WELL-CONNECTED

Effects Of The Integrated Learning Environment

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Commissioned by the Ruskin Mill Educational Trust (RMET)

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Ruskin Mill Educational Trust is a charity specialising in the education of young adults with learning difficulties associated with developmental delay. It runs three specialist FE Colleges: Ruskin Mill, Glasshouse and Freeman Colleges. www.rmet.org.uk

A curriculum is not 'delivered' to a student in a vacuum, it exists within a context and environment that either potentiate learning of the curriculum, or impede it. The learning environment - both physical and social - are central to student outcome. (OECD, 2002) Moreover, to produce functional, employable students, it is imperative to cultivate socially and emotionally viable young people who are able to cope and use what they have learned outside of the college environment (Van Dam, 2003; Nyhusa and Pons, 2005). The social and emotional landscape of a college is the second, and interesting chapter in the story of how a curriculum exerts its fullest effects.   In the case of colleges of the Ruskin Mill Educational Trust, there a variety of factors aside from the curricula worthy of examination.

EXECUTIVE SUMMARY OF FINDINGS

The following is an overview of the findings contained in this report.

INTEGRATION: The learning context at RMET colleges constantly integrates the various elements of both the curriculum and student life. This is exceptionally important for students with learning difficulties.

PUPIL RATIO: The low pupil-to-teacher ratio enables far more effective learning, behavioural modification and development.

MALE ROLE MODELS: The abundance of authoritative male role models – badly needed in mainstream education and in British homes – is particularly advantageous for students with autism, Asperger's syndrome, ADHD and behavioural problems, all of which have a biologically based male orientation. Male staff has a positive impact on male student behaviour and are beneficial to female students.

APPRENTICESHIPS: are found to produce employees who are of "higher quality" and are "more loyal … motivated and satisfied ...". They also serve as an ongoing informal lesson in how to be an adult - in particular, how to be a man - how to behave, interact, respect elders or those of experience, those in authority. Apprenticeships provide an arena for becoming socially viable.

COMMUNAL PRACTICES: such as eating together where students and staff sit at the same table while other students cook and serve the meals; and for residential students, eating dinner with 'house parents', sometimes in a family environment at a round table serve to anchor the student - reinforcing and consolidating the other mentoring and role-modeling the student is experiencing during the formal college day.

EATING TOGETHER: New medical research has found that eating together confers enormous benefits to the physical, mental and behavioral well-being of young people: reduced incidence of depression, anxiety, substance abuse, obesity and eating disorders.

SOCIAL INTERACTION: RMET colleges facilitate eye-to-eye social contact both in and outside of the learning environment. Social interaction is increasingly linked with physiological and cognitive benefits and will help students learn the appropriate social cues in civilized discourse and conduct.

ROUTINE AND CONSTANCY: The residential houses at RMET colleges place a significant emphasis on daily and weekly routines and rhythms, optimising the student's opportunities during the waking day. Routine is accompanied by a highly important constancy in the people students see regularly in workshops and back at the residential home.

CONCLUSION: Most, if not all aspects of the learning and living environment at RMET colleges are in concordance with what research in education, psychology and medicine are strongly recommending for *all* schools, families and communities. Therefore, RMET colleges serve, as a microcosm of what society should be doing with *all* young people.

Well-Connected

In attempting to un-package or evaluate particular curricula or approaches to education it has been observed that ultimately the "process – the conditions, pedagogy, relationships, etc. that frame student experience – cannot be neatly separated from learning". The need to bridge 'the academic/vocational divide and produce rounded, resourceful and free thinking citizens who are also versatile in manual skills.", has also been noted (Woods et al, 2005). The Higher Education Academy (2003) refers to "The new employability agenda for higher education ...requires an holistic approach".

The less visible aspects of a well-rounded education are secondary processes that can produce further benefits that aid the development of the pupil into a more socially viable and employable young adult. Factors such as low pupil to teacher ratio, mentoring and apprenticeship, positive role modeling, gaining a 'sense of the elder' - are all highly significant. In students with learning difficulties there is a particular need to provide integration, order, connection and continuity to their lives during the school day and after. While these factors may seem abstract their relevance to student education and personal effectiveness are becoming clear.

SEED-TO-TABLE

Ruskin Mill institutions place great emphasis on seeing a process through from its source to an end result, striving to provide a sense of connection and continuity which goes further than the college, linking with the traditions and environment of the community in which the college exists.

