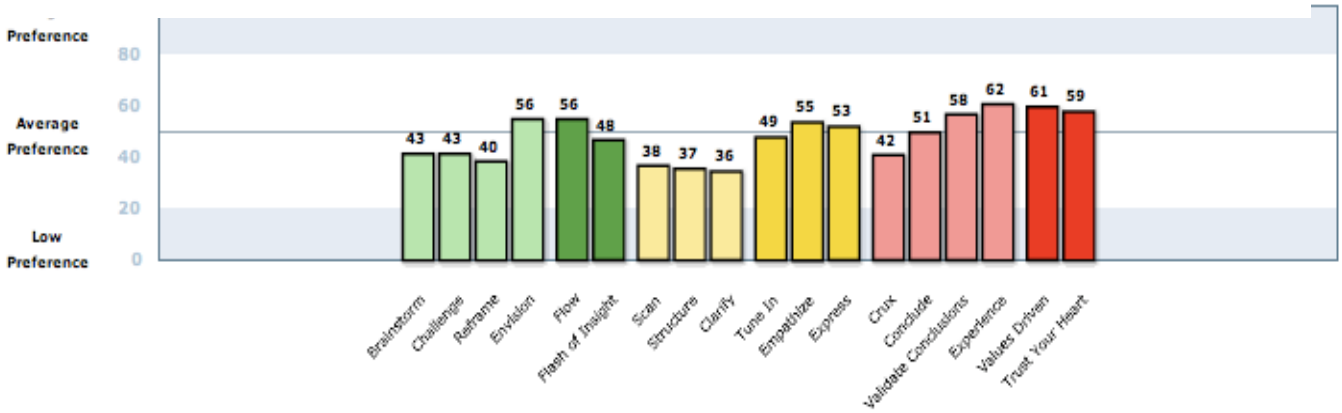
1) **Scan the Situation – 31**
2) **Clarify Understanding – 33**
3) **Structure Information - 37**

