

**What are the Therapeutic and Pedagogical Benefits of Craft
for Impulse Control related Disorders
within the SEN Further Education Sector**

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INTRODUCTION REFLECTION AND RATIONALE

I am a craft practitioner and tutor and have worked for Ruskin Mill Trust (RMT) for over 7 years in a variety of roles. By means of taking part in a range of crafts and talking to RMT colleagues, I have gained a holistic insight into the benefits of its unique craft-based curriculum, along with its 7 fields of practice (Appendix 1), to effectively transform the lives of many young people. I currently serve two roles within the trust, Whittle Tang tutor and Practical Skills Therapeutic Education (PSTE) tutor and mentor. Within my practitioner role I work with a range of Special Education Needs (SEN) students in a traditional cutlery and metal workshop environment, in the heart of Sheffield's industrial quarter, teaching young people traditional metal and wood craft skills using RMT's unique PSTE method.

This project is set within the context of the learners who engage within Ruskin Mill Trust's (RMT) Practical skills therapeutic education (PSTE) curriculum. 'The three principles of Practical Skills Therapeutic Education are: 1.WHY: The development of self-generated conscious action; 2.HOW: Applied Contemporary Apprenticeship Learning; 3.WHAT: The integration of seven fields of practice' (Gordon and Von Bulow, 2012:176). The curriculum is based upon principals and philosophies from John Ruskin, Rudolf Steiner and William Morris. It is centred around a craft based curriculum in which the learners are encouraged to engage their 'hand, head and heart' (2012:14) with source materials in order to provide holistic opportunities for the learner to meet world based challenges which in turn can provide therapeutic and educational opportunities within an integrated and true-to-life setting. Gordon and Von Bulow (2012) explain that:

'The intention within the Practical Skills Therapeutic Education is to create the conditions for the development of Personal Autonomy through self-generated conscious action in service of people and the earth'. (2012:174)

Through my engagement with the Trust and its PSTE curriculum, I too may have benefited from this concept of self generated conscious action as I now have the desire to give back to the Trust and wider community of Education and Craftwork via the means of this MSc project.

Through my personal and professional life I have always been deeply connected to the environment. Through my childhood I had benefited from the holistic learning environments that nature and crafts provided and spent much of my time investigating and exploring nature. I also spent much of my time within my father and grandfather's sheds, experimenting with craftwork, making things and learning a great deal about the world as a result. Having been diagnosed with dyslexia at a very young age I believe most of my useful education came from such exposures and experiences, as I have always struggled within the classroom environment. After benefiting from such experiences and exposures I was keen to pass on such benefits to other people who had similar learning difficulties and who also struggled within the traditional class room environment.

This passion for nature and holistic education, led me to study a Bachelor of science (with honours) degree in Environmental Conservation. This served as a spring board into the professional world of education as it led me to work for Forest schools as a freelance forest school practitioner, in which I educated and trained a wide variety of learners from toddlers to adults.

Through such work I was introduced to the therapeutic and developmental effects of both nature and craftwork, seeing particular benefits to the SEN learners I worked with. Soon after I applied for a role with my current employer, Freeman College. This introduced me to Ruskin Mill Trusts unique visions and values, which I quickly found were very similar to my experiences and views on how education can be approached.

After working for the Trust for a number of years in various roles and environments and teaching, supporting and engaging with hundreds of different learners with a variety of diagnoses, I gained valuable insight into its methodologies and beneficial effects. This resulted in my desire to look

more academically into the inner workings of its PSTE curriculum in order to investigate and explain how such an approach can benefit learners. This eventually manifested in the form of this MSc study and doing this project.

My original intention in the project was to look into the general benefits of crafts with particular reference to the natural affordances of the materials used within them. This idea came out of taking part in the staff training program of PSTE, in which I investigated and compared the qualities, processes and effects of the materials used within the crafts; spoon forging and green woodwork. After an encouraging conversation with Aonghus Gordon (founder of RMT and PSTE) about this theme I was inspired to research further into this topic and resulted in me undertaking the MSc. While studying the masters I investigated more deeply RMT's method as mentioned above. Through lectures within the MSc course I discovered the work of Biesta (2012, p. 92), who researches '...education through the question of the connection of child and world.' He argues that

'education needs to take place in the middle ground between two extremes: destruction of what resists and withdrawal from what resists. I refer to this middle ground as the dialogue between child and world and argue that it is through this dialogue that the worldly existence of the child becomes possible.' (Biesta, 2012, p. 92).

This concept of education became important within exploring and explaining my field of study and as such will be referred to throughout the project.

During the MSc I also had the opportunity to attend a week lecture program delivered by Dennis Klocek in which he described and explained the human relationship to the world. He used both scientific and Anthroposophic perspectives, which helped me gain insight into the area of research I had set out to investigate.

I was later given the opportunity to attend the 'Consciousness studies' course at Rudolf Steiner College. Within this course I was invited to take part in a personal reflectional process. The method aims to develop flexibility of thinking and in turn can help create beneficial and therapeutic shifts in one's life. The concept is to create a capacity for a human to reflect on him/herself without blame and therefore effectively change and dissolve unproductive and negative habits, beliefs and opinions. This in turn leads to the ability to control one's bodily impulses and urges which may be creating stress and problems within one's life.

Taking part in this process helped me develop a greater capacity for personal reflection which helped me better understand and apply the benefits of such a reflective process. It was instructive to read Gibbs (1988) in this context, who states that reflective practice can develop; 'critical and analytical abilities, whilst learning experientially from practice' (1988 p 107). This later inspired me to further develop opportunities in both my professional roles to provide more opportunities for reflection within my teaching of staff and students. Reflecting on my professional role, it is evident to me that working with craft provides a similar reflective process and therefore may serve a similar outcome of increasing one's abilities to better control one's impulses. This concept of using crafts as a reflective process is further explored within the literature review. I also explain and give examples of this process through a description and diagram of my own design later in the project.

After discussing my potential theme of my MSc project with Dennis Klocek (Interview transcript available on request, 2013) it was clear that in order to provide the most relevant and transferable research data I also needed to focus the project to investigate how crafts can support the development of impulse control. He suggested impulse control is a 'rubric' and is at the heart of most diagnoses of the learners we work with at RMT. This conversation led me to doing an investigation on impulse control and executive functions. I discovered that impulse control is widely understood within all scientific realms and is experienced by every human being through their development. This also led me to the realisation that research in this area can be developed to benefit a wide audience.

After researching this area, talking with colleagues and witnessing the increase in impulse control related disorders within Freeman College, as well as the increase in impulsivity within society at large it became increasingly clear that this project would be timely and pertinent. My investigation revealed the paucity of research relevant to the Special Educational Needs (SEN) sector and in particular the demographic of learners which RMT experiences.

Professionally I want to gain a better understanding of exactly what impulse control is, and its associated difficulties and manifestations, in order to better meet the needs of the learners within my teaching practice and workshop environment.

Another reason which drew me to this area of research was to help build upon the PSTE staff training curriculum, in the form of including more training for staff around the area of impulse control. It came to my attention that staff were asking for training and information on how to better manage the increasingly challenging behaviour they were experiencing with learners. Given that we will be facing more learners with such problems in the future I am developing craft reference guide to highlight the benefits of particular crafts, to serve as a prescribing type tool to lead learners to situations or crafts where they may better benefit from the PSTE curriculum.

METHODOLOGY

The method used was a phenomenological research approach which I find provides a holistic perspective of the subject area. Phenomenological research 'gathers deep information and perception through inductive, qualitative methods, such as interviews, discussions and participant observation, and representing it from the perspective of the research participants' (Lester, 1999). I have collected three different types of data: a literature review which examined the benefits of crafts and how developing executive functioning capacities can be used to benefit the conditions presented by impulse control disorders; interviews with tutor practitioners and a professional discussion with an anthroposophical psychiatrist that provided insights of professionals in the field; and first person research through participant observation. Furthermore I have included a scientific and anthroposophically informed case study on materials.

The semi structured interviews consisted of a fixed set of open questions (appendix 2) which encouraged the respondents to answer in their own terms and to develop their dialogue more freely. The results of the interviews and questions were recorded and subsequently transcribed (Appendix 6). The questions were used as prompts in order to let conversation flow and allow the practitioners to have time to develop their point of view in order for the interviews to draw the most authentic data possible. In designing the interviews and questions I followed the suggestions of Bryman (2004) who says that the method of semi-structured interviews can create a better flow to the interviews and help delve deeper into areas of interest, as 'the interviewer usually has some latitude to ask further questions in response to what are seen as significant replies' (Bryman, 2004, p.113). In order to create a conducive atmosphere the interviews took place within a variety of settings deemed appropriate as to maximise familiarity and comfort for the interviewees.

Six interviews were carried out with skilled and experienced practitioners/tutors (the names of whom have been left out for anonymity). I chose five different crafts; blacksmithing, spoon forging, green woodwork, felting and weaving. This is a representative sample of the craft provision at Ruskin Mill Trust and its colleges.

I sought and gained permission from the Trust to carry out the research under its ethical procedures which maintains anonymity for any students or staff who participate, informs them of the subject being studied and asks for their permission to participate and also gives them the right to withdraw from the study at any time.

The practitioners/tutors participating in the interviews were selected through identification of relevant craft subject. The method of choosing the interviewees was thus not random non-judgemental but based predominantly on the research question. (Fetterman, 1989, p. 42). The six crafts and their respective practitioners chosen were as follows (the study refers to them with a single letter for each to ensure anonymity):

1. Green Woodwork (1) C
2. Green Woodwork (2) D
3. Weaver A
4. Wool crafts/Felting E
5. Blacksmith F
6. Spoon forger B

The practitioners were advised of the ethical considerations of this project and were told they could withdraw at any time. They were given an overview of the project and we discussed the topic of impulse control to make sure they had a clear understanding of this concept whereupon they then signed a consent form (an example of which can be found in Appendix 3).

The interview with the psychiatrist was less structured, it aimed to allow him to talk about his own experiences of trying different crafts and then to make connections with the therapeutic possibilities of what he had felt.

For the first person research I took part in three crafts (Forging, Green woodwork and Wool crafts/Felting). This represented the range of crafts and materials used within the PSTE curriculum. I also made a wood and bone handled knife for the purpose of a personal reflective journey. This was accessed through the PSTE training and development programme which aims to allow the practitioner access to the emic (inside) perspective of the learner.

Data analysis method

I used the data from the interviews to assess where practitioners identified a development of executive function skills. When analysing the interview transcripts I was looking for key themes and patterns amongst them. I find Leininger (1985, p. 60) describes this process well when saying that themes are found by "bringing together components or fragments of ideas or experiences, which often are meaningless when viewed alone".

It was very satisfying to find that the themes which emerged from the individual participants' thoughts and opinions eventually created "a comprehensive picture of their collective experience." (Aronson, 1994, p. 2). To reach a meaningful conclusion I converged the findings from the literature review with the themes identified in the interviews and first person observations.

Reflection Evaluation of the Methodology

While the semi-structured interviews were a good way of eliciting the views of the interviewees in a non-threatening way, they were time-consuming and hence limited in number. Due to their subjective nature it was difficult to draw highly conclusive generalisations and such a small sample size meant that statistical analysis was not possible. However the results of the interviews did provide a very rich insight into how the learners experienced the crafts and developed their executive functions and impulse control. The resulting data does give a pattern of trends which, when measured against the literature, did largely match the theoretical concepts. Such a line of research does appear to be ground-breaking and should provide the basis for further studies which will challenge the findings reported here.

LITERATURE REVIEW

This review considers a range of academic writings and studies to examine the general benefits of crafts within an educational, therapeutic and developmental context. It will look at the capacities that are engaged and built through working with crafts in order to establish if they are similar or connected to that involved or related to executive functioning and impulse control related disorders to gauge the possible benefits to the learners.

Craft has long been used within an educational setting and recent research is suggesting it has a range of positive effects and benefits on the learners who engage with it. There is a range of recent publications from a variety of disciplines, which have given craft work a 'significant voice' and how this is reflected in government reports and government funding decisions. (Adamson 2007; Risatti 2007; Sennett 2008; Roberts 2008; Crawford 2009; Frayling 2011; Niedderer and Townsend 2011; OFSTED, 2009:Creative and Cultural Skills and Skillset 2010; Perfect Moment 2006; House of Commons Education and Skills Committee 2007; Geoghegan 2011). For example the OFSTED (2009) report draws together findings of a survey of art, craft and design education in 90 primary and secondary schools. It highlighted the benefits and value of craft within the educational setting and found:

'The picture was generally a positive one. Pupils' art, craft and design work often had a strong and immediate presence in the schools and local communities...Where art, craft and design were flourishing, schools promoted the subject, valuing its unique contribution to pupils' personal development and its impact on their wider achievement.'

(OFSTED, 2009, p. 2).

Looking more specifically at the Special Education Needs (SEN) sector, the report emphasised the positive effects crafts can have on learners with learning difficulties. They found for example that:

'In a school for primary pupils with severe, profound and multiple learning difficulties, the curriculum was modelled around individuals needs and responses to different stimuli.