EXAMPLES OF INTEGRATION AND CONNECTION AT RMET COLLEGES

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*Plant Seed > Make Tools > Nurture Plant > Harvest > Prepare > **Eat** at Table*

*Fell Tree > Cut Branches > Make Pieces > Make **Chair** > Sit at Table*

*Metal blank > Hammering > Shaping > Cutlery > Eat with **Fork** at Table*

*Sheer > Process Wool > Make Plant Dye > Card > Spin > Weave > Table **Placemat***

*Melt Sand > Blow/Hand Mold > Cool > Cut Glass > **Drinking Glass** at Table*

*Grow Willow > Harvest > Weave Basket > **Bread Basket** at Table*

While this 'seed-to-table' approach may be appealing at a moral, social and ethical level, there are also important cognitive factors at work, which are ideal for students with learning difficulties.

Autism and Asperger's Syndrome

New theories of autism and Asperger's syndrome consider the social and communication difficulties in autism and Asperger's syndrome in terms of delays and deficits in empathy, whilst the areas of strength are seen as the student's intact or even superior skill in 'systemising' (Baron-Cohen, 2002; 2008).

Systemising is the urge to analyse or create any kind of system. A system follows rules, and when a student systemises he is trying to identify the rules that govern the system, in order to predict how that system will behave (Baron-Cohen, 2006).

Below-average empathy is a simple way to explain the social-communication difficulties in autism and Asperger's syndrome, whilst average or even above-average systemising is a way of explaining the narrow interests, repetitive behaviour, and resistance to change/need for sameness. This is because when the student systemises, it is easiest to keep everything constant, and only vary one thing at a time. That way, they can see what might be causing what, making the world more predictable.

So the student – even with low-functioning autism – who produces the same outcome every time with their repetitive behaviour, seems to gain some emotional pleasure at the predictability of the world. This may be what is clinically described as 'stimming' (Wing, 1997). Autism was originally described as involving 'resistance to change' and 'need for sameness' (Kanner, 1943), this important clinical observation may be the sign of strong systemising.

New theories such as the empathising-systemising (E-S) theory see autism and Asberger's syndrome as a different cognitive style (Happé, 1996). ES theory recognises excellent attention to detail (in perception and memory), since when the student systemises they have to pay attention to the minute details. This is because each tiny detail in a system might have a functional role. Excellent attention to detail in autism has been repeatedly demonstrated (Jolliffe & Baron-Cohen, 2001; O'Riordan et al., 2001; Shah & Frith, 1983, 1993). While previous theories may see people with autism spectrum conditions as drawn to detailed information for *negative* reasons (an alleged inability to integrate), the E-S theory sees this same quality (excellent attention to detail) as being highly purposeful: it exists in order to understand a system. Attention to detail is occurring for *positive* reasons: in the service of achieving an ultimate understanding of a system.

Whereas some predict that people with autism or Asperger's syndrome will be forever lost in the detail, never achieving an understanding of the system as a whole (since this would require a global overview), the E-S theory predicts that over time, the person may achieve an excellent understanding of a whole system, given the opportunity to observe and control all the variables in that system (Baron-Cohen, 2008).

The RMET emphasis on seeing a process through from its source to an end result, is constantly linking the fragmented to the integrated whole. This emphasis on integration, striving to provide a sense of connection and continuity which goes further than the college, linking with the traditions and environment of the community in which the college exists - provides such an opportunity for students to see a 'whole system' not just

narrow parts of a curriculum. This approach seems to harness the student's 'resistance to change' and 'need for sameness'. By raising student awareness of a greater connection and the role of what they're learning in a greater scheme of things, they have less reason to fear change and may grow to view change as *evolution* - a connected continuation of what they have been doing.

This approach also offers similar cognitive benefits for both students with and ***without*** ADHD/ADD and students in mainstream education. Reinforcing context, connection and continuity is highly important in students with ADHD/ADD who gravitate towards ever-changing stimuli or distractions. Their cognitive style lends itself to short periods of attentional focusing on specific distinct compelling things then drifting or changing focus of attention. This prevents students from grasping a whole system instead of a series of narrow distinct bits of curriculum information.

Students without ADHD/ADD live in what some researchers refer to as "*our modern speeded-up culture … an attention deficit culture."* New screen media are being described by researchers as eliciting "conditioning of short attentional span".
 (Hooper and Chang, 1998; Healy, 2004)

And many in education wrongly assume that learning to multitask prepares today's young people 'for the modern world'. However, this zeitgeist flies in the face of respectable new research. (Foerde et al, 2006; Myers, 2006) We are living through a disturbing change in concentration, an era when children and young people come to recognise that concentration is not one's friend but is another word for monotony. Media multitasking is placing unhealthy demands on our children and young people's developing attention, which is a fragile and limited resource that must be spent wisely.