APPENDIX A: THE BARRIE LEARNING CENTRE

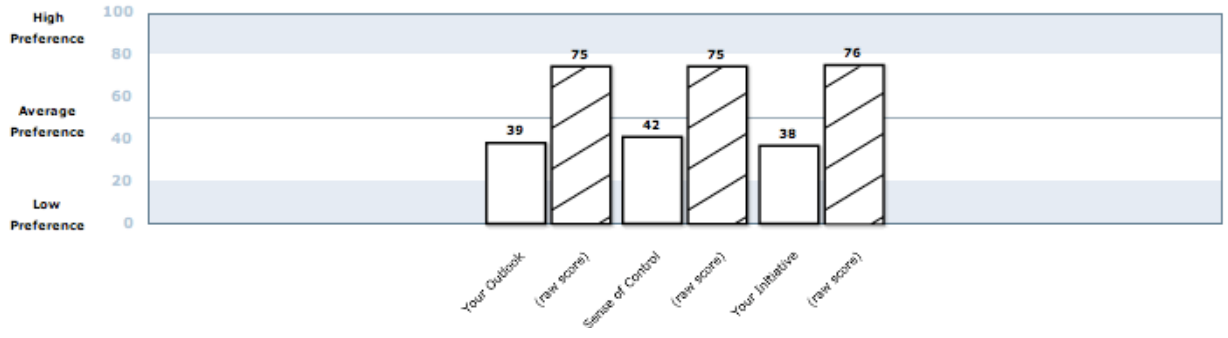


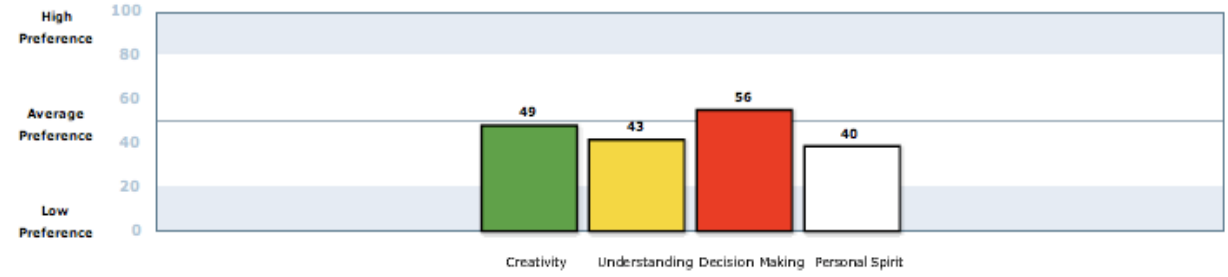


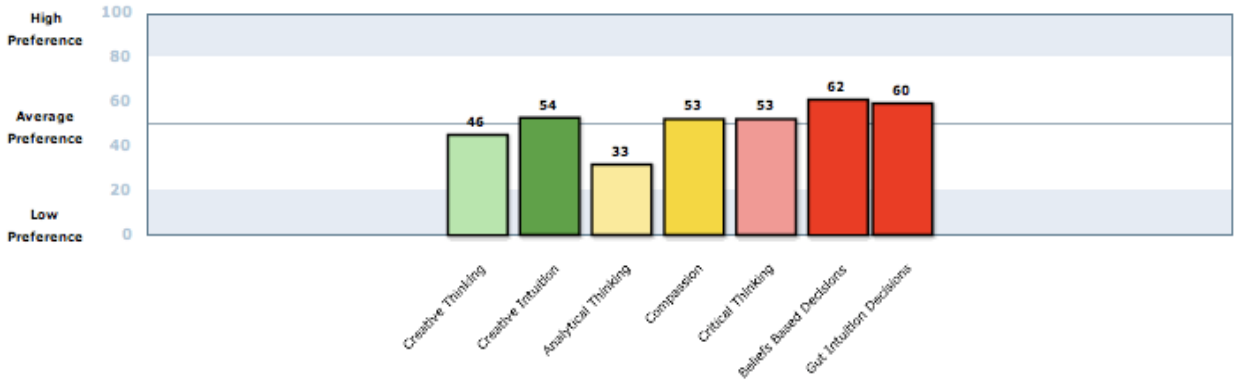


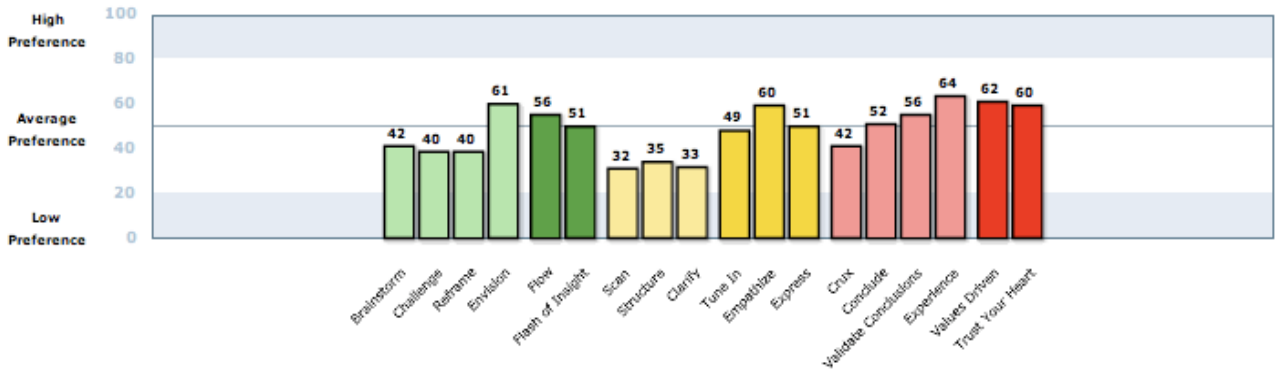


APPENDIX B: THE COLLINGWOOD LEARNING CENTRE

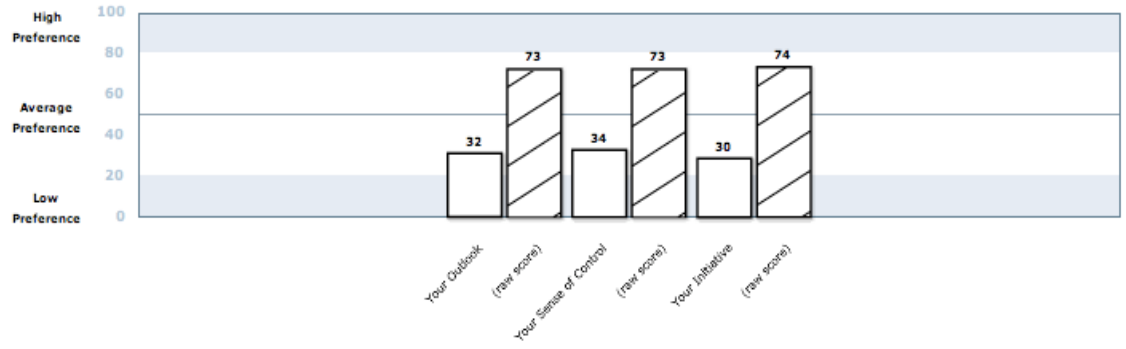


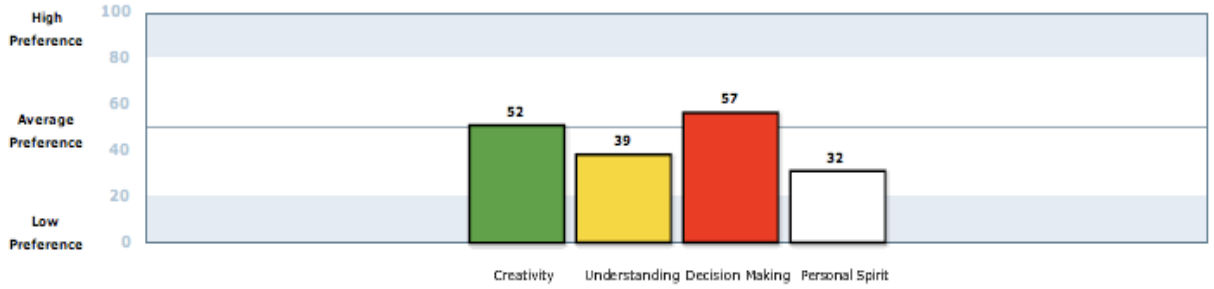


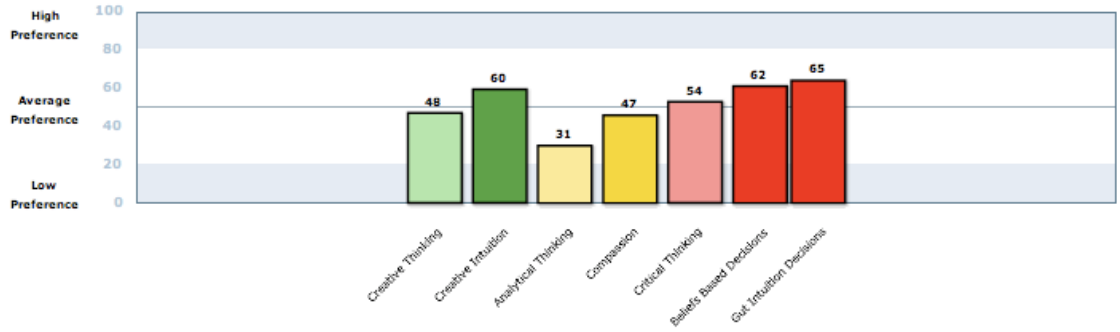


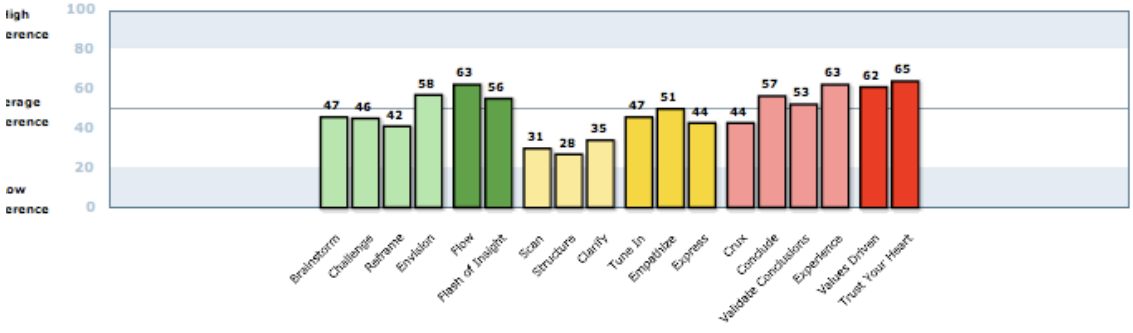


APPENDIX C: THE ALLISTON LEARNING CENTRE

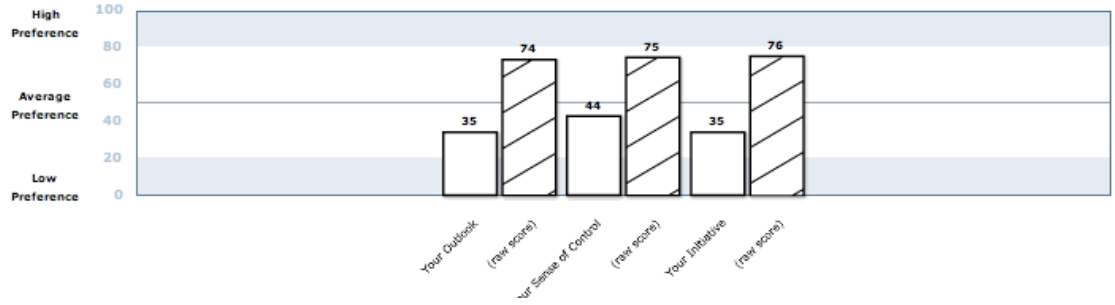


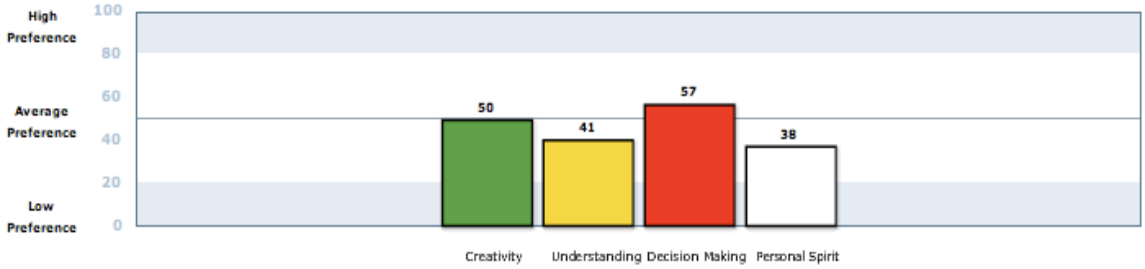


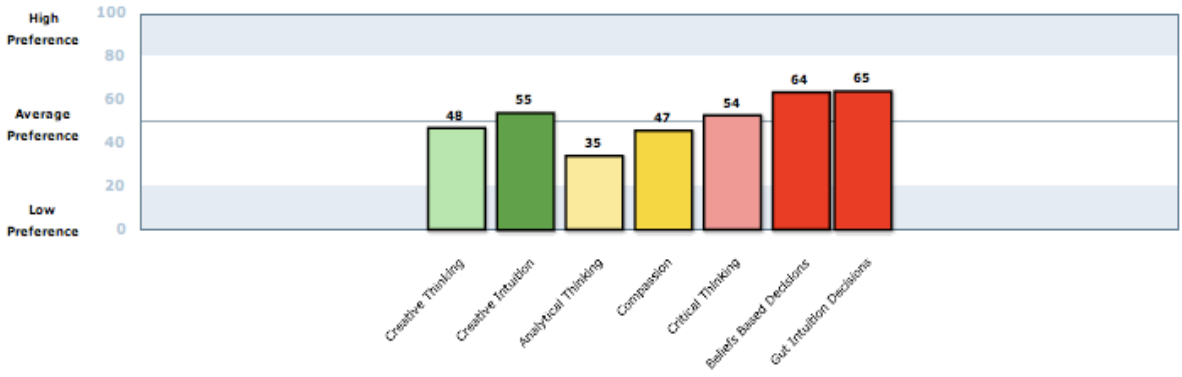