Opportunities to nurture and develop creativity were provided through the creative partnership scheme, which brought together artists of high calibre with teachers skilled in making the curriculum accessible to their pupils.' (OFSTED, 2009, p. 8)

Niedderer and Townsend (2011) discuss the debates, led by Sennett (2008) and Crawford (2009), who show that craft is more than just handiwork and how in recent times it has become recognized as a way of thinking, living and working. They see craft skill not in a narrow way but in a broad sense that highlights the pervasive nature of craft and its important role for the individual as well as for society as a whole. Moreover their emphasis is on how modern society and:

"'fast living' and 'flexible working' discourages dedication to, and pride in, succeeding in a particular skilled activity. In contrast, where time is allowed for the slow development of skill, it will bring pleasure and satisfaction and allow scope for experimentation with ideas and processes, materials and technologies" (Crawford, 2009, pp. 19–20; Sennett, 2008, p.296).

In brief, both Sennett's and Crawford's points are that working with crafts has been devalued in an age of information and schools have dismantled their craft workshops and brought in computer labs. Students are told that academic subjects and higher education is the only route to a successful career. The result is that we have a generation of people equipped for office work, but lacking in practical abilities. Craft work as both Sennett and Crawford point out it requires focused engagement with the material and cultivates the quality to think and to care for something.

Sennett's book *The Craftsman* explores the dimensions of skill, commitment, and judgment in a particular way. It focuses on the intimate connection between hand and head. He points out that a skilled craftsman conducts a dialogue between concrete practices and thinking. Craft, they argue and its associated learning of skills can provide elevation from modern distractions and associated 'fast living' to give such benefits and stimulus for; pleasure, satisfaction, experimentation, experience, emotion, memory, storytelling, creative experimentation, self-expression and technical advancement. Thus working with craft and its related materials can also be seen as tools for reflection and self-development.

Makela and Latva-Somppi (2011) explore the significance of theme of how the use of historical craft techniques can serve as a reflective tool and the significance of the craft practitioner interpreting the creative process of their own practice. OFSTED (2011) also make it clear that a school's curriculum should increase opportunities for learners to reflect and eventually exhibit their work:

‘Colleges should increase opportunities for students to reflect on and develop their roles as emerging artists, craft-makers and designers by working with younger pupils, and by enabling students to exhibit their work publicly’. (OFSTED, 2011, p. 4).

Self reflection and publicly displaying one's own work is an impression of the one who made that particular object and reflects the amount of effort, will and skill they applied to it. It also serves as an intermediary between their understanding of themselves and the reality of what they are actually capable of doing. Therefore as, McWilliam and Dawson (2008, p. 639) point out, craft can be used as a tool to 'creatively express an innate aspect of one's own psyche'. Such a view is endorsed by Karpinnen (2008, p. 88) who suggests that a finished and exhibited piece of craft-work 'can connote a sense of trained ability or mastery of a medium. This kind of craft is an act of expression not only through the production of crafted items, but first and foremost it is self-expression by demonstration of one's skills, knowledge, thoughts, experiences, perceptions and emotions'.

As discussed above it is recognised that working in a craft based educational environment can be beneficial to learners. Additionally, some authors and commentators go further to suggest that having a holistic and integrated craft based education is essential in ensuring the maximum educational and therapeutic benefits to learners. For example the Higher Education report from 2003 says that: 'The new employability agenda for higher education ...requires an holistic approach' (www.heacademy.ac.uk). Looking at education from this perspective, what justification is there for offering a holistic based education where craft can be fully integrated into the

curriculum? Karpinnen (2008).argues that a 'traditional curricula' where craft is included targets their 'pedagogical aims' in a way that has led to a state in which 'craft education has mainly aimed at practising functional skills ' Although the learning and practicing of 'functional skills' is certainly a benefit of using craft as an educational tool, it points towards the notion that crafts can indeed provide much more desirable, holistic and relevant educational and therapeutic benefits.

Such a model of integrative education is provided by Shoemaker (1989) where craft could easily be integrated. She says that it:

‘cuts across subject-matter lines, bringing together various aspects of the curriculum into meaningful association to focus upon broad areas of study. It reflects the interdependent real world, and involves the learner's body, thoughts, feelings, senses, and intuition in learning experiences that unify knowledge and provide a greater understanding than that which could be obtained by examining the parts separately. (Shoemaker, 1989, p. 87)

Kovalik and Olsen (1994) also define the term:

Integrative education bases its practices on the characteristics of the human learner and on the interdependent nature of reality. Instead of artificially dividing the world into ‘subjects’ and using textbooks and set work, integrative education immerses students in an enriched environment that reflects the complexities of life. This provides a holistic context for learning that leads to a greater ability to make and remember connections and to solve problems. (Kovalik and Olsen, 1994, p.1)

Sigman notes the specific benefits of such a holistic and integrated curriculum as it is ‘potentiated by the environment and context in which learning takes place.’ (2008, p. 8). There is also great emphasis on seeing a process through from its source to an end result which provides a sense of connection and continuity which goes further, linking with the traditions and environment of the community in which the college exists. Crafts also contribute to a moral and social development, as they possess an inherent lawfulness. The holistic nature of craft into its curriculum can be seen

to have been taken up and achieved by Ruskin Mill Trust. For example, Gordon (2012; p. 68) states "at the heart of Practical Skills Therapeutic Education lies the intention to support student acceleration towards higher levels of autonomy through the cross fertilisation of different fields of practice." and goes on to explain how facilitating and providing learners with opportunities to experience and view 'the continuum from the primary source through the activities in the workshops into items of civility for the household", (see Table 1). Sigman (2008) supports this by arguing that:

'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' (Sigman, 2008, p.7)

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.

Table 1 Example continuum of source to artefact process (Sigman, 2008, p. 6)

Sigman (2008) explains how crafts, and being part of and seeing such a continuum, can benefit the learner through leading to a greater 'locus of control' within the learner which can produce benefits both inside and outside college life:

'The mechanism by which craft activities - where the learner is fully involved in all stages of the process - produces positive effects, may be in part by reinforcing and cultivating a

greater internal locus of control within the student which becomes generalised... Through crafts, students gain a greater sense of control over a wider range of things in their lives.

For example greater internal locus of control is "significantly related to educational attainment" and is linked with having a lower level of work-family conflicts.

(Sigman, 2008, p.5).'

He goes on to explain how this can stimulate and benefit a number of capacities, in particular capacities relating to the ability to control ones impulses and emotions:

'Emotional stability, behaviour and mental health are also influenced by locus of control, along with an increased ability to delay gratification, tolerate ambiguous situations, or resist coercion, a lower association with suffering from anxiety, and a reduced risk of suffering from depression, other psychopathologies, and behavioural problems.' (Sigman, 2008, p.5)

He then further highlights the link between this type of learning and the development of abilities related to self-regulation and impulse control:

"The process of 'start-to-finish learning' reinforced through a craft-based curriculum cultivates greater sustained attention, self-regulation and deferred gratification vital to impulse control.... These self-regulation abilities - including the ability to alternately shift and focus attention and to inhibit impulsive responding - are uniquely related to early academic success and are now considered more important in early academic progress than measures of intelligence." (Sigman, 2008, p.5).

The learning of self-control skills between the ages of two and five years was first studied by Mischel in the 1960s in which children's abilities to control their impulses were tested. The participants were revisited by Goleman (1997) to follow up the effects of lack of impulse control later in the subjects' lives. He found 'The impulsive children's inability to delay gratification had them cost dearly. As adolescents, they were more likely to be seen as stubborn, indecisive, easily upset by frustration, mistrustful, jealous, and prone to fights and arguments (Goleman, 1997, pp.

80–82). In comparison the children who originally could control their impulses were found to be ‘personally effective, self-assertive, and better able to cope with the frustrations of life.’ In addition, they were more successful students with significantly higher SAT scores, on average, when compared to the impulsive children.

Such research clearly highlights the importance and significance of individuals' impulse control abilities and the resulting positive and negative effects this can have on peoples lives. Therefore it highlights the potential significance of increasing and developing such a psychological skill can have. This is further expressed within Goleman's (1997) statement; “There is perhaps no psychological skill more fundamental than resisting impulse. It is the root of all emotional self-control, since all emotions, by their very nature, lead to one or another impulse to act” (Goleman, 1997, p. 81).

Cyders (2012) defines impulsivity in the following way:

‘Impulsivity is a multidimensional personality trait, which encompasses such tendencies as inability to complete tasks, lack of planning before acting, seeking out new and thrilling sensations and experiences, and risk taking in response to extreme emotional states’ (Cyders ,2012, Preface).

This is further described by Depue and Collins (1999, p. 495); ‘impulsivity comprises a heterogeneous cluster of lower-order traits that includes terms such as impulsivity, sensation seeking, risk-taking, novelty seeking, boldness, adventuresomeness, boredom susceptibility, unreliability, and unorderliness’. From such definitions It is clear to see the negative effects of impulse control. They go on to explain:

‘Other studies identify more specifically a range of related psychopathological disorders, including kleptomania, pyromania, trichotillomania, intermittent explosive disorder and pathological gambling - all disorders which can be broadly grouped under the term ‘impulse control disorders’ (ICDs)’ (Depue and Collins, 1999, p. 495)

Furthermore, various forms of impulsivity have been linked to numerous DSM-IV disorders, including borderline personality disorder, mania, attention-deficit hyperactivity disorder (ADHD), binge eating disorder, pathological gambling, and substance use disorders, in addition to the whole section on impulse-control disorders (e.g., intermittent explosive disorder, kleptomania, and pyromania. (Cyders, 2012, p.1) . Much more research has been undertaken in the USA where Hollander found that:

'ICDs are of increasing importance to clinicians and researchers as the consequences of impulsivity and ICDs affect society to an ever greater degree. Of interest, changes in society and new technological advancements may partially account for the rise in these ICDs. With the development of the internet and its unlimited access to sex, gambling, shopping, and stock trading, there has been a subsequent rise in impulsive behaviour and even new forms of impulsive behaviour, such as internet addiction...Clinicians now see more patients in their practice presenting with ICDs and even newer forms of ICDs and therefore need to know how to classify them appropriately.' (Hollander, 2006, p. 2)

This points to the increase in 'media addiction' which is gaining increasing momentum within academic research. The risks of such media exposure and addiction have been taken very seriously, for example, in 2006, the Centers for Disease Control and Prevention convened a panel of experts in technology and youth aggression to examine this specific risks. As a response to this and other emerging health concerns, such risks and treatments have been investigated and discussed within a number of studies, for example; David-Ferdon (2007); Brown et al (2013); Huang et al (2010); Dong et al (2012).

Such articles highlight that 'Internet addiction disorder' (IAD) is rapidly becoming a prevalent mental health concern in many countries around the world (Dong et al 2012:153), and supports the hypothesis that this theme is indeed an emerging public health problem, while highlighting the need for additional research to support the evaluation and development of effective treatment and

prevention programs. They also highlights the connections between the rise in technology and media addiction with the subsequent rise and manifestation of impulse control related disorders and problems within society and the need to address such a growing problem.

The mechanism by which this influence can lead to impulse control problems and disorders has been shown through a range of studies. For example studies have shown the increase in computer and video game use and increasing length of time spent on them. For example a survey of over 600 eighth and ninth grade students found that boys averaged 13 hours per week and girls averaged 5 hours per week (Gentile, Lynch, Linder, & Walsh, 2004). Barlett et al (2009, p. 1) also highlight the negative effects of such an increase: 'Indeed, there is growing evidence for a wide range of video game effects that influence social and antisocial behaviors, cognitive styles, and affective processing'.

Other studies looking more specifically at video game effects found that the video games and associated 'fast paced decision making...boosts the players visual skills but comes at a cost...reducing the persons ability to inhibit impulsive behaviour. This reduction is what is called "proactive executive control" ' (Anderson, 2009). A further study highlights the negative effects of this and makes links to impulsivity and Attention Deficit Hyperactivity Disorder with which many of RMT's students are diagnosed; 'what such fast-paced media fail to train is inhibiting the almost automatic first response,' and goes on to explain "This is the essence of ADD, ADHD, and measures of impulsivity," (De Lisi et al, 2013 p. 133). Within this study he also hints at the concept of developing executive function capacities within increasing impulse control; "Peoples ability to override aggressive impulses is dependent in a large part on good executive control capacity" (De Lisi, 2013, p. 133).

This increase in screen time and reduction in practical based activities is further echoed by Sigman (2008):

‘increasing time spent in the virtual world of ICT screen technology is displacing hands-on play and hands-on learning that allows young people to experience how the world works in practice and to make informed judgments about abstract concepts. This change is producing the first signs of a software-instead-of-screwdriver-society. (Sigman, 2008, p. 3).

Such evidence highlights the occurrence and increase in media addiction, screen time and subsequent lack of real world interactions. The mounting research suggests a link between the negative effects of this and the subsequent manifestation of impulse control related problems and disorders which would account and contribute towards the increased occurrence of impulsivity within the demographic of learners RMT are catering for.

Conclusion - Literature Review

The literature conclusively points to the benefits of craft in education, not merely as a form of practical skills development but also by providing wider holistic and therapeutic benefits. This finding is helpful to colleges when designing curricula but stops short at the type of craft, material or environment that are most effective or for which types of learners craft work is best suited. Similarly there is extensive research into executive functioning capacity and how it relates to the development of impulse control. The authors conclusively demonstrate that this is a necessary precursor to learning and wellbeing - impulse control starts early in life and if not developed can lead to major problems in social functioning and a range of mental and psychological disorders. Furthermore they see such problems increasing in western society. Recent experience at RMT supports such a view with increasing numbers of new students referred for problems associated with poor executive functioning and lack of impulse control.