Allowing students to see a process through from its source to an end result and to experience a context, connection and sense of continuity in the learning process flies in the face of a culture which "conditions short attentional span" by increasingly encouraging the consumption of short, disconnected pieces of information and

experience. Perhaps this is why the National Foundation for Educational Research (2008) has cited Britain's increasing use of computer games and the Internet as contributing to their findings, that for the first time, "Comics are the most popular reading material …they are now the favourite - enjoyment of reading stories and information books has fallen..."

Mentoring

The 'seed-to-table, start-to-finish' approach to learning is heavily augmented by the prominent role of mentors who not only direct the learning process but also help shape behaviour of students, often on a second-by-second basis. This is hugely advantageous and only possible because of the low student to teacher ratio.

UNESCO has recently concluded, "A high teacher pupil-ratio suggests that each teacher has to be responsible for a large number of pupils. In other words, the higher the pupil/teacher ratio, the lower is the relative access of pupils to teachers. It is generally assumed that a low pupil-teacher ratio … **enables the teacher to pay more attention to individual students, which may in the long run result in a better performance of the pupils.**" (UNESCO, 2008)

It is abundantly clear that monitoring a student's behavior requires the tutor to allocate a significant amount of their attentional resources to that student. As student numbers increase, the tutor's attentional resources are distributed ever more widely. Close observation is necessary especially in assessing a student's subtleties and nuances. This close observation and investment allows the tutor to become far more familiar with each student. And again, this becomes increasingly difficult as student to tutor ratio increases. These are the same principles that apply to effective parenting: time and attention to children matter enormously.

> **Case Example**
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> Ruskin Mill College, outdoor metal forge. The author observed male students ostensibly learning metal forging, which they were clearly doing. However as the author was talking with the tutor, a student interrupted the tutor in mid-sentence. The tutor calmly but authoritatively halted and corrected the student's social behaviour: "*You need to wait until I'm finished talking to our visitor before you ask me a question because I was busy explaining something important. So remember, if you want to ask someone something while they're talking, wait until they stop talking and say 'excuse me' first.*" This left the student better informed, yet not sanctioned in a counterproductive way and they seemed to genuinely accept, at face value, the social lesson they had just received.

Male Role Modelling

There has been a growing awareness of the particular importance of *male* role models, mentors and figures of authority in all areas of society. More recently, the unique and vital contribution of fathers is being recognized. Research consistently shows that fathers parent differently and in ways that matter enormously. A father's presence is intimately linked to higher self-esteem in their children. Therefore, a recent study of "*Lesbian Mothers' Perceptions of Male Involvement During the Transition to Parenthood*" concluded, "Most women desired some level of male involvement, even before their children were born. Having a boy enhanced some women's motivations to actively pursue male role models for their children." (Goldberg and Allen, 2007)

The UK has the highest incidence of single motherhood in Europe and the Office for National Statistics has just announced the "*proportion of children living with one parent more than trebled over the past 35 years.* " (González, 2007; ONS, 2008)

There has been a growing concern "to raise the global profile of fatherlessness and the social catastrophe it is causing in First World countries." (O'Connor, 2007)

Male mentoring programmes are expanding across the UK with aggressive recruitment campaigns such as the "Man enough to mentor" initiative by the youth charity Chance UK. The [female] chief executive says boys need to have male mentors to teach them how to be a man: "Society portrays negative views of men and we forget what an appalling impact it can have on male children." (Chance UK, 2007). Male mentoring is also seen as important factor in preventing crime and reducing drug and alcohol abuse. (Mentor Foundation, 2008)

Male teachers are thought to have a positive impact of boys' behaviour (TDA, 2007) Evidence also suggests that boys perform better at school when taught by men. Thomas Dee recently reported, "One theory asserts that the teacher's gender shapes communications between teacher and pupil, while another says the teacher acts as a gender-specific role model, regardless of what he or she says or does. According to this second theory, students are more engaged, behave more appropriately, and perform at a higher level when taught by one who shares their gender.

Indeed, my results confirm that a teacher's gender does have large effects on student test performance, teacher perceptions of students, and students' engagement with academic material. **Simply put, boys are better off when taught by men**. These findings persist, even after I account for a variety of other characteristics of students, teachers, and classrooms that may influence student learning. **They are especially important for young men**…" (Dee, 2006) And perhaps male tutors are especially important for young men with learning difficulty and behavioural problems.