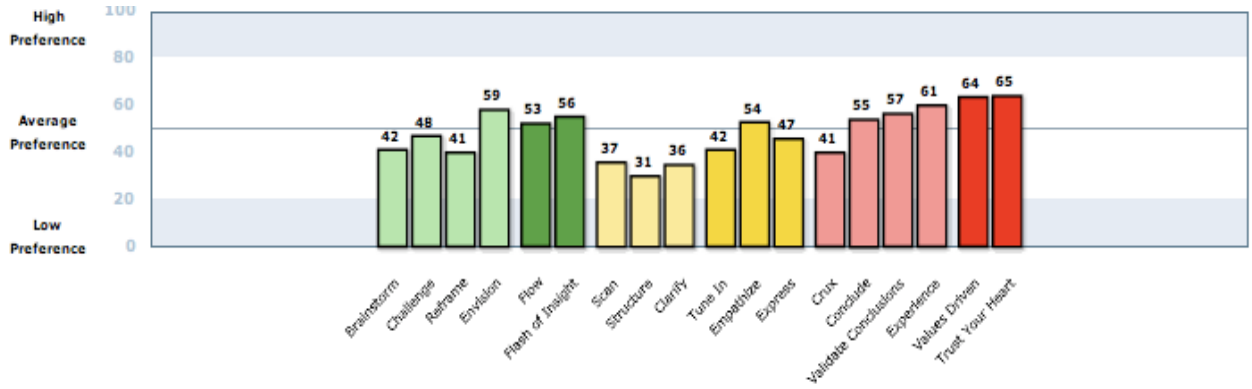


APPENDIX D: THE ORILLIA LEARNING CENTRE

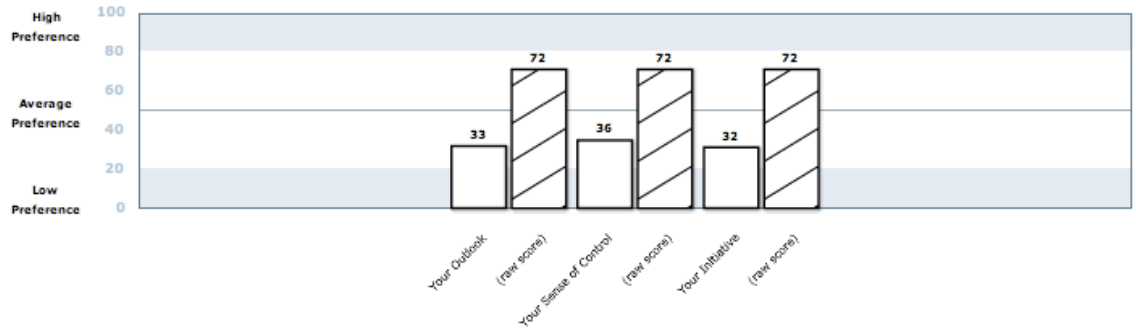


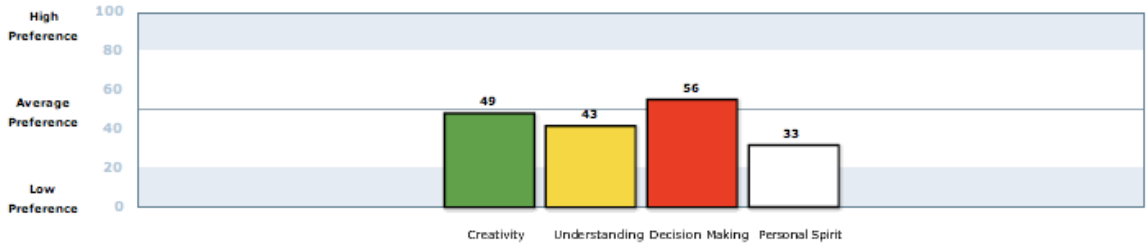


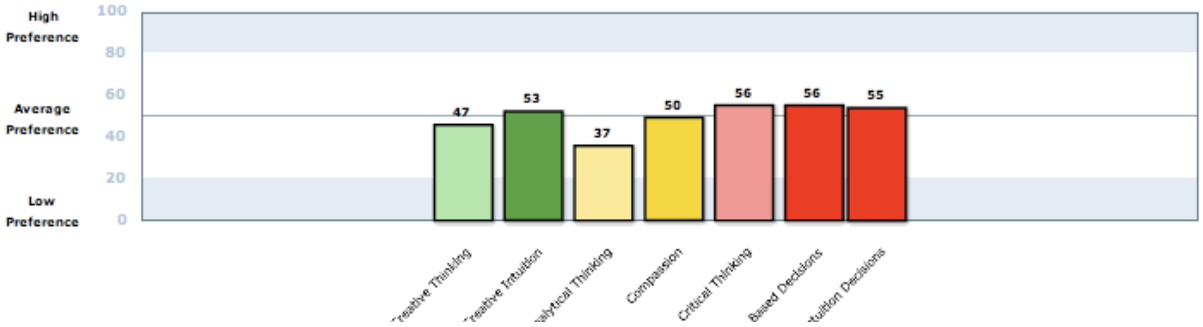


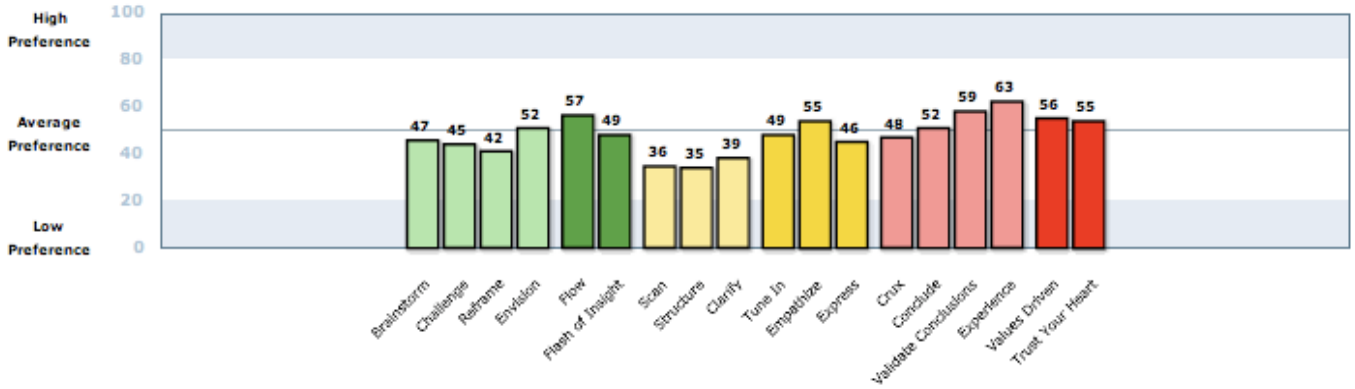


APPENDIX E: THE BRADFORD LEARNING CENTRE

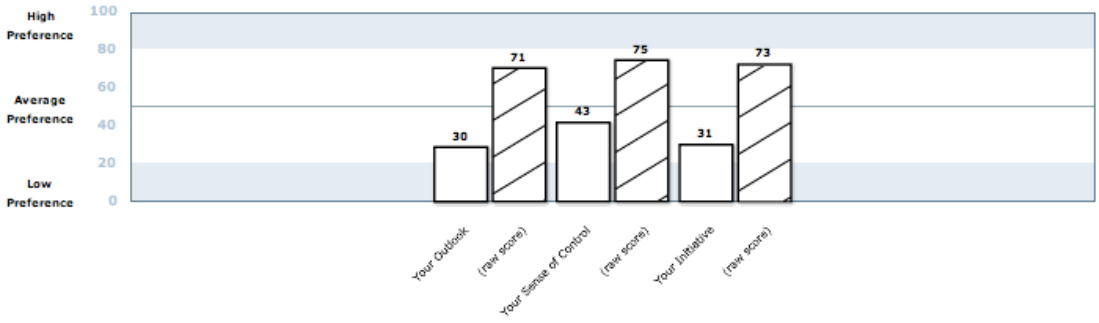


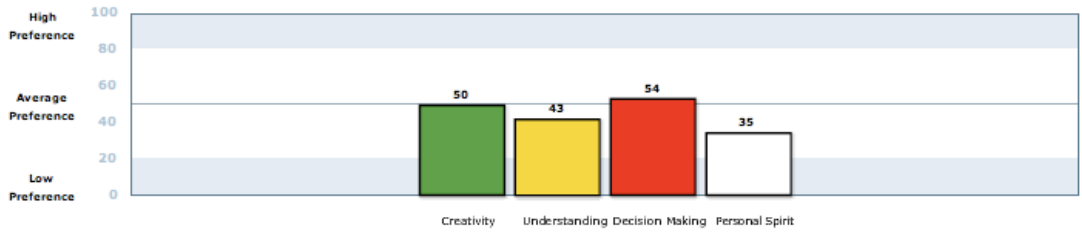


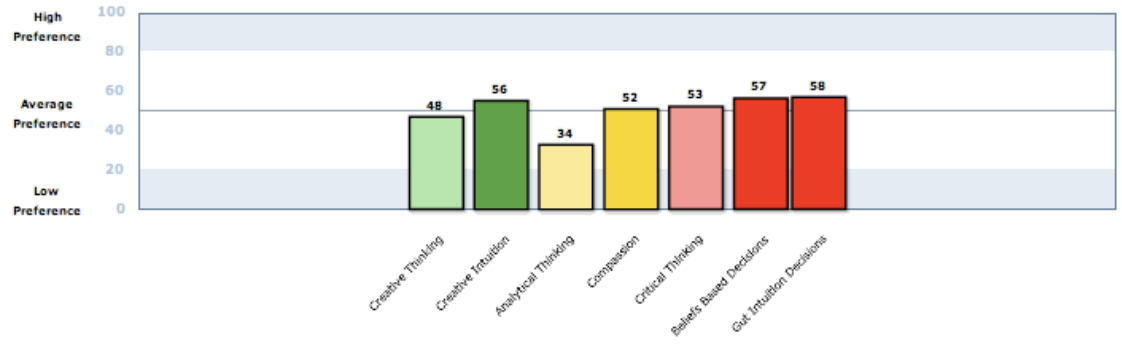


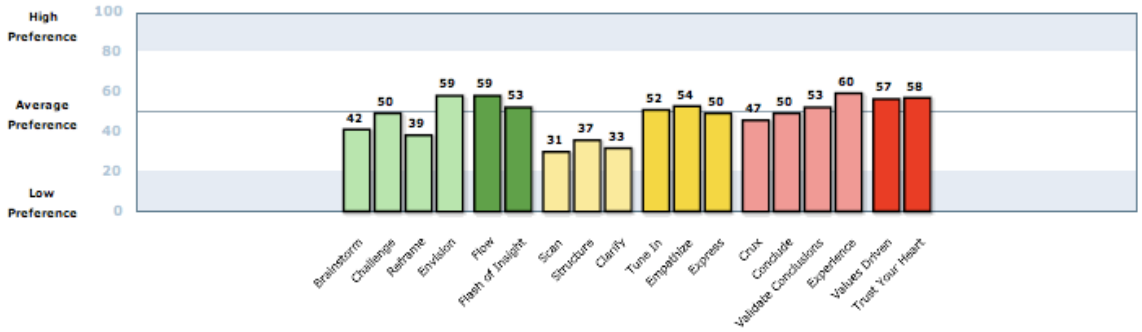


APPENDIX F: THE MIDLAND LEARNING CENTRE

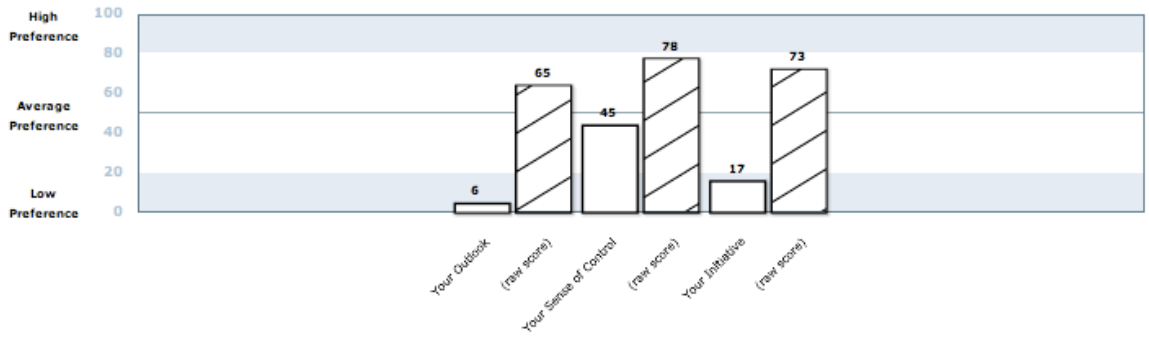


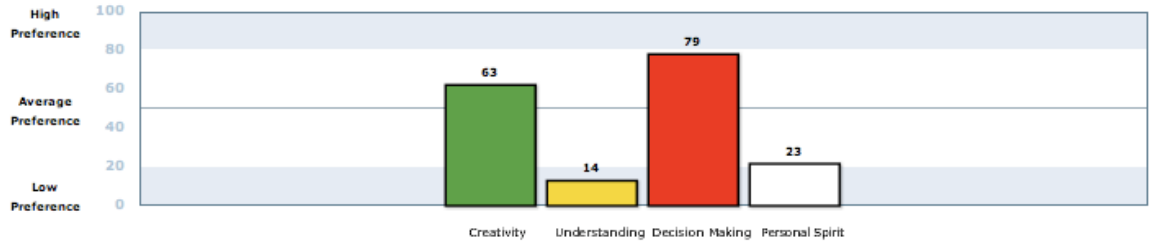


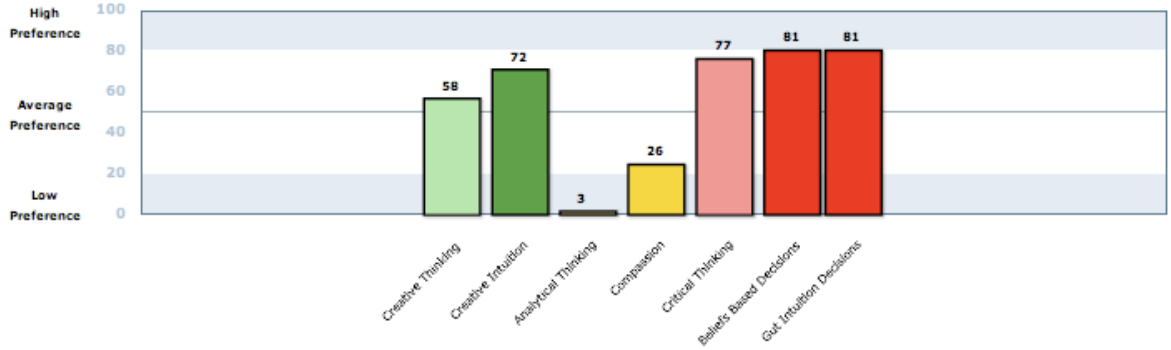


