

## *The Value of Woodwork in Early Childhood Education*

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This paper presents emerging findings from the Big Bang Research Project. The Big Bang Research Project is an ongoing global research project involving over 30 countries, gathering data from, and analysing case studies of, woodwork in early childhood education settings. The full 5 year research project is due to be completed in 2023. With an increasing number of settings providing woodwork for young children, the aim of the research is to collate the impact that this is evidenced to have on young children's learning and development. Survey data, case study and interview collection and setting observations commenced in 2019. Observations of practice have included visiting settings in USA, Japan, China, NZ, Sweden, Finland and UK, with funding from WCMT<sup>1</sup> in-part financing these observations.

ECE (Early Childhood Education) settings were invited to complete an in depth research survey and submit case studies. In addition, where feasible, settings were interviewed or had a site visit to observe the woodwork provision in practice. Initial contact with settings was made through promoting the research through national educational press, government departments, national early childhood organisations and through social media. Settings included nurseries and schools (both state and private sectors), as well as those working as home educators or childminders. The research focused on children aged 3-8 yrs.

Many prominent authors and academics have written about the rich potential of woodwork in early childhood: *'Woodwork is active learning at its best'* (Bruce T, 2000)<sup>2</sup>, *'Woodwork is like a magic carpet of skills which last a lifetime. It involves curiosity, creativity and a rich opportunity to engage with process based learning leading to deep involvement and satisfaction'*. (Solly, K 2018)<sup>3</sup>. Many pioneering educators have also emphasised the importance of experiential learning Froebel, F. *'To learn a thing in life and through doing is much more developing, cultivating and strengthening than to learn it merely through the verbal communication of ideas.'* Froebel 1885: 279<sup>4</sup>. To date there has been no data collection or research looking at the overall impact of woodwork to substantiate these claims of the educational value of woodwork for young children. Certain areas of learning have been researched in isolation, such as researching the impact of woodwork on mathematical development (Joonhee, K and Jihyun, K 2019)<sup>5</sup> or the *'The influence of carpentry in emergent curriculum for spatial perception'* Bae M 2010<sup>6</sup>. The Big Bang Research Project combines both quantitative and qualitative research methods to discover what we can evidence as the impact on all areas of learning and development that we can attribute to the experience of young children working independently with real tools and wood. Woodwork (or carpentry as it is referred to in some regions) for the purpose of this research involves children working with hand-tools: typically saws, hammers, screwdrivers and drills, working with wood and also encompassing an assortment of additional non-wood materials such as fabric, beads, and bottle tops. The project is co-ordinated by Pete Moorhouse (Honorary Research Fellow, University of Bristol), artist educator (St Werburghs Park Nursery School, Bristol, UK), an advocate woodwork in early childhood education and author of *'Learning Through Woodwork'* (Routledge 2018)<sup>7</sup>.

The emerging data presents a clear picture, and if subsequent data correlates this it will further add to accuracy of the findings. Current data related to approximately observations of 3500 children. The majority of the respondents (75.2%) worked with 3 to 5 year old children, with an average of 54 children per respondent accessing their woodwork provision regularly during a school year. There was a significant variation in duration (years) that settings had been delivering woodwork with 14% over 20 years, 55% 2-5 years and 23% less than a year. The type of provision was varied with the majority being adult supported, having small groups of children working at a time with an average of 3.2 children.

The responses on learning and development point to woodwork as being a strong medium for embracing cross-curricular learning. This potential was highlighted by the majority of participants: *'Woodwork can embed so much previous learning within one activity'*. *'There are many overlapping modalities at play with woodwork'*; *'Woodwork is extremely cross-curricular and supports the whole development of the child.'*; *'Woodwork really covers all of the learning we want children to experience in school'*; *Woodwork is one of the most multi-developmental activities we offer'*. The survey data provided, based on observation and case study analysis validated these responses:

This cross-curricula nature of woodwork is exemplified below, evidenced from data collection to embrace all areas of learning and development.

Area of Learning: Observed in practice %:

Personal, social and emotional development	<b>93.3%</b>
Well-being, contentment	80.0%
Self-esteem	<b>88.9%</b>
Confidence	<b>95.6%</b>
Collaboration	62.2%
Self-regulation	66.7%
Playing and exploring	82,2%
Active learning – intrinsic motivation	<b>84.4%</b>
Resilience	<b>88.9%</b>
Perseverance	<b>91.1%</b>
Creative thinking	<b>97.8%</b>
Critical (analytic) thinking	<b>88.9%</b>
Physical development	<b>93.3%</b>
Communication and language	<b>84.4%</b>
Literacy ( research, creating design plans, related books about woodwork)	53.3%
Mathematical thinking	<b>84.4%</b>
Understanding the world	77.8%
Scientific knowledge and understanding	64.4%
Expressive arts and design	<b>88.9%</b>

This illustrates that all areas of learning can be incorporated within woodwork. It is evident that the strongest impacts of woodwork are also broad (figures in bold) incorporating personal development, confidence, learning dispositions and creative thinking, art and design, mathematical thinking, communication and physical development.

Other significant findings included the high levels of sustained engagement. The majority of respondents observed 92% level 4 or 5 (Leuven scale of involvement)<sup>8</sup> with 55% for remaining engaged more than 30 mins and 20% more than an hour. On particular occasions 38% responded that children at times remains in excess of 2 hours. Woodwork was seen to be popular with children, approx. 85% take up when given free choice, 93.2% no gender difference, 95.5% showing high levels of enjoyment, 100% seen to be proud of their achievements. Levels of collaboration were high with 95% observing an increase in social skills, collaborative working and joint problem solving. Creativity was very much evidenced to be at the heart of the woodwork experience, 97.8% observing children's creative thinking, 88.9% observing critical thinking and 91.1% seeing perseverance with problem solving.

Woodwork is also seen to have a significant impact on the development of many children from more disadvantaged background facing ACEs (adverse childhood experiences). Often children who typically found it hard to focus and concentrate were observed to engage more positively with

woodwork. 87.5% of this group of children showed higher levels of engagement. This resulted in 85% observing higher levels of self-esteem and confidence within this group. Children who typically exhibited disruptive anti-social behaviour were observed to have 88% decrease in these behaviours at the workbench. Many attributed this to the fact that they were feeling valued and empowered by being trusted to use real tools, and that the nature of woodwork captured curiosity, instilling an intrinsic motivation leading to more sustained engagement.

The Big Bang Research project will continue to gather evidence, and from an increasing variation in type of setting expanding the cohort samples. The full report will be published 2023 and will include many other factors surveyed such as equipment used, safety measures, and access to woodwork teacher training. The intention is that this research data can help inform curriculum policy for ECE, as well as encourage more individual to setting to provide this opportunity for young children. The benefits of making with 'real' tools go well beyond typical curriculum areas, the knowledge of tool use is life long, with many people requiring to use tools at some stage, be it at work, in the home or for specific interests and importantly in terms of sustainability the process of making and repairing is increasingly valuable by being antidote to cultures wedded to consuming and disposing.

The profound and holistic impact of woodwork on learning and development indicates woodwork is ideal as a medium for core early childhood provision.

If you would like to participate in the Big Bang Research Project<sup>9</sup> please contact the author.

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