Autism spectrum conditions are far more common in males than in females (classic autism occurs in four males for every one female, and Asperger's syndrome occurs in nine males for every one female), this may suggest that the number of autistic traits a person has is connected to a sex-linked biological factor – genetic or hormonal, or both (Baron-Cohen et al., 2005; Baron-Cohen et al., 2004). There are clear sex differences in empathising (females performing better on many such tests) and in systemising (males

performing better on tests of this). Autism and Asperger's syndrome can be seen as an extreme of the typical male profile, a view first put forward by the paediatrician Hans Asperger. This has recently led to the extreme male brain (EMB) theory of autism (Baron-Cohen, 2002).

In regions of the brain that on average are smaller in males than in females, people with autism have even smaller brain regions than typical males. In contrast, in regions of the brain that on average are bigger in males than in females, people with autism have even bigger brain regions than typical males. Also, the male brain on average is larger than in females, and people with autism have been found to have even larger brains than typical males (Baron-Cohen et al., 2005).

More boys than girls present with symptoms of AD/HD. The US *Diagnostic and Statistical Manual of Mental Disorders* DSM-IV estimates the male: female ratio as 9:1 Boys are diagnosed with ADHD three times more often than girls (American Psychiatric Association, 2008); and adult males are diagnosed more often than adult females. Males of all ages tend to display, by far, more hyperactivity than females and slightly more symptoms of inattention than women. Approximately 10% of all males and 4% of females have been diagnosed with ADHD.

The difference in prevalence rates between males and females is an interesting phenomenon. Not only do boys tend to be more often hyperactive, but boys who are inattentive often play around (and get in trouble). As Autism spectrum conditions and ADHD have such a significant over-representation of males, an abundance of male tutors and role models at RMET colleges seems particularly advantageous.

Utility to Civility - Apprenticeships

After decades of neglect, the status of apprenticeships is being seriously reconsidered. The British Government has recently announced its aim to create "an unprecedented expansion in apprenticeships" (Brown, 2008). And new research by the Learning and Skills Council has found that apprenticeships "significantly improve business

performance". Moreover, apprenticeships were found to produce staff who are of a "higher quality" and are "more loyal … motivated and satisfied … Apprenticeships reduce staff turnover". The LSC is also emphasizing the role of apprenticeships in learning skills. Apprenticeships are considered a key factor in cultivating capacity building and general transferable competencies in young people (LSC, 2008).

However, there are additional benefits that come through apprenticeships. The second process of the apprenticeship-tutor relationship is the inadvertent, sometimes incidental, lesson in how to be an adult - in particular, how to be a man - how to behave, interact, respect elders or those of experience, those in authority. Apprenticeships provide an arena for becoming socially viable. The intensive mentoring that occurs at the Ruskin Mill colleges, in addition to cultivating capacity building and imparting general transferable competencies, may act to develop and enhance the process of maturation and stability in young people. And this in turn may benefit the student but also the employer, who will end up with an employee who is "higher quality" and are "more loyal … motivated and satisfied " because they are more viable human being who also learned saleable skills.

The British prime Minister has recently acknowledged the important function of the apprenticeship. "Young women should be encouraged to become apprentices. And we need more role models of apprentices for girls to look up to." (Brown, 2008) The Canadian Department of Labour and Workforce Development recognises this important function and presents awards of excellence to recognize outstanding mentors – "The mentor/coach award of excellence: This award recognizes an employer, supervisor, instructor or other mentor who has served as a role model and demonstrated qualities of superior teaching, enthusiasm for the trade and a strong commitment to the progress of apprentices in their program. (Government of Nova Scotia, 2008)

The author has observed students experiencing mentoring in a variety of places within the RMET colleges. The process could be seen as akin to sending the student to a 'temple' with a Greek god figure for several months and then on to another for a further period,

with each temple and male archetype exerting its formative influence from different angles. This is the environment in which rites of passage can take place; a student can try to make something, which is very challenging, and will either fail or succeed under the watchful eye and support of a mentor. In pewter, weaving, the 'cutting in' on glass, or copper spinning workshop as well as outdoor metal forging and green woodworking, fish farming, horticulture and animal care, the author observed a notable degree of attention to and respect for the tutors who were imparting or overseeing the development of students' skills.

Joined Up Civility

Mentoring and role modeling are not confined to the school day but continue during student's 'down time' both in college and for residential students, at home. Practices such as eating together where students and staff sit at the same table while other students cook and serve the meals; and for residential students, eating dinner with 'house parents', sometimes in a family environment at a round table serve to anchor the student - reinforcing and consolidating the other mentoring and role-modeling the student is experiencing during the formal college day.

