A systems thinking exploration into the rise in mental health and well-being issues in UK secondary schools concerning same-age and mixed-age systems (vertical tutoring).

**Abstract**

This article explores mental health differences between two distinct organisational systems used in UK secondary schools. The same-age system has been 175 years in the making and universally incorporated across the secondary school sector (ages 11-19 years). The multi-age or mixed-age system that schools call ‘vertical tutoring’ (VT) is in its infancy and describes (for this paper) a growing cohort of UK schools that have transitioned from same-age organisation to mixed-age organisation. These schools have innovated, trialled and established a different operational structure (Barnard, 2015 & 2018) based on multi-age grouping in tutor time and have begun a process of innovation around this construct. In VT schools, a pupil is part of a tutor group which is populated by students from all grades (US) or year groups (UK) for round 20 minutes each day. Schools that have successfully transitioned to VT report improved pro-school attitudes, greater happiness and improved social and learning behaviours (Barnard, 2018a).

This exploratory paper uses a multi-disciplinary approach to outline the differences between these two organisational systems, the learning relationships they promulgate and their effect on the well-being of staff and students. This approach includes aspects of biological and living systems theories, complexity theory, and tenets of social, cognitive, and developmental psychology. It finds that the universal same-age is far from being the safe environment for learning and child development it purports to be, and may be a significant contributory factor in the development of mental health disorders and loss of well-being. Research set out below suggests that schools using a same-age system are assuming of psychology and may be the cause of many of the social and learning challenges they are trying to resolve.

**Key Words**

 Systems thinking; multi-age grouping; vertical tutoring; child psychology, complexity theory, mental health; living systems.

**Introduction**

The author of this paper claims no technical expertise in mental well-being other than long experience (almost 50 years) working as a practitioner in both same-age and mixed-age secondary school settings, and as a participant observer facilitating school transition from same-age to mixed-age cultures. There is a growing appreciation that we all have a role to play in preventing and combatting mental health disorders, and this makes schools pivotal in such a process; evaluating what schools do and what they assume is essential despite any conjecture caused. This is especially so given that mental disorder and loss of wellbeing (Patel et al., 2007) ‘begin during youth (12-24 years of age)’ and constitute ‘a global public-health challenge.’ Given the inadequacy of provision, Patel suggests that a youth-focused model may be part of the answer and this places an onus on schools to critically reflect (Fook, 2010), and reconsider their role. This may involve considerable unlearning as Grisold et al. (2017) suggest, if schools are to abandon an aging system for new learning and leadership approaches.

Schools traditionally see themselves as treatment-oriented. They provide services and pastoral support alongside their teaching duties. No-one would question the professionalism, expertise and attention they show. However, the contention of this abstract suggests that schools are also causal, that same-age organisation is a (major) contributory factor to loss of well-being. If this is so, then treating conditions caused inadvertently by the school itself seems counterproductive. Flood and Romm (2017) use the concepts of Argyris and Schon (1974 &1978) to show how schools identify and solve problems (in this case problems of wellbeing). Schools use single-loop learning (SLL) as opposed to double loop learning (DLL) asking the question ‘*are we doing things right’*; for example, do we have a care system in place, can we access help, is there someone in charge of wellbeing, are staff trained to identify problems, can we get hole of a counsellor. DLL asks a different question; ‘*are we doing the right things’*. This question involves learning to see in new ways by reframing the challenge of (in this case) wellbeing (Romm and van Witteloostuijn, 1999). Finally, there is triple-loop or deutero-learning organsational learning described by Snell and Chak (1998) as:

* Inventing by creating ways of coming up with new structures of thought and action suitable for particular occasions…
* Co-inventing by creating collective mindfulness where members discover where they and their predecessors have facilitated or inhibited learning and produce new structures and strategies for learning.

The suggestion here is that schools cannot operate in SLL mode to solve problems that are DLL in nature and require a TLL systemic solution.

**The Challenge of Wellbeing**

The Mental Health Foundation (MHF) suggests that around 1 in 10 children and young people experience depression, anxiety, and conduct disorder. Schools will be all too familiar with eating disorders, self-harm, ADHD and suicidal tendencies and do all they can and more to support young people. Schools are beyond reproach in their good intentions, and no criticism of practitioners is implied here. However, this article takes the view that the same-age system in use is far from helpful and comprises a significant barrier to the wellbeing of staff and students and as such, warrants considerable scrutiny. For 70% of young people, there is no appropriate intervention and the MHF lists ‘going to a school that looks after the wellbeing of all its pupils’ as an essential factor in keeping young people mentally well. We can include staff in this! But care must be taken at this point. Exactly what does this ‘looking after’ entail?