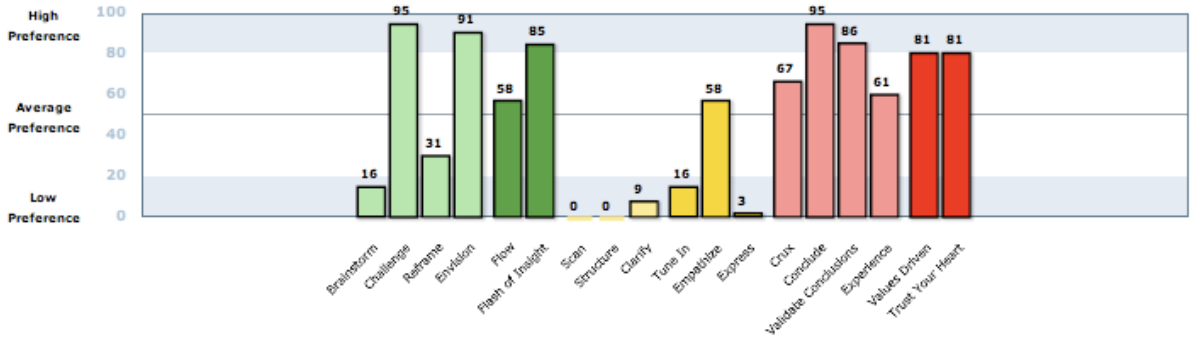


APPENDIX G: SAMPLE STUDENT RESULTS

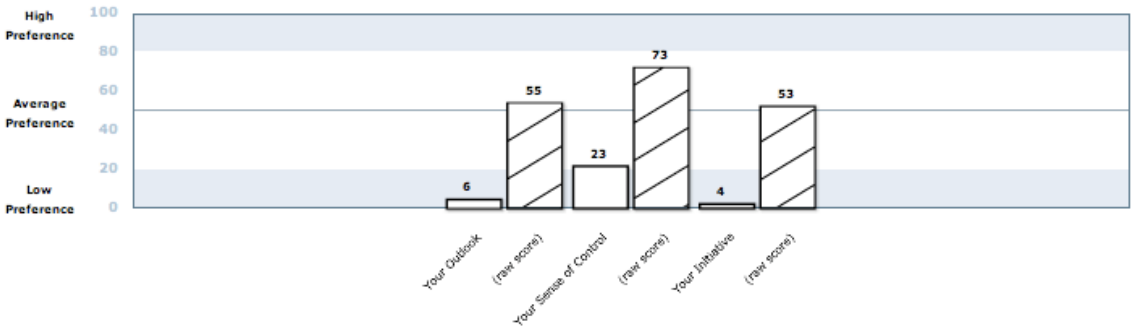


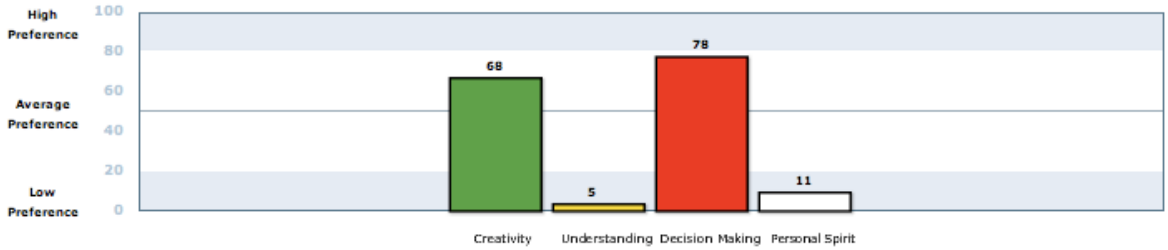


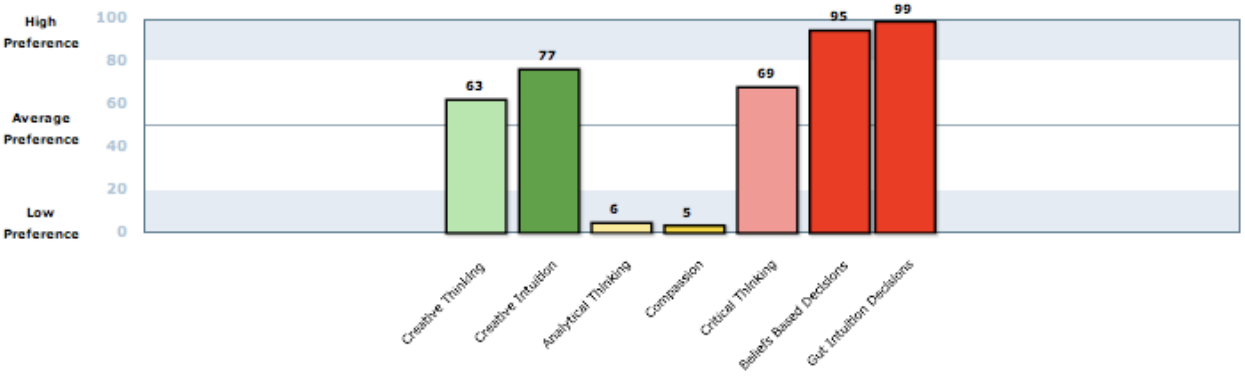


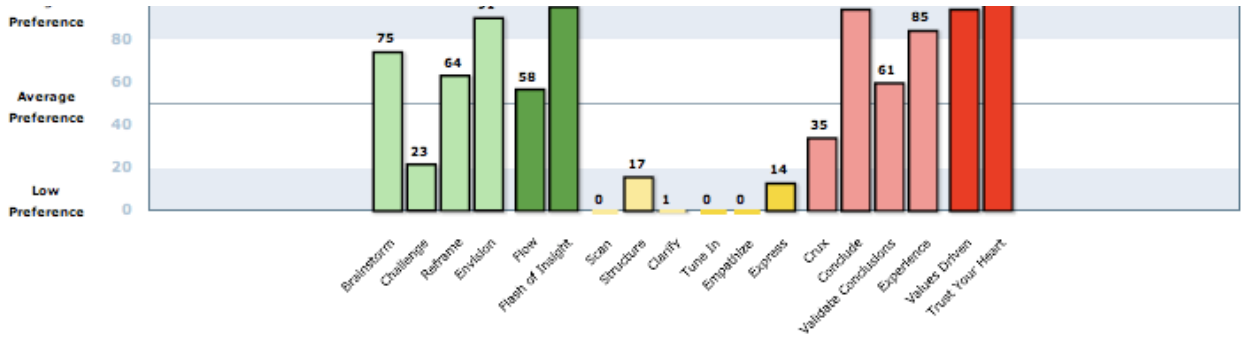


APPENDIX H: SAMPLE STUDENT RESULTS









KEY ONESMARTWORLD TERMS AND DESCRIPTIONS OF PERSONAL SPIRIT

The OneSmartWorld system maps 4 key dimensions of what we call total intelligence. The 4 dimensions are creativity, understanding, decision-making and personal spirit. Total intelligence is based on frameworks originally developed by Robert Sternberg in his