Britain has the lowest proportion of children in all of Europe who eat with their parents at the table (Bradshaw et al, 2007) and 75% of dinners are eaten in front of the television (Spungin, 2004). The Association of School and College Leaders has just cited this decline of the collective meal as the reason that over-stretched schools are now having to teach basic manners and tasks such as using cutlery and **how to hold simple conversations**. The general secretary John Dunford Speaking at the union's annual conference concluded: "one of the most important factors has been **the loss of the family meal**, which has reduced family conversation so that schools have more to do in teaching children to communicate. Youngsters too often lack key social skills such as listening to others, saying 'please' and 'thank you' and taking turns. In terms of good manners and appropriate behaviour, primary schools have to teach children how to use a knife and fork and sit at a table." (ASCL, 2008)

A new generation of research is finding that this informal ritual has powerful unexpected effects on young people. Eating together at the table confers benefits such as closer social units and better-behaved young people who learn about interaction through taking part at the table. Eating in bigger inclusive groups integrates young people, teaching them how to be part of a group. Practices such as having ritual grace – a 'stilling' – before eating and serving others first then waiting until others are finished before leaving, imparts deferred gratification, consideration and respect for others. This is particularly important in students with Autism and ADHD where recognizing others and acting less impulsively are more difficult. Including children and young people in the process of eating is an important opportunity to socialise them. The table is a forum where our children and young people are made socially viable, a place where we impart our values and (hopefully) they absorb them. Eating together involves a form of mentoring that goes beyond just learning table manners, children learn how to interact and behave in other social situations.

Children and young people become socially viable by learning through observation and /or copying the 'right things' at the table. This appears to be mediated by specialized brain cells called *mirror neurons* which when activated literally make children and young people absorb, mimic and integrate aspects of culture. (Umiltà et al., 2008)

Learning to Read Emotions

New research is going "against the popular theory that the facial expressions of basic emotions can be universally recognised. A person's cultural experience of others plays a very strong role in determining how they will perceive emotions". (Yuki et al, 2007). Children and young people need to *learn* this from repeatedly experiencing face-to-face-conversations - particularly across a dinner table within their own family or residential unit. This is more likely to ensure they become emotionally literate and able to interpret and even manipulate others as required outside of the residential unit. It is part of the civilising process of social viability. And if there are deficits in the student's ability to empathise they can at least learn to observe and respond correctly to the overt social cues. Social behaviour can at least become a *learned* - if not a true emotional, empathetic

response.

Linguistic and Expressive Skills

Eating together confers linguistic skills along with the ability to have conversations – to know when and how to listen and contribute to a group conversation. Researchers are studying "*The psychological and social dynamics of topic performance in family dinnertime conversation*". And they are finding that a variety of vital processes are exercised through table talk: "interactional and psychological dynamics involved in introducing, sustaining, reintroducing, shifting, discontinuing, and ending a topic, as well as the underlying factors that govern topic dynamics during family dinnertime conversations." The technical sounding nature of the studies gives us an idea of how complex table-talk is and what processes are learned and reinforced during what to most of us see as idle 'chit chat'. "To introduce a new topic, discontinue a topic, etc., participants seem to use certain explicit cues such as the introduction of new locative, temporal and participant coordinates, and implicit cues such as speakers assuming that the conversational participants have the background or frame of reference to interpret what has been said." Power-relations and gender roles in the structure of families are central to "organising topic development during dinnertime conversation". (Abu-Akel, 2002)

Particular note should be made of the use of _round_ tables at RMET that facilitate eye-to-eye contact, conversation and the reading of body language during meals.

Eating Together and Mental Health

A new group of scientific studies now cite the act of eating together as a health requirement.

A study at Columbia University reported that having **at least one parent eat dinner together with their child regularly** - was found to prevent depression, anxiety and substance abuse in children, who also achieve higher grades in school, compared to those

children who dine on their own.

(Luthar and Latendresse, 2005)

Eating together has been cited as strengthening marital relationships and children's self-esteem (Li, 1998). Children in families eating with adults less than three times per week reported higher levels of family tension, less conversation, and lower self-esteem than families who eat together more often, without television. (CASA, 2008)

Research by The National Center on Addiction and Substance Abuse at Columbia University "consistently finds that **the more often children eat dinner with their families, the less likely they are to smoke, drink or use drugs."** The National Center has established "Family Day — A Day to Eat Dinner with Your Children - eating dinner frequently with your children and teens reduces their risk of substance abuse."