Children today lead complex lives and face complex social pressures. There is a straightforward organisational law (Ashby’s law of requisite variety, 1956) to guide the way in which chools might respond. Putting mental health issues momentarily to one side, Ashby’s law states that an organisation (like a school) must of itself be sufficiently complex if it is to absorb the requisite variety of demand on its system. This is what schools try and do; they try and cope with the complexity young people bring to school that schools are there to absorb. I raise this now because all that follows suggests that this ‘law’ is wrongly interpreted by secondary schools operating a same-age system, one where students, for organisational purposes are separated on the grounds of age or grade. A same-age school seeks to control complexity through homogeneous grouping. From a systems perspective, it resembles a high compliance organisation reliant on learning theories that don’t hold using a received system mindset designed to suppress variety, one that practises social and cognitive limitation through separation. Unfortunately, complexity responds poorly to control and sameness; young people misbehave and can get ill if needs are not recognised and met.

Schools will say, look at all the things we do; our pastoral care, the support staff, the new expert in mental welfare, the results from our staff wellbeing questionnaire, our amazing anti-bullying ambassadors, our systems of referral and intervention, ourexpanded pro-social PSHE programmes and our parent partnership. They will show how they identify looked-after children, carer children, those on free school meals, SEN children, the disabled and socially excluded, the anxious and how around each group is a raft of complicated policies that Ofsted inspectors will judge (for compliance and safe-guarding). Each year new additions are added, new vulnerabilities identified and added to the inclusion list. None of this is a criticism of practitioners who strive each day to make their school the best it can be, but workload mounts and resources are scarce, and the to-do list is getting longer! There are obvious cracks in the system and old approaches (SLL) no longer seem to work.

I will argue that such an approach (SLL) to school management is one of *add-ons* and *fixes*, the school’s separational and somewhat lumpen response to variety and diversity, one that does little to prevent individual vulnerabilities becoming major issues of wellbeing. The effort by school staff in making a same-age system work is outstanding by any measure, but from a systemic thinking perspective, such an approach contains glaring contradictions and seems piecemeal, highly complicated and disconnected in form. Adding new parts to old is the reaction of the same-age system to operational *disturbances* (explained below) and a misapplication of Ashby’s law (1965). [See Glouberman & Zimmerman, 2002 for a guided tour of the differences between ‘complicatedness’ and ‘complexity’]. An understanding of the differences is vital if schools are to develop as (learning) organisations that consider the ‘whole’ child and all staff.

Systems and Psychology

So, how should schools react? How can schools develop in ways that enhance wellbeing rather than endanger it? John Atkinson (2018), an experienced systems thinker and organisational consultant, describes the systems approach:

It is dialogue that has created who we are and only a change in our dialogue will change that. To change the dialogue means much more than changing the topic of conversation, you’ll rarely manage that over any period of time. (Networks will decide on their topic of conversation based on their sense of identity.) Instead, the route is to change the relationships within and between networks, across silos and across the organisational boundary. This is not the crude and crass ‘cut and paste’ of organisational restructures. This is a qualitative change in how people are in relationship with each other, how they decide what matters, how they respond to new information and new people.

Put simply a systemic response is needed, one that is inclusive by design not by add-ons. Such a response cannot be the addition of more pro-social programmes and more PSHE (add-ons and fixes) despite the valuable concepts from which these are derived. Instead of adding things on and trying to fix people when they break, schools could redesign their operational system by ensuring that empathy, citizenship, and conversations emanate from the relationships that schools use every day. In effect, the school must complexify (a shift from the complications arising from its same-age structure) and learn how to be ‘open’ to all agents (staff, students and parents) in a socially collaborative sense. Such positionality is far from where same-age schools are as organisations. At present, schools have increasingly limited conversations, weak parent and student partnerships, poor collaboration; these are systemic restrictions arising from the complications of the same-age operational structure with its endless referrals, access difficulties and undistributed leadership. Only at the water-cooler and informal areas where restrictions are weakest do staff rationalise, interpret and make working sense of what they do. It is the development of learning conversations between actors that eventually builds the symbiotic link to the environment and a more open system that embraces and builds community.