The review has therefore shaped this dissertation into researching how craft work can help dysfunctional learners develop their executive functioning and impulse control. It aims to cover new ground by considering if and whether different type of crafts and materials have different effects on

learners; if there is any benefit in matching type of learners to specific crafts and materials and ultimately building a useful guidance framework for tutors.

Methodologically it has shaped the focus of the research onto in-depth interviews with craft tutors within RMT, a professional discussion with an expert psychiatrist in the field along with my own experiences as a tutor and craft practitioner. It has affected the type of questions I would ask within the interviews in order to gain the best data to analyse and assess whether such capacities and skills are built within crafts and how to draw out the mechanisms and capacities which are used in the treatment in improving executive function and in turn a learner's impulsivity. Further literature is quoted as the research goes deeper into specific functions and materials.

In practical terms these findings could provide an example of how a craft based educational environment can lead to alternative and effective methods of treating such conditions which may be more effective than other less human centred treatments such as psychopharmacological methods. Taken over a longer term this could also lead to a decrease in associated crimes and associated disorders.

THEMATIC ANALYSIS OF THE DEVELOPMENT OF 'EXECUTIVE FUNCTIONING' SKILLS IN CRAFTS AND MECHANISM OF REFLECTION

"The highest reward for man's toil is not what he gets for it, but what he becomes by it." John Ruskin.

Ruskin Mills underlying philosophy, as described within the introduction, is based on a holistic view of re-imagining individual potential based on the work of Rudolf Steiner. In this study I have focused on how such an approach can develop learners abilities to live a more fulfilled and independent life principally through the development of impulse control and the eight executive functioning skills.

A popular area of research within impulse control treatment focuses on the area of the brain which is responsible for executive function. Cooper-Kahn and Dietzel (2008) define the term:

"The executive functions are a set of processes that all have to do with managing oneself and one's resources in order to achieve a goal. It is an umbrella term for the neurologically-based skills involving mental control and self-regulation."

(Cooper-Kahn and Dietzel , 2008, p. 9).

They give a list of specific abilities that are covered under the umbrella term of executive functioning:

Inhibition - The ability to stop one's own behaviour at the appropriate time, including stopping actions and thoughts. The flip side of inhibition is impulsivity; if you have weak ability to stop yourself from acting on your impulses, then you are "impulsive."

Shift - The ability to move freely from one situation to another and to think flexibly in order to respond appropriately to the situation.

Emotional Control - The ability to modulate emotional responses by bringing rational thought to bear on feelings.

Initiation - The ability to begin a task or activity and to independently generate ideas, responses, or problem-solving strategies.

Working memory - The capacity to hold information in mind for the purpose of completing a task.

Planning/Organization - The ability to manage current and future- oriented task demands.

Organization of Materials - The ability to impose order on work, play, and storage spaces.

Self-Monitoring - The ability to monitor one's own performance and to measure it against some standard of what is needed or expected.

This project has set out to test the theory that working with a material gives direct feed-back to the participant who then perceives the influence of applying their will physically and cognitively to an object either positively or negatively or both. This process lays the foundations for the learner to develop the capacity to assess whether their action have been positive or negative according to the desired outcome of the article and can be seen to stimulate both. In turn it builds the basis for reflection as the participant must adjust their will and thinking accordingly in order to meet the desired outcome. Within psychology this process can be seen to stimulate the learner's executive functioning. It is a healthy and contextual activity in which the learner can experience polarities (positive and negative) and therefore experience success and failure within a controlled and true to life (holistic) environment. Figure 1 gives a graphical representation of this process.

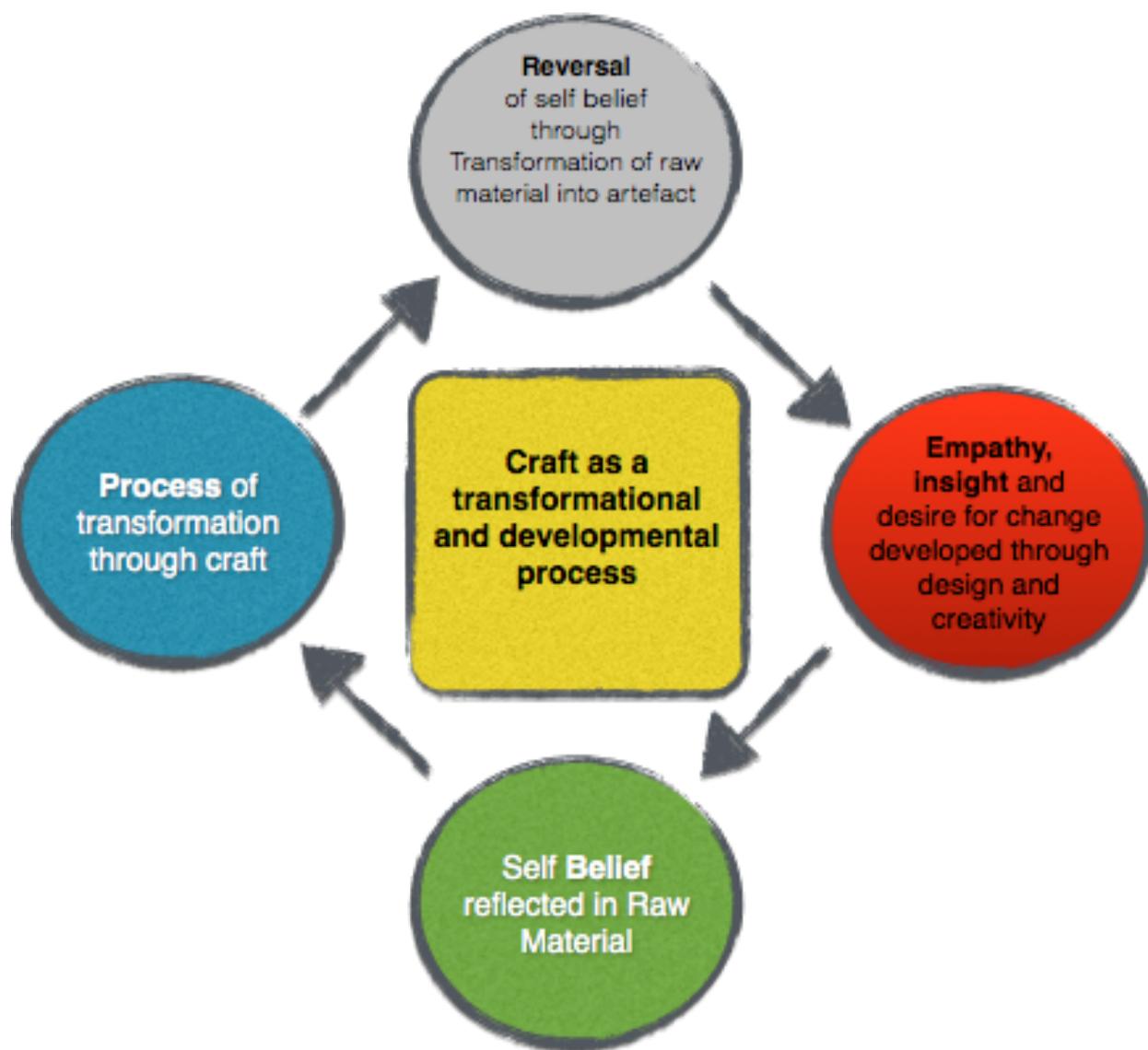


Figure 1 Craft as a developmental process

This a diagram outlines the method of reflection within crafts using Alchemical coordinates. For example the practitioner/learner starts with a set belief of themselves which is reflected in the base material they begin to work with (Green section). They then engage within a resistance based interaction/education with the material, through the various craft techniques and process it dictates. Within this process the learner faces challenges to their initial belief or view of themselves (Blue section). The reversal of their belief then occurs when they are faced with the refined material in the form of the finished craft artefact (grey section) which results in empathy towards their original belief or condition through the externalised reflection of themselves in the unique design of the article. By encouraging an overview perspective of their journey they can better accept the need for personal change (red section).

The process of oscillating between good v bad and positive v negative affect can lead the learner to see the object as separate from their ego and therefore diminish the attachment of blame. With the disassociation of blame towards their concept of working goal, the learner is free to evaluate the outcome (article) from a third person perspective. This allows the learner to have flexibility with the outcome and dissolve the ideal of perfection which they feel must be reached, which in turn leads to self blame and a spiral of negative thoughts and behaviours such as blaming another, resentment, aggression, frustration, anger, loss of interest and ultimately failure. Similarly by separating themselves from their actions they can better accept and therefore reflect and improve their own behaviours.

This process is very similar to that used within modern therapeutic environments in order to give a 'higher' perspective of one's self and one's actions in order to effectively move on or see a issue from a different perspective in order to stimulate and promote personal change and development.

Therefore by developing and improving skills and abilities which are linked with 'executive functioning' it can be seen to improve learners ability to deal with 'impulse control related disorders' while improving their generally abilities of 'executive functioning'. As outlined above this study intends to show how this can be effectively achieved through craft.

Drawing on the practitioner interviews and my own experience with the students i found that craft work can develop all of these executive functions at varying levels. The development is mainly through interaction with the practitioner, participation in the craft itself and the environment in which it takes place. In building a working relationship with the learners the practitioners helped them to extend their social and interactive skills; the crafts themselves required levels of impulse control and executive skills in order to work with tools and create new objects (the study explores the material aspects of the crafts more fully in the next section); the workshop and other working environments required greater self awareness and control to ensure safe practice.

Table 2 (occurrence of exec functions) gives a breakdown of evidential examples from the practitioner interviews, where executive functions are developed. When analysing the developmental effects I found that the craft work was more effective in developing some executive functions than others principally: Inhibition, self-monitoring, planning and organisation and shift. This is reflected in the 'Total example occurrences of development of executive functions' found in table 1. The study will now analyse how the developmental effects of crafts carry through and then go on to give more detailed examples of the areas which had the most effect on executive functions.

Craft types (numbers refer to transcript pages)	Blacksmithing	Spoon forging	Green woodwork	Green woodwork	Weaving	Felting	Total example occurrences of development of executive functions
Executive functions							
1. Inhibition	8-10	5,6	3,4	9,10	8	5,10 11,11	13
2. Shift	4		3	4, 6, 9		2,	6
3. Emotional Control	10,3				7,8		4
4. Initiation					4	1	2
5. Working memory	8	1		10			3
6. Planning/Organizati on	4		1	3, 4	8	3	6
7. Organization of Materials	3	1		9			3
8. Self-Monitoring	5, 10	3	8		7		6

Table 2 - Occurrence in practitioner interviews of development of executive function capacities.

The study will now look into specific examples where the evidence has shown development through craft to be most effective.

Inhibition. The ability to stop one's own behaviour at the appropriate time, including stopping actions and thoughts. The flip side of inhibition is impulsivity; if you have weak ability to stop yourself from acting on your impulses, then you are "impulsive".

The evidence (table 2) shows that inhibition was significantly the most frequently developed executive function within all crafts. Such a result is encouragingly congruent with the hypothesis that crafts develop the ability to control one's impulses.

Interviewee C discussed how the 'lawfulness' of using tools such as draw knives and chisels in the Green woodwork craft gives rise to the learners ability to develop their 'inhibition':

'the rules of engagement makes it very easy to teach impulse control because....for example, sometimes students want to jump ahead, they want to miss a stage...so actually just slow down, just calm your impulses' (p9 of interview C transcript).

He goes further to give a case study example of how this is applied within the process of teaching a learner to fell a tree and explains the success of the learner being able to control his impulses enough to fell it cleanly. It also highlights the development of 'Self-monitoring' through reflection:

'that student is a completely different person and the result [of felling a tree] is different, it's clean, the tree isn't completely shattered and torn apart like it's been savaged...by reflecting on that and making them pleased to get those results, hopefully he can control those impulses.' (p10 of interview C transcript).

He also explained how the 'nature of the craft' with its 'very slow processes' creates the condition in which the learner must react and work; '...the nature of the craft will mean that you have to do it in a certain way that impulses just don't work. Impulsiveness doesn't really work. You have to give your own ego away to the ego of the craft,' (p10 of interview C transcript).

This was also echoed by the other interviewees. Interviewee E explained how the social conditions of crafts, in particular within the wool crafts workshop can also help develop 'inhibition' (refer to table 2). He also describes how the nature of the craft dictates certain processes that must be followed, which give rise to the development of 'inhibition':

'I think a lot of what we're doing here is kind of social skills and getting people to talk and talk to other people, ask questions, listen rather than butting in and all those kind of social skills to do with conversation.' (p5 of interview D transcript).