The Chairman of the National Center has gone so far as to state: "*One of the simplest and most effective ways for parents to be engaged in their teens' lives is by having frequent family dinners," "one factor that does more to reduce teens' substance abuse risk than almost any other is parental engagement.*" (CASA, 2005)

The US Congress now recognises National Family Month (mid-May to mid-June) strongly promoting 'frequent family meals' as the way "to help America's families reconnect" (National Family Month, 2006)

A new collaborative 5 year study of 2516 adolescents by epidemiologists and consultants in adolescent medicine concludes that eating together is so important it should now be considered a health issue: "*Health care professionals have an important role to play in reinforcing the benefits of family meals … Schools and community organizations should also be encouraged to make it easier for families to have shared mealtimes on a regular basis.*" The study found for example that adolescent girls who frequently eat meals with their families are less likely to use diet pills, laxatives or other extreme measures to control their weight five years later. "even after adjusting for sociodemographic

characteristics, body mass index, family connectedness, parental encouragement to diet, and extreme weight control behaviours at point 1 [beginning of the study]". (Neumark-Sztainer et al, 2008)

Eating together as a family during adolescence is associated with lasting positive effects on dietary quality later in life, according to researchers. For women, eating together as a family more often during adolescence meant significantly higher daily intakes as adults of calcium, magnesium, potassium, vitamin B6 and fiber. Among males, eating as a family more during adolescence predicted higher intakes of calcium, magnesium, potassium and fiber as adults. The frequency of family meals also predicted females would eat breakfast as adults. It also predicted eating dinner more frequently as adults, placing a higher priority on structured meals and a higher priority on social eating. These are strongly related to better weight control and better health. "Results of this study suggest that having more family meals during adolescence is associated with improved diet quality during young adulthood," the researchers say. "*Food and nutrition professionals should encourage families to share meals as often as practically possible*." (Larson et al, 2007)

Sitting down to a family meal **reduces the risk of obesity** (Gable et al, 2007). And eating in front of the television lowers metabolism, burning fewer calories than eating together and interacting. There is actually a significant dose-response relationship in which REE [resting metabolic rate] decreases as a person's average weekly hours of TV viewing increase (Cooper et al., 2006). Other research finds that eating with the television on makes both children and adults eat significantly more – the equivalent of one full extra meal a day - even if they are not physically hungry. (Stroebele and de Castro, 2003) One of the mechanisms by which television, as opposed to eating together as a family, may induce us to eat more is through causing our brain to monitor external non-food cues– the television screen – as opposed to internal food cues telling us that we have stuffed ourselves and can stop eating. Experiments have found that when distracted in this way, humans continue to salivate unnaturally in response to more and more food when normally they wouldn't (Epstein et al., 1997). Again, all of these observations occur at a

time in our history when Britain has the lowest proportion of children in all of Europe who eat with their parents at the table (Bradshaw et al, 2007) and 75% of dinners are eaten in front of the television (Spungin, 2004).

RMET college students are likely to have more face-to-face contact with house parents and fellow students at mealtimes than students in mainstream education who live with their biological parents. **The above findings strongly support the practice of RMET college students eating routinely within groups and 'house families'. These students are likely to derive many of the benefits described in the research above.**

Effects of Social Interaction

In addition to the role modeling and mentoring above, life at RMET colleges encourages and facilitates social engagement and interaction in all areas during and beyond the formal college day. And the net level of social interaction with another human being on a day-to-day basis is increasingly linked with physiological and cognitive benefits. For students with learning difficulties it is especially important to be engaged on a regular basis socially and emotionally. For example, the social and communication difficulties in autism and Asperger's syndrome are characterized by deficits in empathy. Increased social interaction may help to improve this situation because of the constant experience of dealing with other people and trying to interpret their emotions and motives. Some may refer to improving the student's 'emotional intelligence' (Petrides & Furnham, 2003) through everyday real-life practice. At the very least this social interaction will help students learn the appropriate social cues in civilized discourse and conduct.

Observations at Glasshouse College

In a weaving workshop, the tutor, Lottie accompanied by a support worker, has created a situation and environment which is conducive to incidental conversation among the students, who can continue to be deeply engaged in their weaving or carding wool yet can make others a cup of tea and interact nonchalantly. All of this contributes to cumulative experience in learning the protocol and cues of interacting with others. In the glass cutting workshop a student Dan, has learned to demonstrate cutting to visitors make a cup of tea and connect with people. While in the glass blowing workshop, the tutor Roger doesn't need to say much as the students learn to read his intentions through his body language.