**Psychological imperatives**

Among the *disturbing* changes currently experienced by schools (students, staff and parents) are the following:

* Traditional stand-alone schools are being subsumed into school chains and multi-academy trusts (MATs). Schools experience this as loss of identity, temporary or otherwise. Weaker schools may see these as a safe places of respite care. This offers the illusion of autonomy (Salokangas and Ainscow, 2018) and increases sameness.
* Pressure on teachers is increasing and exerted through a focus on improvement via high stakes testing and increased accountability. Anxiety is rising; there is fear in the system (Bell, 1999).
* The curriculum is narrowing in favour of science, technology, engineering, and mathematics (STEM); subject balance is under threat restricting the learning and developmental potential of staff and students.
* Workload is increasing creating pressure on work-life balance. The school is insufficiently organisationally complex to handle variation in demand (Ashby’s Law). Pastoral care is under extreme pressure.
* Values-driven purposes have been replaced by a *de facto* purpose. Instead of value purposes deciding the measures used to judge a school’s worth and performance, schools are judged by test results which not only redefine purpose (to pass tests) but specify the methods used (teaching style). Values have become distant and assumed and purposes like the goal of goodness and preservation of the commons, uncertain.
* Push management regimes and reward mechanisms are exerting more pressure on staff and students. Resilience is being tested beyond working norms. There has been no reflexivity or time for adjustment.
* Added to these are new pressures emerging from the age of social media.

Arguably, the cumulative effect is to stress-test the systems used by schools; one that results in gaming (previously moral people resorting to underhand practices to produce better data), off-loading troublesome or weaker performing students, examination cheating, a decline in participant well-being, a redefining (reduction) of parent partnership (now parental engagement), a silent cull of headteachers judged ineffective (slow to bring about change), school conglmerations, and a decrease in practitioner morale. Schools are suffering significant systemic disturbance with an unnecessary level of fear introduced into the workplace. Confidence is low.

Psychology

In this section (the author claims no psychological expertise despite being a teacher for almost 40 years) the focus shifts to the theories of the psychoanalyst, John Bowlby (1969), and the developmental psychologist, Uri Bronfenbrenner (1977), and the degree to which schools are psychologically congruent in their practices. If there is a mismatch, it is not unreasonable to suggest that a child’s well-being is at risk.

Bowlby studied medicine and became a psychoanalyst. While training he worked voluntarily at homes for maladjusted children, most of whom had minimal if any contact with their parents, an experience that shaped his life’s work. Returning from the war, Bowlby ran a children’s clinic (Tavistock) and began to specialise in parent/child separation, a problem affecting vast numbers across Europe. In 1951 he was commissioned by the World Health Organisation (WHO) to write a report on the mental health of homeless children in postwar Europe. In her biography, Inge Bretherton (1992) notes that Bowlby’s ideas abstracted from practitioners and researchers across Europe ‘were little short of heretical’ and ‘more Vygotskian than Freudian.’ Bowlby concluded that for a child to grow up mentally healthy, ‘the infant and young child should experience a warm, intimate, and continuous relationship with his mother (or permanent mother substitute) in which both find satisfaction and enjoyment’ (Bowlby, 1951, p. 13). He added, ‘If a community values its children it must cherish their parents’ (p. 84), just as schools must!

At the heart of Bowlby’s work is ‘attachment theory’ which proposes that safety and exploration are essential, complementary, and conflicting ingredients that prepare children for life. When a child feels safe and secure, she explores and plays developing the social skills, resilience and intelligence she will later need. It was Mary Ainsworth (1982) who applied Bowlby’s theory while in Uganda, and evidence suggests (Hazen & Shaver, 1987) that attachment theory (proximity maintenance, separation distress, the need for a haven, and a secure base from which to explore) applies throughout schooling and probably into old-age (see Bronfenbrenner, below). Between the ages of 8-14 years, the safe-haven shifts to friendship groups (discussed below) and eventually in late teens to a partner (detachment as tofrom the previous family). The question as to the role of schooling hinges on the ability of the school to create a safe environment from which to explore, and the kinds of relationship needed to fulfil attachment needs. Later I will show through the research literature that schools organised on a same-age basis are unable to meet such requirements no matter how hard they try. At this point, the purpose is to establish the conditions required of schools to promote good mental health.