book, *Successful Intelligence* and by Jerry Rhodes in the UK. We have expanded the model and deepened it over the past 12 years, with our own original scientific research into 21 core strategies in thinking, emotional intelligence and resilience factors. Bob Wiele's book, *Smart for Life,* outlines the 21 strategies. The 4D-i is the online assessment and personal skills coaching tool that supports students in building out their capabilities.

Personal Spirit – Key Success Factor 1 – Outlook

There is an increasing body of research that suggests that a positive, constructive outlook contributes to long-term health and well being everything from feeling better, to fewer illnesses, faster recovery, fewer relapses and greater longevity. A positive, constructive outlook is essential to enjoying life and successfully managing stressful life events, uncertainty and change. A positive outlook creates a proactive mindset, a way of being that acts a platform for your personal empowerment. It also gives you the belief in your own ability to transcend difficult events, large or small and find positive, constructive meaning and options in adversity.

Personal Spirit – Success Factor 2 – Sense of Control

A strong sense of control is a major causal element of mental and physical health. Exerting personal control within the circumstances of your life is good for your health and good for your life. In the 21st century, life is stressful enough and your personal sense of control is essential for coping with whatever comes at you. A sense of control is an ongoing, lifelong belief and action process that you can make a difference, through your own efforts, on the outcomes of the problems you face, no matter how serious.

It moves you from feelings of helplessness to a place of empowerment. This success factor usually combines with outlook to create a powerful personal force for dealing constructively with life's challenge.

Personal Spirit – Key Success Factor 3 – Initiative

Robert E. Kelley's landmark research study on star performers, How to Be a Star Performer at Work, 1999, pinpointed initiative as the single most important differentiator of high performers from average performers. Initiative is a key success factor in personal spirit. Taking initiative drives people into going above and beyond what is expected to benefit the team or the organization. Initiative is at the core of taking courageous actions to develop self and to benefit others.