Until recently general cognitive capacities were seen as relatively fixed and not subject to change. However, a new study has concluded that spending just 10 minutes talking to another person can improve general cognitive functioning:

"*participants who interacted socially for 10 min showed better cognitive performance, performance equivalent to that displayed by participants engaged in so-called intellectual activities. Not only do the results show that the effect is causal but that the process is very sensitive to small amounts of social interaction. Social interaction directly affects memory and mental performance in a positive way.*" (Ybarra et al, 2008)

Social interaction seems to produce real-time changes in the sections of the brain underlying such key functions as attention, working memory, and processing speed (Olesen et al., 2004; Posner & Rothbart, 2005). Importantly, these changes can have short-term positive effects, presumably based on real-time *activation* of these brain areas, as well as long-term effects, presumably based on actual changes in the *structure* of the brain (Draganski et al., 2004). These findings are also consistent with research on other species showing that social interaction improves cognitive performance, brain cell growth, and overall brain mass (Bennet, Rosenzweig, & Diamond, 1969; Cummins, 1973; Lipkind, Nottebohm, Rado, & Barnea, 2002; Lomassese et al., 2000; Menzel,

Davenport, & Rogers, 1970; Sandeman & Sandeman, 2000).

The researchers also found that greater social engagement is associated with better cognitive functioning in the *longer* term. This is the latest in a growing number of studies. (Bassuk, Glass, & Berkman, 1999; Seeman, Lusignolo, Albert, & Berkman, 2001)

Social interaction can "exercise" general cognitive processes (working memory, speed of processing, inhibition) in the service of social cognition (e.g., empathy, 'mentalizing', symbolic interaction).

The researchers suggest that "in light of current research and discussion, it may not be inappropriate to rephrase Descartes' philosophical statement 'I think therefore I am' as 'I think about and with others, therefore I am.'" This abridged version captures a core aspect of a student's identity. In the case of students with learning disabilities, it is imperative that a sense of awareness and connection to others is reinforced in order to strengthen their own sense of identity.

Social interaction is also linked to:

    - healthier immune systems (Pressman et al 2005)

    - lower death rate, extended life span (Koenig, 1997; Yeager et al, 2006)

    - the same impact on general health and life span as physical exercise programmes (Glass et al, 1999)

    - reduced risk of clinical depression (Gladstone et al, 2007)

Face-to-face interaction is now considered a non-negotiable necessity for physical, mental, and societal health:

Real eye-to-eye contact and human touch alters brain function and the level of the 'affiliation' or 'bonding hormone' *oxytocin*, which is produced during social contact. Oxytocin is also implicated in higher order social experiences such as witnessing good deeds (Silvers+ Haidt, 08) and is involved in feelings of trust and generosity (Zak, 2001). Interestingly a recent experiment found that when students were given oxytocin nasal spray they displayed an 80% increase in financial generosity. (Zak et al 2007). However the production of oxytocin can then produce more caring behaviours. So there is a 2-way effect in that a behaviour may produce more oxytocin, which can then reinforce that behaviour. (UCSD, 2008) In students with learning disabilities involving a deficit in empathy and connection and often trust, this may prove to be an important process to reinforce.

Students, Screen Media and Social Disengagement

Until now, people's lives have been dominated by being socially engaged and interacting with one another. Yet, recent history has seen Britain move from a culture of greater common experience to a society of more isolated experience, where private space is available in almost every sphere of the student's life. Social interaction and connections among young people appear to be on the decline resulting in a great loss in what is referred to as 'social capital' (Putnam, 2000).

- Britons now spend only 50 minutes a day interacting with other people (ONS, 2003)

- Couples now spend less time in one another's company (ONS, 2004)

- Children now spend the vast majority of their time in the family home isolated, in front of their TV/computer screens. (Children's Society, 2008)

- Television is displacing the parental role, eclipsing "by a factor of five or ten the time parents spend actively engaging with children".
Children's Society (2008)

Time that was previously spent socially interacting has been displaced by the virtual variety. UK social-networking usage is now the highest in Europe, in terms of hours spent, pages viewed, and the number of visits per month: (comScore, 2007).

Unlike social networking sites, face-to-face conversation offers the second and third dialogues of communication: the nuances of voice modulation, prosody along with forms of non-verbal communication such as facial expressions and body language.

Those particularly drawn to interacting with others through a screen would in previous times be called introverted or shy. Now, chat rooms are hailed as giving them a voice and even the more gregarious are being enticed to spend more time alone. Childhood and young adulthood is increasingly about private space. Key periods of emotional and social development are being displaced by time in front of a screen.