Finally he gave a case study example which brings these concepts together of how the craft and its environment directly benefited the learner rather than the tutor himself. This is also congruent with Biesta's (2012) concept of world based education (refer to table 1):

'J...came here loads of time when he was anxious and he had been in other sessions and he was kind of beside himself and getting worse and worse and he came up here...that's a different way of controlling an impulse I suppose by being in a session he really loved and just doing the processes in that session and that just sort of totally relaxing him and taking his mind off what he was thinking about...it was just working. That was it...I talked to him a bit but initially I would just get him in, get him sat down, get him some wool out and it was just the work, it was the work that helped him and it was doing the work that helped him. It wasn't me really...You have to be very patient with felting...some students they find it difficult at first but then they kind of see the benefits of it and they can control.....they can't start doing what we do and put things off... because you have to be patient and it's very repetitive...and you have to go through the correct stages in the right sequence if you want to do it. (p10-11 of interview D transcript).

From this living example it can be seen how focusing on impulse control through the inhibition executive function can lead to personal development but also in a secondary way touches on a more holistic development of the other executive functions in this case 'self monitoring'. The next example gives further evidence of a different craft approach developing 'inhibition' again but also having a secondary effect on 'self monitoring', emotional control and shift. Interviewee F is an

experienced blacksmith practitioner, evidence taken from his interview provides a good example of a learner developing inhibition over a period of time through impulse control:

‘so a student starts working with me last term. He is a student who just wants to do stuff, alright? He just wants to do stuff and he doesn’t want to be told things and he doesn’t want to sit down and do any paper at the end of the session and he doesn’t mind whether one thing that he’s made is better than the one before... ‘I just want to do it’...no thought and no discernment whatsoever, no reflection. So it’s all the power and the fire will that needs an expression, which is a real talent, the lad wants to engage... Now six months later what he’s doing, he’s starting the fire and he’s talking about everything that he’s doing and explaining... what he’s learnt in the meantime is that when he was allowed to have his will engaged...he was able to start discerning what’s better, what’s less...’ (p8-10 of interview F transcript).

On a secondary level he goes on to describe how this learner developed some of the other executive functions - self monitoring, emotional control and shift. AL explains how blacksmithing gave rise to improved self monitoring in the following quote:

‘over a period of six months which is extremely fast, [impulses] got tempered in with the ability to discern and the ability to appreciate or not the product of his work and to look at it, to evaluate it, to understand why something is as it is’ (p9 of interview F transcript).

He describes how the physical aspect of blacksmithing tempered the learner's emotional control:

‘So, in his case, from the impulse of hitting somebody in the face and not being able to take any responsibility or recognition of it...to being able to lead an adult through the process of making, for a solid four hours...near perfect example of impulse control. Because you can come to the forge and you can try battling iron, sure, try it. No problem at all’ (p9 of interview F transcript).

In the final stage he highlights 'shift' in transferring the learning from the work place into home life:

‘It’s quite good, don’t battle your house parents, don’t battle the other people in the forge.’ (p9 of interview F transcript).

Self-Monitoring. The ability to monitor one's own performance and to measure it against some standard of what is needed or expected.

Interviewee E explains how feedback from significant other people help form both their inner confidence and self monitoring executive function:

'I get students who will find it very difficult to accept and yet it's very supported by the community here because they get very positive feedback in the exhibition of course at the end and they see their products, they see their craft work praised and admired so that's really important because it's a really meaningful thing we're doing...it goes out into the community and it's respected and that's very very important for them...so the girl who's making the rolling pin at the moment took back and her aunty conversed with people in her family who said 'Oh I'd like one of those', so she just came back with real motivation.....motivations come from a feel-good factor she's had for being admired, from her work and products being admired.' (p4 of interview E transcript).

Interviewee C notes how in the early stages of learning green wood work learners had little impulse control or self monitoring ability, they just wanted to dive straight in and produce 'something' without any forethought or planning, for example:

'He wanted instant results so the cutting, trimming side of it was too much for him; he wanted to go straight on to the pole lathe, that's what grabbed him. But it was just....his own idea was 'I want to go home and give something to my Mum tonight' and that's my conception of what this craft should be.' (p5 of interview C transcript).

As the learners immersed themselves into the craft, it can be seen how the practitioner works with them to develop their self monitoring function, which naturally increases their impulse control:

'the time that it takes ... was not in his conceptualisation, so I had to work with his conceptual idea of what he wanted and then he slowly began to realise that he was able to

come back and reflect on his first attempts and he didn't like it...he reflected by himself and came to the conclusion that they weren't as nice as the polished ones' (p5 of interview B transcript).

As a practitioner I also experienced this particular process to be very profound in creating significant therapeutic development in which a learner who had problems with self confidence, clearly developed self monitoring capacities and as a result became more autonomous and confident. Further to this through first person observation, I also experienced the development of my 'self monitoring' abilities to be stimulated through the reflective process of working with and exhibiting my craft work.

Planning and organisation. The ability to manage current and future- oriented task demands.

The nature of the crafts dictate a process that specifies and sequences events. Without a planning and organisation function it would be extremely difficult to start from raw materials and end with a useful, finished product. Learners therefore must develop this function alongside self monitoring and impulse control in order to create even basic products. The practitioners meet this challenge through personal interaction within a safe learning environment. In interviewee C's words:

'It seems very magical at first, it's actually quite a systematic approach to doing craft work... there's always a system there that you've got to learn how to organise yourself and the craft teaches you that very clearly...a lot of our students are very disorganised with and that comes with dyspraxia and dyslexia and the ability to organise, put things in a sequential order and think things through, 'what is the end result of this going to be'. That's not just knowing what the design is going to be or 'what am I making' and 'what am I starting with', every single step you're also thinking 'what is the result of this chisel stroke here?...'I'm guiding their imagination into seeing what is possible using the materials we've got...' (p 3-4 of interview C transcript).

When the learners have grasped the basics of the planning and organisation function it opens the doors for them to both widen what they can create through the craft and shift this more systematic approach into their largely disordered lives. E sums this up quite nicely:

'It just gives them a whole overview of where something comes from rather than just receiving the stuff ready to go. And they have more of an understanding of all sorts of things I suppose, like farming, animal welfare, sheep rearing, when it gets done, why it gets done' (p5 of interview E transcript).

Many interviewees referred to the holistic learning environment and many discussed how it helps develop the before mentioned executive functions such as 'shift' through the involvement of the learner within a 'seed to table' curriculum. This is beautifully summed up by a quote from the second Green woodworker interviewee D 'When you are involved in a whole process I think that gives you a sense of being whole in yourself.' (p2 of interview D transcript).

Conclusion - thematic analysis

The evidence gathered here does show that impulse control and executive functions can be improved through craft work as part of a holistic process to develop more fulfilling and independent lives. It works through a combination of the practitioner/learner relationship, systematic craft skills and a controlled holistic learning environment.

Through the Interviews and first person observation it can be understood and seen that crafts indeed provide such recommendations for managing physically impulsiveness, given by Cooper-Kahn (2008, pp. 105-106) within the literature review. For example it has been discussed by the interviewees that the lawfulness of the crafts 'provide external structure' and provide rules that were applicable in a variety of situations. It has also shown how craft increases the conditions for the learners to experience more freedom through 'experimentation' and independent activity and

outlines the process in which the craft process teaches alternatives to negative behaviours through the crafts inherent lawfulness and outlined process of reflection discussed at the beginning of this section.

The executive functions, 'Self monitoring' and 'Shift' are also developed through the process of learners presenting and showing their work to others around them as well as the wider public which helped them apply themselves within another situation. This served as a powerful tool for reflection and self development. Most interviewees discussed this as being a significant changing point for the learners which, they explained, led to a range of benefits. This concept and process of using craft techniques and processes as reflective tools has been explained from my perspective at the beginning of this section which I believe adds another level to the findings and benefits discussed by Makela and Latva-Somppi (2011), McWilliam and Dawson (2008) and Karpinnen (2008), within the literature review. It also fulfils and agrees with the recommendation set out by OFSTED (2011) to increase opportunities for young people to exhibit their work.

The analysis has shown differential effects on the eight executive functions and within this study it highlighted three functions which were more likely to be developed, with others gaining a secondary benefit. The study has detailed these three primary areas and collated quotes from all of the interviews in table 1 (Table 1 - occurrence in practitioner interviews of development of executive function capacities). The reader can then gain a more detailed view of how the evidence supports the theory. This is a limited study due to the nature of the thesis and therefore care must be taken in generalising the findings. However it does give strong indications of causal links which can provide a springboard to further studies.

In the next section the study will consider how the properties of the material used in craft effect the practitioner/learner. And give an example of how they can be used along with impulse control and executive function development to create maximum therapeutic and educational benefit.

MATERIAL AFFORDANCES AND EFFECTS ON LEARNERS

“When a man undertakes to create something, he establishes a new heaven, as it were, and from it the work that he desires to create flows into him... For such is the immensity of man that he is greater than heaven and earth.” Philippus Aurelius Paracelsus

The study will now move from the development of executive functions to how the craft materials themselves can contribute to the holistic development of learners and offer a guide to staff when planning their student’s journey. In order to gain a holistic view of the mechanisms of crafts and their corresponding materials effect on the learner, this study is twofold the first being, investigating the development of executive function capacities, as these give rise to the ability to temper ones impulses and therefore can be seen as the Internal or human process. Secondly the investigation of the material influence or affordance on the learners through their interactions with them. This can be understood as the external or outer conditions in which a learner can gain additional therapeutic and educational benefits, which arise from the unique processes, biographies and interactions they can offer.

The assumption is that both play a vital role within the education and therapeutic value of the PSTE curriculum. By better understanding such processes, this study may provide a basis for further research and development within the curriculum. It may also serve as a beacon of inspiration for others (staff and wider society) to further such esoteric and scientific research in order to integrate the realms of spiritual science (Anthroposophic) and main stream science, in order to harvest meaningful research. Which in turn may help evolve and increase the availability of therapeutic craft based education in the future.

Thematic analysis of executive functions, showed that certain benefits can arise from the natural properties, lawfulness and archetypes within the materials which are used. Such qualities are harnessed through the prescribing of certain materials within homeopathy and anthroposophical

medicine in order to bring a range of developmental and medical interventions to the recipient/patient in order to bring about balance and therapeutic change/development. The materials are chosen according to their 'affordances' (a term coined by J.J. Gibson). An affordance refers to the actionable properties between the world and an actor/person; it describes a property which allows an individual to perform an action. For example a hammer affords hitting or a handle affords pushing or turning.

I am suggesting here that there is a dynamic memory (biography) and therefore set of processes inherent within materials which can have an effect on the human consciousness, through appropriate interactions with it. Such processes can be seen to manifest within the inherent lawfulness of the corresponding crafts. This can be drawn from my interviews with a range of practitioners (2014, appendix txx transcripts) and a professional discussion with Dr Z (2014:appendix example). It can also be seen through the perspectives and evidence gained from the literature sources: Biesta's (2012) 'Resistance' and 'world based education'; indications/a lecture from Steiner (year); literature from Pelican (1973) and Dr Grunewald (2002).; Sheldrake's (2011) theory of 'Morphic Resonance' and Gibson's, (1977) concept of 'affordances'.

The processes that the materials initiate can then in turn stimulate a process within the human which can potentiate a therapeutic change, or shift in consciousness, through the process of reflection and subsequent self development. Such a method is outlined within the thematic review section of the study.

Such a concept can be further understood through an Alchemical perspective like that used within Anthroposophic medicine. For example, Dr Grunewald (2002) explains how one can use such an understanding of the inner workings of substances in the constitutional treatment of a range of physical, neurological, developmental, emotional, behavioural and mental conditions and illnesses.

In order to draw together how and where the various materials affordances have beneficial therapeutic effects, through the learners interaction with them I have organised the crafts and material properties into a continuum and tabulated it according to alchemical laws (see table 3). It allows a single view of how the kingdoms, material affordance and other elements of the holistic process can be related through a process of transition through different states and levels. The table is a visual representation of how the crafts and materials form a continuum going from peripheral (right side) to highly focused (left side). Such a continuum reflects the learner journey that is the basis of learning within RMT's PSTE curriculum. It has been synthesised using information from the first person observation research and relevant information from the interviews I carried out and literature reviewed. It provides concise and relevant information about the effects of each craft and/or material on the learners. It can be used as a guide for staff looking to place new learners within the continuum at a position that matches their needs. For example, a learner who needed to develop the executive function of Initiation would be best placed to the right hand side of the continuum.