Although mental health disorders occur throughout life, they often make their entrance in childhood and adolescence (Kessler et al. 2007) and this makes prevention essential (Whiteford et al. 2013), and this brings us to Uri Bronfenbrenner. Just as Bowlby was an associate of systems thinking pioneer, Ludwig von Bertalanffy, so Bronfenbrenner learned from his systems thinking mentor, the organisational psychologist Kurt Lewin. It is no surprise that Bronfenbrenner’s (bio)ecological systems theory (a ‘nested’ system) maps out the influences on child development within and across different environments or systems. Bronfenbrenner describes these as ‘processes of progressively more complex interaction’ (Bronfenbrenner, 1998: 996) involving the family, school, workplace and institutions. Unfortunately, these ideas have been notoriously difficult to apply in terms of public policy (see overview by Eriksson et al., 2018). The suggestion is that VT schools have discovered the means.

There is one notable long-term study of a Boston high school in challenging social circumstances (Leonard, 2011) that employed Bronfenbrenner’s ecological theory to track the partnerships and interventions (mainly from the *exosystem*) on its improvement journey. Although this involved significant external funding and support, no substantive change occurred to the system used by the school. Those inside the school were never able to fully grasp and absorb the changes suggested. Classic living systems theory (Maturana and varela, Luhmen) suggests that schools cannot be changed externally). The impression (my impression) from the research is that schools are seen as hapless, that self-improvement is very difficult and that external reform will always be the chosen short-term, snake-oil fix even though it fails. When any support or funding is removed, the school regresses to its original organisational form. Schools, it seems, are overwhelmed in solving SLL problems emanating from their design and cannot critically reflect on operational processes (DLL). It seems that the *internals* (staff and managers) cannot understand and often thwart what the *externals* (reformers and politicians) are trying to do, a situation leading to apparent closed-mindedness at the system border just as living systems theory predicts. The Leonard paper (2011: 31) reflects this frustration, concluding:

The developmental needs of all students are larger than what a school can address alone. With successful students, these needs are met through relationships we hardly notice between teachers, parents, peer groups and other members in microsystem settings. For at-risk students, these relationships are sketchy.

A reading of this study suggests that massive outside intervention provides a temporary benefit but fails to impact on the school’s modus operandi. Trying to implant new operations across the school’s border (*structural coupling*) remains fraught with difficulty. The same-age school as a recursive living system has spent a lifetime learning to be itself; it cannot conceive that the system it uses is in any way problematic and like most, considers its same-age sttructure benign. Its cognition and psyche are fused into its existing wiring as Maturana & Varela, and Luhmann suggest.

Bronfenbrenner (1990) set out five propositions that describe the processes needed to foster ‘the development of human competence and character.’ Each process (proposition) for positive development involves schools (below) just as attachment theory does. ‘At the core of these principles is a child's emotional, physical, intellectual and social need for ongoing, mutual interaction with a caring adult—and preferably with many adults.’ Bronfenbrenner added wryly, ‘I am sometimes asked, up to what age do these principles apply. The answer is debatable, but I would say anytime up to the age of, say, 99.’

* Proposition 1. In order to develop--intellectually, emotionally, socially, and morally--a child requires participation in progressively more complex reciprocal activity, on a regular basis over an extended period in the child's life, with one or more persons with whom the child develops a strong, mutual, irrational, emotional attachment and who is committed to the child's well-being and development, preferably for life.
* Proposition 2. The establishment of patterns of progressive interpersonal interaction under conditions ofstrong mutual attachment enhances the young child's responsiveness to other features of the immediate physical, social, and--in due course--symbolic environment that invite exploration, manipulation, elaboration and imagination. Such activities, in turn, also accelerate the child's psychological growth.
* Proposition 3. The establishment and maintenance of patterns of progressively more complex interaction and emotional attachment between caregiver and child depend in substantial degree on the availability and involvement of another adult, a third party who assists, encourages, spells off, gives status to, and expresses admiration and affection for the person caring for and engaging in joint activity with the child.
* Proposition 4. The effective functioning of child-rearing processes in the family and other child settings requires establishing ongoing patterns of exchange of information, two-way communication, mutual accommodation, and mutual trust between the principal settings in which children and their parents live their lives. These settings are the home, child-care programs, the school, and the parents' place of work.
* Proposition 5. The effective functioning of child-rearing processes in the family and other child settings requires public policies and practices that provide place, time, stability, status, recognition, belief systems, customs, and actions in support of child-rearing activities not only on the part of parents, caregivers, teachers, and other professional personnel, but also relatives, friends, neighbors, co-workers, communities, and the major economic, social, and political institutions of the entire society.