A decade ago, a detailed classic study of 73 families who used the Internet for communication, The Internet Paradox, concluded *'greater use of the Internet was associated with declines in participants' communication with family members in the house, declines in the size of their social circle, and increases in their depression and loneliness.'* They went on to report *'both social disengagement and worsening of mood...and limited face-to-face social interaction … poor quality of life and diminished physical and psychological health. … **When humans have more actual social contact, they are happier and healthier, both physically and mentally**'*. (Kraut, R. et al, 1998)

An ongoing study of families by UCLA is finding that social disengagement is now rapidly increasing, as side-by-side and eye-to-eye human connections are being replaced by the eye-to-screen relationship. The impact of multitasking gadgets is one of the most

dramatic areas of change, described by the scientists as '*pretty consequential for the structure of the family relationship.*' (Ochs, 2006)

This new private space for the young afforded by the Internet is part of a growing privacy accentuated by record levels of divorce, the longest parental working hours in Europe, and children having the fewest siblings in history. What this social disengagement means in plain terms is there has been a drastic reduction in daily eye-to-eye contact with people who care about you, and a concomitant increase in eye-to-screen contact with people who don't. Even in mainstream education, there has been a growing trend of students looking at screens in classrooms and a reduction in interaction between student and teacher.

It is important to highlight the extent to which all RMET colleges defy the trends described above and facilitate eye-to-eye social contact both in and outside of the learning environment in preference to electronic media.

Routines and Rhythms

The residential houses at RMET colleges place a significant emphasis on daily and weekly routines and rhythms. For example students may be expected to:

1. Be in bedroom by 10:00 allowing students to wind down and get used to being by themselves.

2. Lights out by 10:30

3. Silence by 11:00

There is an increasing interest in the importance of biological routines such as eating and sleeping. The field of *chronobiology* finds significant benefits in humans who sleep and eat regularly.

The American Medical Association's *Archives of Pediatrics and Adolescent Medicine* report, 'Young people in the United States are in the throes of a glut of wakefulness,' putting them at risk of problems with their immune system, metabolism and clinical depression (Carskadon, 2004). Children who sleep poorly are more than twice as likely to end up smoking, drinking and using drugs (Wong et al, 2004) British students are increasingly sleep deprived, this is exacerbated by going to bed later and at erratic times. The heavy use of electronic media late at night in bed is a major factor; strongly linked to sleep deprivation and sleeping problems even years later This in turn affects academic performance, general cognitive function, social behavior. (Sadeh et al, 2004; Wiggs 2004; Van den Bulck, 2004; Johnson et al, 2004))

More recently scientists have gone further to identify specific changes in components of students' immune system. For example, Stanford University Medical Center has found evidence that a lack of sleep can significantly alter levels of the hormone melatonin, an extremely powerful antioxidant. Reduced amounts of melatonin may result in a greater chance that cell DNA will produce cancer-causing mutations. (Sephton and Speigel, 2003) Researchers in Germany found that people who got a good night's sleep had almost twice the immune system antibody level to the hepatitis A vaccine – even a month later. According to Jan Born, researcher at the University of Luebeck, 'Our results are amazing in that they show a decrease in antibody titer [concentration] after only a single night of sleep deprivation.' One reason may be that hormonal changes during sleep may help immune function. He noted that sleep boosts the release of prolactin and growth hormone, two hormones that lab experiments suggest enhance the immune response. (Lange et al, 2003)

New research is finding a link between obesity and a lack of sleep. And it may be no coincidence that as we now get less sleep we've grown fatter. Three studies, including one involving 1.1 million people, found that getting less sleep is associated with having a higher body mass index (BMI). One study found a completely inverse relationship – the less sleep the person got, the fatter they were. What is emerging is the discovery that sleep directly influences two vital appetite-controlling, fat producing/fat-burning

hormones. People who sleep less have lower levels of *leptin*, a hormone that acts to suppress your appetite and stimulates calorie burning. At the same time, less sleep causes an increase in *ghrelin*, another hormone that has the opposite effect – stimulating your appetite as well as your fat production and body growth. Scientists have concluded, 'The changes in hunger are proportional to the changes in these hormones.' *We observed a significant relationship between sleep duration and body mass index (BMI).*
"There is a really clear relationship between short sleep duration and obesity in children." (Taheri et al, 2004, 2008; Vorona et al 2005)

Again it is important to draw attention to the policy of RMET colleges that reinforce regular and sufficient sleep schedules, thereby optimising the student's opportunities during the waking day. According to the medical authorities mentioned above, this is what *all* young people should be doing for the sake of the health, behaviour and school performance.

Beyond sleep, the general emphasis at RMET colleges on rhythm and routine also provides a sense of security through predictability, which is particularly important in many of the students with learning difficulties. This routine is accompanied by a highly important constancy in the people they see regularly in workshops and back at home at day's close.

CONCLUSION
Most if not all of the learning and living environment at RMET colleges is in concordance with what research in education, psychology and medicine are strongly recommending for all schools, families and communities. Therefore, RMET colleges serve as a microcosm of what society should be doing with young people.

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