Table 3 - Continuum of Materials and crafts

	Focus	Balance	Periphery
Kingdom (traditional 4 fold classification)	Mineral (A mineral is movement/energy come to rest and therefore is the most stable/focused form of matter, end of long process)	Plant (A plant unites/connects the periphery of the sunlight by harnessing and focusing this energy into structured form while drawing in the minerals from beneath the ground)	Animal (The animal's consciousness is very much within the astral realm, it lives in a dreamy haze dictated by the governing impulses of nature)
Material	Iron/copper	Wood	Wool/Fleece
Craft	Blacksmithing/forging/metal work	Wood work/Green woodwork	Wool crafts/Weaving/Felting
4 Subtle bodies (Steiner) 4th being human-'Ego'	Physical	Etheric (and physical)	Astral (and etheric and physical)
Consciousness	Focus/Concentrated	A range between	Periphery/Dreamy
Interaction (tendency)	Individual/insular	Either and both	Social
Engagement of	Thinking	Feeling	Willing
	Head	Heart	Hand
Time. Sequence of activities, processes to form and create material (Evolutionary biography)	Very long, lots of complicated and specific processes	Varies according to plant/tree (long and short)	Short, quick organic growth
Processes in craft	Requires defined sequences and ordering to manipulate and create material	Different activities dictate different woods and vice versa	Requires less input and time to create similar outcomes in material
Resistance	Provides lots of intense resistance/confrontational	Broad range of resistance and densities	Provides less resistance/less confrontational
Executive functions. Developed in order of significance (see table 2)	Inhibition, self monitoring, working memory, organisation of materials, planning and organisation, emotional control, Shift	Inhibition, Shift, Planning and organisation, Working memory, organisation of materials, Self monitoring	Inhibition, Initiation, planning and organisation, emotional control, self monitoring
Environment (therapeutic qualities)	Challenging, lots of dangers	Peaceful with challenging aspects	Calming, little to no dangers
Environmental (soundscape)	Loud, confrontational, industrial	Natural, warming, rhythmical, nurturing	Quite, soothing, nurturing
Elements (predominantly harness/used) qualities	Fire (annealing, smelting and forging)	Water (controlling content of water and sap)	Air /earth/water (condensing material/taking air away/direct human manipulation)

I have further broken down the properties of the three principle materials Metal, Wood and Wool in table 4 to provide a prescription guide for staff when matching learners to type of craft and material

according to their natural tendencies and level of practical abilities. This will allow further refinement in matching learners to type of craft and material. For example a learner who needed to develop the executive functions of Inhibition or self monitoring may be best suited to metal work but regard would also need to be taken of their motor skill and ability level - they would be able to take up the craft fairly easily if they already had fine motor skills but if they lacked such ability they would need to develop them firstly through working with one of the other materials, essentially working their way though the continuum from right to left outlined within tables 3 and 4.

Type of materials		
Metal	Wood	Wool/felt
Offers Very strong resistance. Hard, tensile, Cold, solid, heavy, colour changes according to process eg. cherry red when heated, black when quenched in cold water and shiny copper after being in acid. Hard to take material off but can be bent or moved back into shape if mistakes are made.	Less resistance than metal but more than wool/felt and less forgiving. Soft, mainly light in colour but can change throughout piece. Natural, easy to take material off but then it cannot be replaced or reworked very easily.	Does not offer as much resistance Soft, light, fluffy texture can vary from silky to course dependant on animal source. Natural range of colours. Can be teased apart or pushed together, easy to manipulate, can be changed at almost any time during or after process
Way of working the material		
Metal working	Wood working	Weaving and felting
Using specialist tools and machinery only found in workshop, need to be always watching and very precise and sensitive use of tools. Repetitive and constant process of heating, cooling, cleaning and reworking using: gas torch, quenching, buffing, cleaning in acid and working with hammer and stake or presses.	Mostly basic tools and machinery, often self-made or can be made relatively easily within natural environment. work can be done in any location with a very basic tool, naturally quiet and relaxing method of working (whittling), body is machinery or powers machinery.	Very simple and basic tools and equipment but ranges to complex looms at other end of spectrum. Can be done in any environment or location, little skills or knowledge needed to initially engage.
Cognitive/Conceptual capacities required		
Metal working	Wood working	Weaving and felting
Very strong concentration goes into the material and processes/activities. Lots of thinking, planning and conceptualizing required. Feeling of power and will in changing such a hard material into a product - fighting the material.	Mixture of calming, relaxing but some activities requiring concentration and focus. Consciousness of working with living and unique material, listening and engaging to the flow and individual structure of each piece. Working with and against the material.	Very calming and relaxing activities. Initial processes require little focus or attention. Little conceptualisation or thinking required.

Type of Movement required		
Metal working	Wood working	Weaving and felting
<ul style="list-style-type: none"> • Sitting in chair for hand work (hammering) or standing for machine or gas torch work • up and down movements used extensively in hammering • Left and right movements used in filing and polishing • forwards and backwards used in annealing (using gas torch) • Applying lots of pressure to change form of material • Rhythmical motion of hammering with up and down motion 	<ul style="list-style-type: none"> • Work can be done sitting or standing in nearly any area of the environment • all planes of space (up and down, left and right, forward and backwards) are used when working on a pole lathe • Applying little pressure to change/shave form of material • rhythmical movements engages whole body on pole lathe • Gross motor movements used by legs to power pole lathe but fine movements used by hands to direct chisel (unique character of pole lathe) 	<ul style="list-style-type: none"> • Sitting or standing in nearly any area or environment • Large rhythmical movements, can engage whole body, forward and backwards while felting on surface • Small circular movements activate all areas of the hand in ball felting • All planes of space (a range of up and down, left and right, forward and backwards) can be used on weaving looms
Type of motor skills required		
Metal working	Wood working	Weaving and felting
Strong, full and exact gross motor skills at beginning of process and fine at end or when adding detail	Mostly soft, delicate and calming gross motor movement used to split wood with finer while whittling or using chisel on pole lathe	Mostly soft and dreamlike processes and movements, calming

Table 4 - How types of materials make different requirements of craft practitioners.

Dr Z, an Anthroposophic psychiatrist, echoed the beneficial qualities and aspects of each craft during our professional discussion. He reflected on how the differing crafts affected the level of consciousness. His views echo this study's conclusions about the different qualities of the three crafts and how they engage the students (physically, cognitively and emotionally):

' The forge requires more effort...interestingly everything I did today involved hammering, here again, you had to have your mind on the hammer as you didn't want to hit your hand...the need to stop and reheat it [annealing] created a different kind of rhythm, it shifted your awareness that you were noticing quite quickly that it [metal] was getting harder so it wasn't quite as easy to just get lost in it for a whole 15 mins or something you can easily see that you won't be effective in the work if you weren't concentrated on it...it required more effort to maintain that focus...the feedback from the material seemed to be

harder, the physical effort needed to alter the form was greater which somehow made me aware of myself and what I was doing in a way that wasn't quite as dreamy as some of the other things [weaving and green woodwork] could get...it was more about the conscious thinking rather than the feeling.....in contrast..green woodwork had a way of calmly captivating your attention, you knew you had to have the focus or something would go wrong...for me I think certainly the woodwork had quite a lot of feeling in it...specially when you where on the lathe...it's almost trance like with the rhythm of the foot...it immersed my consciousness in a way that time took on a slightly different meaning...you just felt quite at one with the activity quite easily...in terms of distraction or the mind to disengage, impulsivity...it's almost effortlessly been reduced as you are at one with your task.'

(Appendix 5 - Excerpts from professional discussion with Dr Z)

Such observations were also congruent with those found in the practitioner interviews. For example the Felting practitioner (interviewee E) also commented on the 'calm' and 'soothing' qualities; "a lot of what we are doing here is kind of social skills ...you are not as focused...nothing is going to happen to you in here basically, there are no kind of dangers...it provides a very calm atmosphere, quite soothing" (5).

The practitioners were also well aware of the unique effects each material had on their students:

'If you do it [forging] really well every time you get a predictable result...Unlike woodwork where you make a nice beautiful chair leg that's perfectly round and turned and then in a week of drying it cracks and its totally oval...the material is still doing its stuff. (p6 of interview F transcript).

The mediator or middle ground between metals and fleece is wood as it is still very much in a state of flux or fluidity. Such an affordance is experienced with almost brutal force within Green wood work due to the use of freshly cut and almost still living wood.

In order to find out how such affordances directly affect craft practitioners, the study will now look into the inner and outer biography of one particular material - iron in blacksmithing, chosen due to its cultural relevance within Sheffield's industrial heritage and its prominence within the Freeman College curriculum.

Case Study Investigation into Iron in Metal Craft

The study proposes that materials such as iron, with its biography, affordances and biological/chemical processes, can play a therapeutic role within the interaction between learner and material.

Pelikan (1973, p. 1137 of 3227) explains from both a scientific and Anthroposophic perspective the significance of iron within all realms (Mineral, Plant, Animal, Human) and explains its significance both as an inner function, within the human body, and in the evolution of human kind through a biological, historical and social perspective. He also discuss the role of iron and its 'consciousness-awakening processes' (p. 1340) within the human organism 'Iron helps wake the proteinaceous body from its vegetative sleep and opens it to the forces of consciousness' (p. 1474) as well as its function as a remedy.

Dr Grunewald (2002, p. 53) makes similar connections for the function of iron 'Iron helps the ego to overcome fearfulness and helps to develop courage within the rhythmical system (breathing and circulation). In the nerve sense system the iron process helps the ego to create an active thinking and active perception, while within the metabolic-limb system it helps to develop a controlled and measured, but nevertheless strong willed activity.' . He goes further to describe how effects and qualities of iron can flow into a person through the skin and the sensory organs when working with it .

Rudolf Steiner (1923) also refers to the iron process and its significance within the development of freedom and free will within man: 'If we were beings who had no iron in our blood, we would have no physical basis for unfolding the impulse to freedom ... wherever iron appears the impulse is provided out of the cosmos, out of man, for freedom to develop ...'

Sheldrake (1981, 2011) proposes that all self-organising systems, from crystals to human societies, inherit a collective memory that influences their form and behaviour. Just as he argues 'Memory is inherent in nature' (1) and a 'Morphic unit' [p.546,sheldrake] of material can have 'Morphic Fields' surrounding them which interact and influence the person or 'structure of activity' within their presence through 'morphic resonance'. Hence, through such a mechanism a material with its inherent memory and influences, can have a 'resonant' effect on the learner. Such 'resonances' could be used therapeutically and educationally, to help bring balance to learners through the proposed system of prescribing materials and crafts, according to the reference guide provided in table 4.

Given these views on the biological and chemical functions of Iron and comparing them to the 'thinking', 'focused' and 'strong willed' activities which iron-working dictates, parallels can begin to be drawn between the inner effects and the outer effects. Processes are engaged and developed when working with iron which in turn help to 'awaken' and develop the learners 'ego' and 'freedom', as evidenced earlier within this section. It can therefore be seen that the material's inner functions are reflected within its natural properties, laws and affordances and are manifested within the human activities of working with it.

The following quote from a Freeman College student graphically highlights the process of how learners can benefit developmentally through a reflective process of working with iron from source to finished article:

'As I began to polish my spoon, my picture of myself began to be reflected. It looked weird as it distorted my reflection. Sometimes I looked better than I thought, I felt, and sometimes

I looked disturbed. My dislike for myself was tested because the spoon was beautiful.”

(Quoted in Gordon 2013 p.7)

When I asked Dr Z whether he thought that putting a learner who was too calm and not conscious enough in at the iron end of the craft continuum would be beneficial he replied:

'I would say so, because I think there would be an obvious connection ... with the spoon forging because obviously you are requiring quite a bit of physical effort, with the hammering, but, you know its got that more active thinking quality to it as well so I think ... it has a more slightly awakening quality to it.' (Appendix 5 - Excerpts from professional discussion with Dr Z)

He also saw the concept of a reference guide to the differing therapeutic qualities of crafts as a welcome tool:

'if I was trying to think in terms of Anthroposophic medicine ... it would be great to try think all that through in more detail, for example for someone with OCD or some other presenting problem, might be able to benefit from most with these different therapies, I think what you are saying in terms of having some kind of outline of a little indicator really of where these different skills and crafts can take hold or intervene best, I think it makes a lot of sense.' (Appendix 5 - Excerpts from professional discussion with Dr Z)

In order to bring this concept back to the idea of treating 'impulse control related disorders', assumptions can be made that 'prescribing' particular materials and crafts such as Iron and Blacksmithing could benefit a learner who may be more sedated or 'dreamy' by helping them to be more awake. In Anthroposophic terms it would help to 'incarnate' the learner who would develop the 'Ego' as iron with its 'inner' (biological processes and interactions) and 'outer' (cultural interactions and effects) conditions. Therefore it is no surprise that the data from interviewees, the first person research data and reflections from Dr Z all point to the same conclusion about the qualities and affordances that such a material and craft can offer. Referring back to the (Reference

Guide table 3) and thematic analysis section on the occurrence and development of executive functions within this particular craft, it can be clearly seen that such a craft and material leads to the development of the more cognitive and awakening executive functions such as Inhibition, self monitoring, and working memory.

As the other materials were not investigated within such a context or case study care must be taken in making generalisations. Although it is the assumption that in a similar ways the other materials unique affordances could also play important therapeutic roles within the interactions and activities they provide within the other corresponding crafts.

Conclusion - Material Affordances

This section built on the hypothesis that craft work is an effective method of developing impulse control and executive functions. It has been possible to build a continuum into which fields such as materials, craft type and executive functions can be located holistically. Further analysis of the study's data and literature review enabled construction of a grid placing qualities and affordances of materials in relation to the different requirements of craft practitioners/learners. These two tables are able to aid prescription of craft and materials to learners and aid tutors when tailoring activities and approach to each learner's unique set of learning needs.

A case study into iron metalwork drawing on practitioner and professional interviews and supported by external evidence, gave further insight into how a material could constructively influence learning and development. Every material dictates different 'affordances' and therefore manifests in additional developmental benefits to the learner through their interactions with the working conditions and processes involved with each craft. As only one material has been investigated in this sense, care must be taken in generalising the results and further study is required to make confirmed assumptions about other particular materials. However it has resulted in the creation of a new tool which builds upon and refines the PSTE method/ Anthroposophic

approach to a learner's journey helping towards the development of Self Generated Conscious action.

CONCLUSIONS - GENERAL

The study tested the hypothesis that craft work is an effective method of developing impulse control and executive functions and found evidence to support it. Using the same data sources and first person observations it was then possible to refine the 'prescription process' according to type of craft and material affordance. The study was able to set out guidance to help staff decide which craft and material would best suit the individual needs of the learners. It has resulted in the creation of a new tool which builds upon and refines the PSTE method/ Anthroposophic approach to a learners journey. This will help towards the development of Self Generated Conscious action and further help 'reimagine' the potential of the learners.

RECOMMENDATIONS

More research could be done to validate and test how the effectiveness of craft based learning can contribute towards people experiencing impulse control related disorders through longitudinal studies.

I would like to be able to include the areas of the RMT curriculum which I have not been able to investigate for this project (e.g. agricultural crafts) in my reference guide, meaning further research into the connection between their specific executive functioning skill development and material affluence is necessary. A 'craft prescription handbook' could be developed from the reference guide to better help the appropriate placement of learners within each craft in order to maximise the potential opportunities to benefits or develop executive functions, deemed necessary for each individual learner. This would require a more encompassing assessment of each student upon entry into the college to accurately identify what capacities would be beneficial for each learner.

In addressing OFSTED's recommendation from the report (OFSTED, 2008–11, p.7, Making a Mark: Art, Craft and Design Education) to colleges for securing more "subject specific professional

development" it is recommended that a PSTE style programme could be made to address crafts related subjects in the mainstream setting.

It would be interesting to explore the extent of the therapeutic benefit of crafts in a one on one, focused therapeutic environment, such has been developed for art therapy.

Reflective Evaluation

The findings of the study have been extremely useful within my professional role and practice of being a craft tutor. I have been working with some students who have a particular diagnosis (e.g. P Fetal Alcohol Syndrome) and behavioural statements which directly link to poor impulse control and this has manifested in some very challenging situations within my sessions. Through actively reading and researching impulse control disorders I am now able to better understand the behaviours of such students. It consequently enables me to respond appropriately to them. Guided by my new insight I thus believe I have started to embark on a meaningful and intentional path to help my students both therapeutically and educationally. I have fulfilled my original intention.

I want to give an example of how my day to day interaction with the students has been adapted. I am now routinely encouraging situations for the students to reflect upon their behaviour. I facilitate this by creating sequences within their work plans in order to help develop their 'working memory' which has been shown to promote the development of their executive functioning. I intend to further such improvement within my professional practice and workshop in the future and am looking forward to discover where it can lead to for the students.

Although studies such as Sigman (2008) have looked more specifically into the benefits of RMT's craft based curriculum, critically it can be seen to focus heavily on drawing together a range of old and relevant studies in a literature review style of data gathering, which does produce some interesting and valid points but lacks a more in depth and holistic approach. It has therefore been intention of this study to gain perspectives through the practitioner's observations, first person

research and the reflective practice of the embedded investigator himself. This in turn should have produced a valid and accurate picture of how crafts can benefit the learners with particular focus on where and how executive functions are developed and embedded within each craft. I also believe research carried out for the practitioners by the practitioners is empowering and champions the excellent work that is being done by disseminating best Practice.

The reference guide (table 3) was improved through the integration and braiding of the philosophies, terminology and guiding principles of RMT and its PSTE curriculum. This was achieved through including: head, heart and hand as well as thinking, feeling and willing in accordance with Steiner's and RMT's use of such ways of viewing and understanding the world. My confidence in the practicality of this reference guide was encouraged following a professional discussion I had with the anthroposophical psychiatrist Dr Z.

As a craft practitioner and PSTE tutor studying Practical Skills Therapeutic Education I felt it important to engage in a craft process as part of my personal reflection process. I liked the idea of exploring craft as self-expression in a pedagogical model' (Pollannen et al, 2011, p. 115) and "making as a tool for reflection" (Niedderer et al, 2011). This concept was discussed and explained within the literature review. A similar craft reflection method is explained within the beginning of the thematic review section. Therefore I decided to challenge my skills as a practitioner by combining all three materials, crafts and processes to make a unique, purposeful piece of craftwork (a wood and bone handled knife), to help me reflect on the overall process (see appendix 7).

My most striking insight from this reflection was how deeply I was able to feel and understand the sense of 'accomplishment' and 'satisfaction' which the interviewees all highlighted within the student examples discussed during the interviews and literature review. This gave me insight into the process of tempering and controlling my impulses in order to focus, reflect and improve on the piece and as a result the desire to finish and complete the project enhanced both my personal and

professional life. This lends testament to the effectiveness of such a craft method - fighting with the boundaries of the materials.

This whole process of deep investigation with the subject areas of impulse control, crafts and material affordances also immensely supported my stand point as PSTE tutor and mentor. As part of the process I was able to share a presentation on 'PSTE and impulse control' in order to help other staff better understand this issue. I was also able to instruct and give ideas on how to manage and improve conditions within their practice to better cater for learners needs within Freeman College. I intend to continue with my research and conduct further presentations/workshops on this topic.

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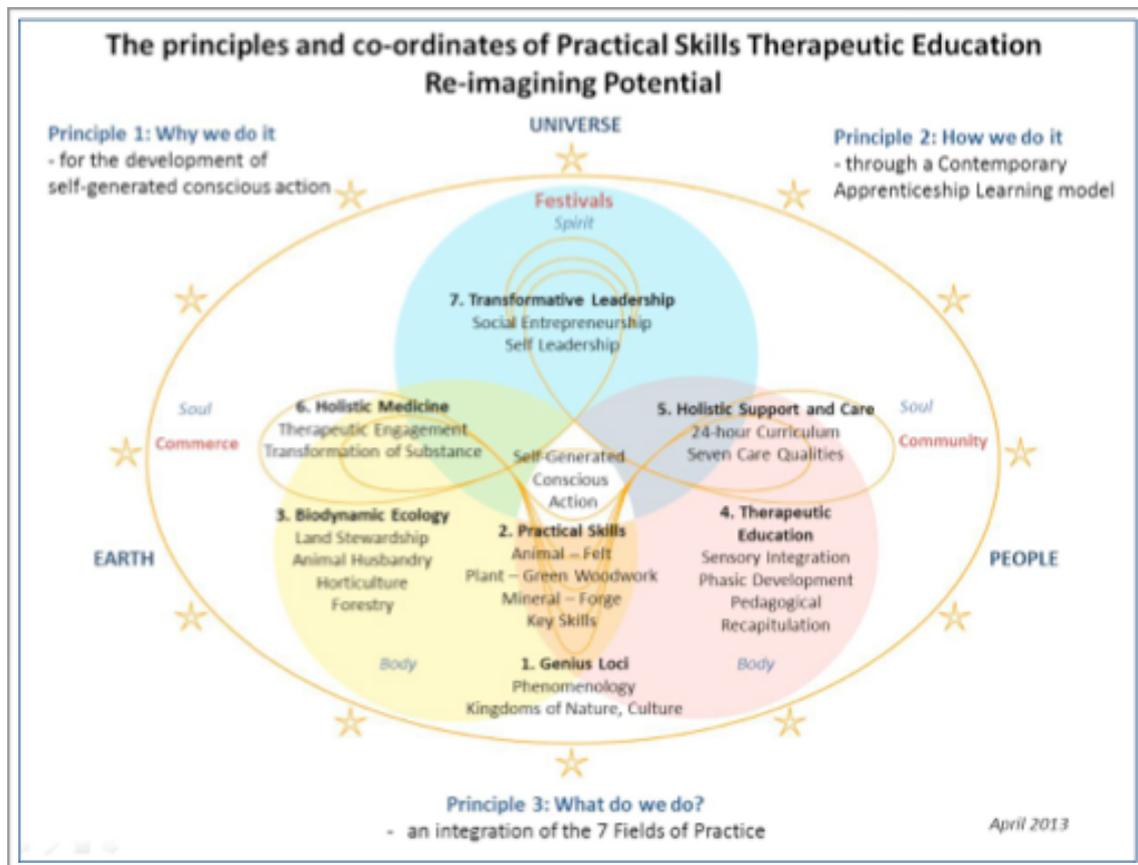
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Research Interviews

Interviews conducted for research and referred to in the text have been transcribed and can be made available in full on request. Names have been withheld for anonymity purposes.

Appendix 1 - 7 Fields of Practice (Gordon 2013 p.25)



Appendix 2 - Interview Questions to Craft Practitioners

1. Do you think the craft is beneficial to the learner and if so how?
2. What skills/capacities are used and built within the craft and how do these effect or benefit the learner?
3. What environment does the craft provide and how does this effect or benefit the learner?
4. What challenges/issues or boundaries does the material provide and how does this effect or benefit the learner?
5. What are the social conditions of the craft and how does this effect or benefit the learner?
6. Do you think the craft and its various aspects (skills, materials, environmental and social) help learners better control their impulses and if so how and what parts? Could you give examples?
7. What aspects of the craft best address/benefit impulse control and how?

Appendix 3 - Example participant information and consent form for practitioner interviewees

Participant information sheet

The purpose of this information sheet is to provide you with details of the interview you are being asked to participate in. Upon acceptance you will be required to take part in a short recorded interview (there is no set time limit). The interview will take place within a quiet room which has been allocated for this purpose. Following the interview there will be a short de-brief in which you can discuss your participation. The information gained from this interview shall be used as part of a post graduate MSc study which aims to better understand the benefits of crafts. You are one of six interviewees from a variety of different crafts. The interviews shall be informal and aim to gain an understanding of your experiences as a craft tutor and practitioner. Should you have any further concerns or questions about this research please feel free to contact your researcher via e-mail. [ANON@example.com]

Consent Form

Please answer the following questions by circling your responses

- | | | |
|------------------------------------------------------------------|-----|----|
| Have you read the information sheet about this study? | YES | NO |
| Have you been able to ask questions about this study? | YES | NO |
| Have you received answers to all your questions? | YES | NO |
| Have you received enough information about this study? | YES | NO |
| Do you understand that you are free to withdraw from this study: | | |
| 1. At any time? | YES | NO |
| 2. Without giving a reason for withdrawal? | YES | NO |
| Do you agree to take part in this study? | YES | NO |

Your signature will certify that you have voluntarily decided to take part in this research study having read and understood the information in the sheet for participants. It will also certify that you have had adequate opportunity to discuss the study with the investigator and that all questions have been answered to your satisfaction

Signature of participant:..... Date:.....

Signature of investigator:..... Date:.....

Appendix 4 - Sheldrake References

Morphic field: A field within and around a morphic unit which organizes its characteristic structure and pattern of activity. Morphic fields underlie the form and behaviour of holons or morphic units at all levels of complexity. The term *morphic field* includes morphogenetic, behavioural, social, cultural, and mental fields. Morphic fields are shaped and stabilized by morphic resonance from previous similar morphic units, which were under the influence of fields of the same kind. They consequently contain a kind of cumulative memory and tend to become increasingly habitual.

Morphic resonance: The influence of previous structures of activity on subsequent similar structures of activity organized by morphic fields. Through morphic resonance, formative causal influences pass through or across both space and time, and these influences are assumed not to fall off with distance in space or time, but they come only from the past. The greater the degree of similarity, the greater the influence of morphic resonance. In general, morphic units closely resemble themselves in the past and are subject to self-resonance from their own past states.

Morphic unit: A unit of form or organization, such as an atom, molecule, crystal, cell, plant, animal, pattern of instinctive behaviour, social group, element of culture, ecosystem, planet, planetary system, or galaxy. Morphic units are organized in nested hierarchies of units within units: a crystal, for example, contains molecules, which contain atoms, which contain electrons and nuclei, which contain nuclear particles, which contain quarks.(Sheldrake.2011:546)

Appendix 5 - Excerpts from professional discussion with Dr Z (full transcript available on request).

In order to gain an expert therapeutic and medical perspective I asked Dr Z to reflect on the crafts he had experienced firsthand, with particular reference to spoon forging, green woodworking and weaving as these represent the continuum of materials and crafts I was investigating.

Z - Spoon forging requires more effort, in contrast...green woodworking (pole lathe, mechanical movement) had a way of calmly captivating your attention, you knew you had to have the focus or something would go wrong.

Z - immersed in our consciousness in a way that time took on a slightly different meaning. You just felt quite at one with the activity quite easily. In terms of distraction or the mind to disengage, impulsivity ...it's almost effortlessly been reduced as you're at one with your task. Interestingly everything I did today involved hammering, here again, you had to have your mind on the hammer as you didn't want to hit your hand. You can easily see that you won't be effective in the work if you weren't concentrated on it.

Z - The feedback from the material seemed to be harder, the physical effort needed to alter the form was greater which somehow made me aware of myself and what I was doing in a way that wasn't quite as dreamy as some of the other things [weaving and green woodworking] could get. Copper, the need to stop and reheat it, created a different kind of rhythm, it shifted your awareness that you were noticing quite quickly that it was getting harder so it wasn't quite as easy to just get lost in it for a whole 15 mins or something.

Z - It was more about the conscious thinking rather than the feeling, for me I think certainly the woodwork had quite a lot of feeling in it especially when you were on the lathe ...it's almost trance like with the rhythm of the foot.

Z - Weaving...the ability I get very absorbed in the whole rhythm of it, time kind of going out the window is quite a pertinent thing in that. I'm prone to being overacting in my thinking, very active in my head, that tends to translate into being quite restless so it's particularly the calming, engrossing rhythm, oval activities or movements like the stuff I did here in green woodwork that I feel a real affinity to, because I feel that's missing in my life, so if I can get myself into an activity where I'm calmly immersed in it, it feels more and more good and healthy in a way as it's that contrast that I'm missing. And I'd include the idea of impulsivity in that because the distractibility and tendency to always do more than one thing at a time...I think part of the world we live in today is that we are always being distracted more and more easily, with lots interactive seductions around, from our phones or other things. So I think it's more and more important, especially for young people to be better at counteracting that really, which I think these kinds of activities and tasks that are not

in most people's everyday life as much as they might have been 30-40 -50 years ago or 100 years ago.

Z - Green woodwork and weaving it helps your mind switch off so when I feel my mind is generally over-active, it's something that's like a little treat where you can just immerse yourself in an activity like that where your still really focused but it's certainly in that realm that I experienced it with some of the work here.

Interviewer (I) - Do you think it could be similarly beneficial for the opposite, so for someone who is really too calm, and not conscious enough and maybe engaging with the world as much, a bit more sedated, do you think putting them in the opposite end of spectrum, so if we put them into spoon forging or blacksmithing, do you think that would help them in any way?

Z - For sure yeah, I would say so, because I think any, well its interesting because I don't know whether the idea of the action and engaging the will, I mean certainly I think there would be an obvious connection as well obviously with the spoon forging because obviously you're requiring quite a bit of physical effort, with the hammering, but you know it's got that more active thinking quality to it as well so I think I would have through so yeah, it has a more slightly awakening quality to it.

I - what I've been working towards it's building almost like a reference guide for tutors so when a student comes and they're more sedated and need awakening more, a diagram similar to this (shows him draft and explained prescription technique) also more impulsive, so providing the opposite end of the spectrum.

Z - For sure, if I was trying to think in terms of anthroposophic medicine, with let's say a young person who was thought to have ADHD or something that inherently would be based on a kind of overactive impulsive, attention deficit type picture, something like the weaving or a very calming thing like that, along the lines of what you almost might then think about say in eurythmy or massage or something like that could be relevant. It's the same gesture the same quality I think, and so it would be great to try to think all that through in more detail. For example for someone with OCD or some other presenting problem, might be able to benefit from most with these different therapies. I think what you're saying in terms of having some kind of outline of a little indicator really of where these different skills and crafts can take hold or intervene best, I think it makes a lot of sense.

Z - The forge requires more effort...interestingly everything I did today involved hammering, here again, you had to have your mind on the hammer as you didn't want to hit your hand...the need to stop and reheat it created a different kind of rhythm, it shifted your awareness that you were noticing quite quickly that it [metal] was getting harder so it wasn't quite as easy to just get lost in it for a whole 15 mins or something you can easily see that you won't be effective in the work if you weren't concentrated on it...it required more effort to maintain that focus...the feedback from the material seemed to be harder, the physical effort needed to alter the form was greater which somehow made me aware of myself and what I was doing in a way that wasn't quite as dreamy as some of the other things weaving and green woodwork could get...it was more about the conscious thinking rather than the

feeling.....in contrast. Green woodwork had a way of calmly captivating your attention, you knew you had to have the focus or something would go wrong...for me I think certainly the woodwork had quite a lot of feeling in it...especially when you were on the lathe...it's almost trance like with the rhythm of the foot...it immersed my consciousness in a way that time took on a slightly different meaning...you just felt quite at one with the activity quite easily...in terms of distraction or the mind to disengage, impulsivity...it's almost effortlessly been reduced as you are at one with your task.

Appendix 6 - Sample transcript of an interview. The other transcripts are available on request (capital letters refer to practitioners):

- Weaving. A
- Spoon Forging. B
- Green Woodwork (1). C
- Green Woodwork (2). D
- Wool Crafts/Felting. E
- Blacksmith F

Interviewer - (I): So, I guess to begin, what is your name and what is your craft?

F: Blacksmithing, iron work. So your question....

I: I'll give you a question to start off.

F: Oh, is there.

I: I've got like seven questions basically.

F: Right.

I: You don't have to answer them all if you haven't got the time..

F: Yes, yes, or if I don't know the answer (Laughter)

I: Obviously, yeh, that's fine. And is it alright for me to use your sort of referencing within....

F: ...in any way you like.

I: Great.

F: Yeh, any way that's useful – sure.

I: So, the first one would be more general, so do you think that craft is beneficial to the learners and, if so, how?

F: Craft is beneficial to learners and I absolutely haven't got any doubt about that. It's probably not equally beneficial to all the learners. I think if you look at the mainstream education, and I have two daughters in mainstream education and I also have a teaching certificate which made me aware that statistically in the UK about one third of all the learners at age 16-17 are regarded as failure, so that means they do not achieve a GCSE at an expected rate, so...I mean it's not for no reason that, I believe, that number is around one third because I believe that when I look at secondary education in the UK it's clearly based on behavioural and cognitivist educational philosophies and it's very clear that they provide a lot of academic engagement, they provide some artistic design, you get something relating to...so

drama for example can be very engaging so there are opportunities for engagement and humanities and stuff like that. When it comes to practical engagement, outside of sport there is very little and the design technology that happens in school is really low quality and a really low aspiration. The aspiration is zilch, it's basically screwing MDF bits together and it really doesn't engender pride or love of making or love of work. So design will be mainly looking at the idea of how we design something rather than the practicalities of actually doing it.

So, academic learners do really well. Those that are maybe more emotionally intelligent may achieve something through humanities, arts, visual arts and drama, stuff like that. I think that the people who need the physical expression, who need working with materials, get very little and I think, therefore, that it's not going so well and we fail about a third of the learners. So when you provide lots of craft provision for those that have failed, perhaps in the mainstream or haven't been able to access, makes sense to me. We had also a mock inspection this last week at Ruskin Mill and one of the comments that comes out and made to me afterwards is that the learners want to be around, they want to do the stuff that they've been offered. That was his external view, I didn't make this up, you know.

So that was his reflection and so these things show you that there is obviously something in this that is absolutely relevant to the learners and my craft, as it happens, is very popular with the students and they are happy to do it, so I would say, yes, it's.....this is in the broadest possible terms, you know, where I would contextualise why doing a practical and craft programme would be meaningful to certain learners. Perhaps some of it is purely academic, of course they could benefit from it but they can do well at school...so there is for them enough probably of that challenge and academic achievement laid up.

So, in the primary school for my daughter, when we were being shown around I asked the headteacher 'so can you tell me what percentage of your curriculum is practical and what percentage is artistic and what percentage is academic'. She didn't understand what I was asking. I said 'Okay, I'll put it another way. How much of this, this, that and the other' and so basically it ended up with a mess and that was about two hours a week at primary level, that was it at the primary school. So hardly anything at all, so she couldn't understand the question of the need to balance – very simple to explain – human capacities, it's just maybe the words that are different, but that wasn't a thought at all. So even at primary level, with quite young children, the sense of movement is essential to learning or wellbeing.....

I: Brilliant. So, getting more specific into your craft, what skills are used and built within the craft and how do they affect or benefit the learner, if they do at all?

F: Particularly in blacksmithing?

I: Yes

F: You were talking about hyperactivity and perhaps it's two-fold the craft. Blacksmithing – very important sense of balance. To me, hyperactivity is a sense of

movement taking over and sense of balance not being engaged, or not being very active. So it's an unstructured or movement expression and when I look at the meaning of balance and it relates to the forge very clearly, it is the part of the maker which actually doesn't move, there is something that is outside your stream of all the movements, all the sense impressions and everything going on around you in that craft, which the elements in there are quite powerful. So there's sharp contrasts; you have lots of heat, you have banging of the hammer, so it's a really sense of overload on so many levels and then something of you moves to the main outside the wall of death and be steady, calm, collected and focussed.

So I think, to me, a picture of blacksmithing is the one of maintaining balance in and amongst very powerful and very distractive elements around you in order to be able to manage these powerful forces and related to that of course are...probably I could summarize all of blacksmithing in one word 'focus'. I could say absolutely everything is...if you look at a material, it's very focussed. You're talking about lengths of steel; you don't work with large volumes such as clay or big lumps of wood or big lumps of stone, or clouds of felt, or wool or anything like that. It's kind of rod-like pointy, kind of focussed dense material. Fire, like a barbecue, or a coal fire, or any other fire, is actually a really specific focussed fire, very intense heat in quite a limited area...so it's quite focussed.

Visually everything is leading to focus tools, leading to focus because you're hitting a small piece of material with a small surface area of the hammer, very precisely just where the piece is heated up, so all the gestures are leading to that focus towards the point of where the hammer is impacting, so I could really focus, discipline, courage, and the beautiful, beautiful saying 'strike while the iron is hot', this is something about acting at the right time, so you get the chance to do a reflected bit of work while your piece is heating up you are actually disengaged in terms of...it's a real need of time and space to contemplate, to assess what you've done, to think about what's the next bit, about paying attention to your piece which you can't see. Because it's in the fire you have to remain focused on it, but it's a gentle focus. When that piece comes out of the fire it's the right level of heat and then, of course, you need to really fully engage your mortar activity, bring it all to bear in a very focused way and right at that time you can't hang around, you know.

So you have a very strong focus of this is the activity and then stop and then do it again and then you step back. So some students find it very challenging because it's very awakening so another very important word to add to blacksmithing is it's an awakening craft, so if you have somebody sleepy by their nature or personality it could counteract and force them to be awake. Those that are perhaps overly awake need temper that wakefulness with control of the wakefulness because the time skills and processes are very specific, so thinking related craft, dominant is thinking, people usually think it's hitting things with a hammer, so that it's a will craft. Thinking is the predominant aspect in the forging because you need to have a really clear preconceived idea of the design in your mind in a way that you don't leave a cloud of wool on the table if you are going to make a bit of a felt picture.

So I did a presentation with Maryann, 2 PhD learners and she presented her craft and she gave us bits of wool and then she said to us 'well, just feel the material a bit and just tease it a bit and just tickle it' and then it came to my presentation and I contrasted it by saying 'all the instructions you gave are absolutely meaningless in my craft. I cannot use a single word that you used with your learners...what sort of instruction is that: 'feel the....' What? What do you mean? Do something with it, it stretches a bit....it's such a precise kind of language it's intolerable, it has no meaning at all. So we have to say 'Okay, what we are doing is making a point'. Now that is an extremely precise concept. Or we're going to make a round piece of steel square. Extremely precise and if you don't have that level of precision you end up with a very unclear piece of work and it shows very clearly and it's immediately dissatisfying, so this is why I say it's the thought is engaged in the process and in a way that all the actions are constantly engaged back against the concept is not a reality as such so that needs to be clear and if you can't conceptualise a point then you can't make it out.

I : So conceptualisation is a really important capacity.

F: Really important capacity, yeh, and the work probably begins to look of quality when the concept making is clarified sufficiently and that sometimes of course through the process of making, sometimes I find the hand is a bit quicker and learns a bit quicker the brain catches up and other times I find the brain gets the idea quicker and the hand needs to catch up and I think for a different learner I don't think there is a single, only one, direction. And I think for the same purpose sometimes I find for myself I will have an idea and my hand just won't be able to do it. Other times my hand will be doing something and my head will be struggling to catch up; 'Ha-ha, that's quite clever but how the hell is this working and how will I remember it next time' and so even within the same person I think those two processes can alternate.

I : That's brilliant. So what environment does the craft provide and how does that affect or benefit the learner, if it does?

F: What....?

I : The environment, so the immediate environment of the blacksmithing workshop.

F: The environment is critically important, I think most education doesn't understand or work within that impact of environment probably at all. Definitely for me, but I know that it's irascible but if I'm being specific about the forge I can be as specific as to recount an incident where I'm working with a student, very non-verbal student or a student who you would ask a question and then you will really have to allow between 5-10 minutes of total silence, which seems a lengthy eternity. But in any case we're working for a while and he comes to the forge, we do a little bit, he tries a bit and then starts disengaging and I'm trying to figure out what's not working for him. So at one point a few weeks after he's engagement visibly dropped, I'm still giving him more opportunities of course and trying to engage him and it's not working, so we sit down and I summoned enough patience, which probably took about 8-10 minutes of

absolute silence, waiting for him to come out and thank God I did because I asked myself 'what's up, is there anything that we could do to make you able to enjoy this, or engage, or whatever' and I waited and waited and waited and he comes to me and says 'I like you, I like blacksmithing, I hate your workshop'.

Okay? So that tells you something critically important is that environment, purely environment, has disabled him from doing the activity or spending time with me. So that's why I said to him 'Well I've waited long enough for the answer because it's a very illuminated answer'. And another wise colleague of mine he says to me 'Well perhaps, you know, knowing him as he is he probably spends so much time inside his own head in quite a dark space and perhaps coming up here and having more of the same is just a bit too much'.

So whether we really resolved it or not it just verbalises on behalf of the learner the impact that the environment has. I find it to be, if I'm being a bit poetic about quite a feminine space, funnily enough, it's a darkened womb-like...in the way that I've constructed the forge...it's a bit of a cave within reach. Miracles of transformation happen. It's a really sort of a...there is something of the womb...there is something warm in the environment, the workshop is a very hearty space as well and the fire and the nearly magical transformation that's beyond reason and so it's got a...within itself as such, because of the fire element being so central it's quite a nurturing, can be very cosy, hearty, very homely space.

I think in its later synchronation with a large frame and wooden structure with a hardened floor, our local poet saw the workshop when it was finished and he looked at it and said 'Oh, this looks like some Viking burial chamber'. And, again, that was a great reflection and I thought in a sense... I said 'well, if that's what you say I feel like I've succeeded'. With an intention I didn't really fully understand but working with the building team I felt it was how I would like it to be and when he put poetic words to it I thought 'Oh, I can understand something of a Viking burial'.

There is something about...for me I can't remain untouched so if I go in my space and if I do the activity I don't walk back through the door and change, so that by extension I assume that that process is happening for the students. Sometimes I know it clearly, other times I simply trust that it has, so I walk out having been inside a Viking burial chamber and having interacted with the power of fire and iron, the sole sort of signature that will be printed on that sort of part of our constitution is a definite thing I think we can really take for granted.

A lot of it seems so improbable and so unlikely when you perceive a theory, just hold it on that, it seems such an impossible thing to do anything really well, it seems so beyond our...and so then the magical forge-work and this is what I challenge sometimes, and textile work for example, I say to teachers 'how is it that blacksmithing is the easiest craft, far easier than felt-work' and they say 'of course it is' and what I mean by that is that as a blacksmith you are standing with that sense of balance and you're balancing out no more or less than the four elements that outside of you in the environment very simply and visible. Very simple and visible, there is nothing convoluted. You get your bellows and you pump the air into what.. 'Hey

Presto' fire, there is your fire element, you've got your own materials, tools, fuels, coal, there is an updated presentation of our...and the water element is immensely important at critical times as well. Interestingly as well that by heating a piece of metal...so you're mixing up earth and fire, and air from the bellows, what you're actually producing is a liquid phase of iron, so actually you're working with your material in a water element state, somewhere between half-way and between the solid and liquid.

And there they all are, you can see them, and it's very simple. You learn how to do it, you can do it really well and if you do it really well every time you get a predictable result, so in a way quite unlike pottery where things can blow up in the kiln, quite unlike woodwork where you make a nice beautiful chair leg that's perfectly round and turned and then in a week of trying it cracks and totally oval, which makes it no less beautiful but the material is still doing the stuff so to speak, to its own nature. So there is something predictable and students often...I think it can be very helpful because I can tell them 'if you do learn these things and if you do them with presence, consciousness and attention, you will get results, it's guaranteed, there's not going to be a nasty surprise, you're not going to get a'...you know...and that can be reassuring for students who like to have a predictable picture.

I : It's interesting for you to say those things about the element, I'll speak to you later on because it's given me a really interesting.....

F: Oh, I'd love to see that...

I : Have you got to get back?

F: Not yet, we're okay for a bit more.

I : So, you spoke quite a bit about the materials actually which was the next point. So I don't know if you've got anything more to say about...but the question was what challenges, issues and boundaries do the material provide and how does that affect or benefit the learner?

F: Challenges, issues and boundaries?

I : So I think you just spoke about them actually.

F: Another one?

Sense of touch, which you're asking about boundaries. Sense of touch is nearly violently exposed in this process. I control that or leave a differential why I unplug intermediate technology so I can increase the soft touch through the leather bellows that are hand operated and you can make that out of sheepskins and deerskins and it can be quite furry and soft, so for kindergarten children that's what I do. Lots of our students are kindergarten children in terms of their boundary and development, based on a sense of touch, so for them I'll do goat or deer and iron age technology and the work will be smaller so that their handling is not of the magnitude which will

expose a sense of boundary so violently that you would lose the student, so for our students and for young children that's where you start.

When you move on then it comes to be harder and the hammering action becomes...your sense of touch is the real sort of informer of how you're working, because you hit a piece of metal when it's hot with your hammer and something incredible happens at this point which is that if you're...it's the boundary in between what you do and what you don't do and what you don't do is probably more important. So the hammer lands on the piece, you need to gauge the moment at which to stop down the pressure within a milli-milli-milli-second because if you don't you lose the rhythm and you are forcing the metal...forcing the tool beyond it's time to actually bound back.

I: So time and space is sort of valuable?

F: Oh, extremely, extremely important. Or you can release the pressure before you actually hit the piece and then you get this sort of...very weak and somebody who sees people not putting enough weight into the hammer because they hesitate and they go down but they stop just before they have hit the piece properly.

The other extreme is when people hit and the hammer is held down and not allowed to come up and so...*what is it called...Oh I'll leave that for a bit for the exact term but it's to do with the...*it's more important what you don't do. The way to is direct it skilfully by you can be used ... and then just knowing when to stop, knowing when not to continue doing what you are doing. Then that amounts to really effective working, interestingly enough, so most people think 'Oh my God this is very hard work'. I say 'No, that's really easy work that you're doing' but if I've been felting for two hours is really difficult because you don't get...here I have tools, I have the weight of the hammer and gravity, thanks very much, Mr Newton. Bellows are there and fire, because from the material I can't do anything at all with it in its normal state, I'm making into a pliable and soft material by an element outside of myself.

And so this is a bit of a joke is the question, but just about how blacksmithing is the easiest craft and I just want people to understand that the rhythm and skilful control of the elements in your environment based on your sense of balance and non-movement and control and sort of acquired discipline and perception, when you develop those skills it stops being a while of will-based hitting things hard with a hard tool upon a hard anvil and it becomes more liquid, skilful, dance movement process, which ends up quite often in very graceful forks, so if you look at traditional blacksmithing, all this forge work and leaf-work it's interesting that transformation is very often into somewhat surprising forms and shapes.

I: Can I give you one last question?

F: Yeh, for sure, for sure.

I: I could ask you about the social conditions or I could ask you about the aspects which could address or benefit impulse control.

F: Impulse control. Okay, so this is good because we come to....I did want to tell you an anecdote when you was talking about this before you put the recording thingy on...impulse control, so a student starts working with me last term. He is a student who just wants to do stuff, alright? He just wants to do stuff and he doesn't want to be told things and he doesn't want to sit down and do any paper at the end of the session and he doesn't mind whether one thing that he's made is better than the one before, he just wants to do it, 'I just want to do it'.

That goes on for a while and what he does on the other hand is he gets driven in a taxi from his home to Ruskin Mill every morning for an hour and ten minutes and goes with another couple of students and then on the way in he hits the student really hard in the face because they got annoyed with each other and then he gets disciplined and excluded from the Mill for a week, but still the manager rings him up every day, 'Hey, how is it going' and stuff like that. 'What're you doing' and stuff. He says 'Oh I'm at home really bored, I can't wait to get back and I can't wait to hit that so-and-so again, even harder this time'.

So basically 'well, well, not to worry' no thought and no discernment whatsoever, no reflection. So it's all the power and the fire will that needs an expression, which is a real talent, the lad wants to engage. If you get him in the forge he will not stop, it's the trouble stopping him in the break time. Yeh? He just wants to go and use and use and use his energy. And when you ring him up and say 'what are you thinking', he says 'Oh, I'm going to deck him again' that means he's then excluded for another week because he can't come back before he says 'that was probably a bit stupid and an over the top thing to do' and 'Yes I won't find it easy but I will apologise when I see him'. That's what you need in order for him to get back.

So this is an example of will, impulsiveness and lack of soul discernment of right and wrong the moral *and* the lack of reflective capacity to say 'Well, actually it was out of order'. Or he needs to be selfish and say 'well, I'd better pretend that I resent what I did because that's going to get me back in the College and I want to be doing more blacksmithing'.

So that's six months ago.

This term a brand new member of staff comes in the workshop and I say to them 'Ah, this student has been around for a while'. She's on induction and it's four hours in the forge she gets as part of the induction. So I say 'would you mind, it would be really nice I say to the student, if you could show Sophie how to start the fire, how to start making something' and she did the whole thing and not only did.... so last year at best she would have perhaps able to do something for her like.....Sophie would start making a keyring and he probably would not have said anything and would have made the keyring for her. In reality would be an outcome. Now six months later what he's doing, he's starting the fire and he's talking about everything that he's doing and explaining to Sophie and then shows her how to do something and will let her do it and then tells her that she's doing it wrong.

The development here is not that of personality because that was there all the time but what he's learnt in the meantime is that when he was allowed to have his will engaged in that, because for the first couple of months he would just make poker after poker after poker and one was no better than the other, so you gauge at what point can you say 'Hmm, you know, just if you do it a little bit like this' and then show him an example and say 'it could look just....' and at some point that happened and then it happened a bit more and...so as the will the need was kind of met. More and more he was able to start discerning what's better, what's less..

I : ...a reflection on capacity....

F: Yes. And then...so when I go to the end of the story, which is this week, with our new HR lady, he then says to her how to do something, why to do it and he lets her do it. That's reflection, that's not activity, he's not actually doing it. And so I think that's an example of would impulse, caught over a period of six months which is extremely fast, got tempered in with the ability to discern and the ability to appreciate or not the product of his work and to look at it, to evaluate it, to understand why something is as it is and what he could do to make it different to better itself like that.

So, in his case, from the impulse of hitting somebody in the face and not being able to take any responsibility or recognition of it for quite a long time, to being able to lead an adult through the process of making, for a solid four hours, is impulse control example, which is near perfect, near perfect example of impulse control. Because you can come to the forge and you can try battling iron, sure, try it. No problem at all. It's quite good, don't battle your house parents, don't battle the other people in the forge. Hit this and hit it and hit it, but little by little that need when it's bad, not when it's alright but when that need is bad. At some point as a teacher you are gauging at what point can you start structuring it. You can't before it's at the right moment, because it's still not there so that's the skill and the observation and then you get by. Where is the person. So at times he would be working hard for two hours and then he would actually get a little bit tired, get a little bit tired. Then you sit down with him just for two minutes, that's all you get and say 'You know I was thinking about that poker, I wonder whether this time you can make the diamond head, you know I've shown you on my one. Mm, maybe, maybe not, we'll see how you go'. And you just leave it at that.

I : He brought the design element up?

F: No, no no.

I : You brought it up?

F: Yes. At this stage. You just plough it a little, just a sentence or two that's all you're going to get. Otherwise there's a bit of confusion. And it's also, for me, it's sort of a heartfelt process, well actually I wish for you to be able to put now just a little bit more refinement and a bit more control into your work. It's great what you're doing but I would just love that as the next step. So you just offer it up a little bit and then you wait and the next time you hear it mirrored back and two days later he says

'Are you saying that I should be making a diamond point this time, then'. This is your opportunity, then you say 'yeh, I think that's spot on, I just wonder what point you'll be ready'. It's a little challenge. 'I don't know whether it's there yet but, you know, you'll tell me'. 'Okay, okay, I'll do it then, I'll do it then'. So you build on that.

I : Great.

F: That's an example.

I : Yes and it's covered some of the social aspects. Fantastic! You've actually answered all my questions.

F: Unbelievable. Thank you.

I : Thank *you!*

END

Appendix 7 - Author's personal reflection on crafting a wood and bone handled knife

I decided on a Norwegian style knife, as the traditional nature of this style dictates that representatives of most of the materials I studied could be used, namely metal, wood and animal hide/leather.

Through the process of making the knife I was able to take part in a range of activities and processes which emphasised the 'seed to table' nature of the curriculum and craft process which helped me better understand the flow of energy, 'focus to periphery', from sunlight all the way to finished material product:

Knife - Sunlight-Tree- Charcoal-Forge-Blade-Knife

Sheath- Sunlight-Plant-Animal-Leather+Antler-Sheath and Knife handle

Handle-Sunlight-Tree-Wood-Knife handle

For example, I took part in cutting wood from the managed woodland from the green woodwork curriculum; charcoal making (to fire the forge); forge building (clay); forging (forging a blade); wood working (handle) and finally leather craft (sheath).

The finished craft product, the knife, did indeed serve as a tool of reflection of all the processes and learning I had achieved while making it and also provided a significant memory prompt of all previously described seed-to-table activities and processes it let me engage in.

The making of the knife was a clear example of the holistic and interconnected nature of the crafts RMT provides. The benefits of which were discussed by Sigman (2008), Gordon (2012; p. 68), within the literature review, as well as the interviewees and truly helped me gain a very wide and encompassing view of both the interdependent nature of the world through ecology, science, metallurgy, woodland management, charcoal making, building a forge, forging, woodworking, leather working, etc. This further helped me foster and learn from my personal affiliation for nature and the world, which in turn further helped me understand and reflect upon Biestas' (2012) theory of 'resistance' and 'world based' education.

I also feel this process improved my personal and professional 'locus of control' explained by Sigman (2008) and widened my knowledge, skills and ability to understand the deep connections between all the crafts, environments and people within the RMT and its PSTE curriculum.

This therefore may better help me fulfil my professional role as craft practitioner due to the new and improved crafts skills along with my role of PSTE mentor and tutor by being able to explain and pass on such knowledge to other staff within the trust and parties with vested interests.