The five propositions describe precisely the underpinning rationale and social and developmental psychology of vertical tutoring with its a multi-age design, one that enables a school to connect to more of itself and be socially collaborative. Unfortunately, same-age schools are convinced that this is what they do and will point to their procedures and practices as evidence. It appears that such organisational self-deceit (described by Trivers, 2011), is very much in line with evolutionary living systems theory: by only seeing our own point of view, we can more authentically argue our case, a kind of ‘post-truth’ rationalisation. However, the following sections and accompanying literature review reveal why same-age systems can only aspire to such socio-psychological coherence. Had Dunbar High (Leonard’s school) moved to a mixed-age system, they might have made significant progress under their own steam, saving vast investment and resourcing costs. However, to do this school practitioners need to engage with the kind of critical reflection advocated by Fook (2010).

**Mixed-age and same-age systems**

In this section, there are four areas of concern often raised by schools when considering the transition from one system to another; friendship, bullying, socio-cognitive learning and underpinning research. By dealing briefly with the first three items in order, much of the fourth is covered.

Proponents of the same-age assumption perceive the need for peer (same-age) friendship, and the placement of students in same-age groups as a plausible means of organisation, one with a 175-year-old pedigree. The assumption is that children like being in a group with their peers but this is not a complete picture. The research literature casts doubt on such a generalised assertion. Bowker and Spencer (2009) focused on young adolescents in grades 7 & 8 (ages 13 – 14 years). Their research had three objectives.

* To investigate the prevalence of mixed-grade friendships in early adolescence;
* To evaluate the contribution of mixed-grade friendships to adjustment, and specifically, loneliness, and victimization;
* To test whether same-grade, friendless, aggressive, and anxious-withdrawn adolescents benefit from mixed-grade friendship.

Most students (83%) reported having at least one friend from a different grade or age group. The ‘most important and novel contribution of the investigation’ showed that young people with mutual mixed-grade friends reported less loneliness than other adolescents. Even the perception of friends in different grades (regardless of reciprocity) provided emotional security and support, especially among girls (see also, George et al., 2011). The revelation that came as ‘a surprise’ to the research team involved older students being more likely to identify friendship with younger students. The study showed that having friends in other grades often provided a quantum of solace from the loneliness and victimisation within their same-grade cohort. Children designated ‘anxious-withdrawn’ (especially boys) were as much beneficiaries of mixed-grade friendship as lonely girls. The research findings ‘strongly suggest that mixed-grade friendships are developmentally significant during early adolescence.’ These findings come close to providing robust evidence that mixed-aged groups incur considerable social benefits for young people (perhaps everyone, as Bronfenbrenner suggests), and that a school environment that acts in a way that organizationally restricts these friendship patterns and relationships by age may be an unnecessary risk and far from any proven benefit. The Bowker paper concludes;

The developmental significance of mixed-grade friendships was clear from results indicating that the perception of and the involvement in mutual mixed-grade friendships have unique connections to psychology, well-being and victimization.’

Given that this is precisely what mature and successful VT schools have discovered through practice, it seems reasonable to hypothesise that multi-age groups are not only congruent with social and developmental psychology, but also prevent victimisation, and enhance well-being.

In a different paper, Thomas & Bowker, (2013), looked at *desired* friendships nominated by young adolescents (M age = 12.94 years). Thie research revealed, ‘that adolescents desire to be friends with peers who are popular, well-liked, and aggressive, but not necessarily prosocial.’ This raises interesting questions as to why young adolescents would nominate desired friends who are ‘highly visible, but not necessarily well-liked’ ones that ‘tend to engage in both “positive” (e.g., prosocial) and “negative” (e.g., aggression) behaviors, (Lease, Musgrove, & Axelrod, 2002; Parkhurst & Hopmeyer, 1998).’ It seems there is a need to compensate for status and esteem issues that may arise (in same-age situations) during adolescence. Research ([Pedersen, Vitaro, Barker, & Borge, 2007](http://journals.sagepub.com.ezproxy.mdx.ac.uk/doi/full/10.1177/0272431612469725) cited by Thomas and Bowker) suggests that in early adolescence friendship experiences become increasingly influential on psychosocial adjustment and well-being. According to Thomas and Bowker:

Peer relations theory and research indicate that early adolescence is a developmental period during which youth are especially concerned with getting along with classmates and expanding their social networks, and when they often report loneliness and dissatisfaction with their current peer relationships and social standing ( [La Fontana & Cillessen, 2010](http://journals.sagepub.com.ezproxy.mdx.ac.uk/doi/full/10.1177/0272431612469725)). Therefore, it seems likely that most young adolescents wish for new and different friends and have at least one desired friend.

The narrative from VT schools (Barnard, 2018a) indicates that multi-age grouping produces kinder, more sympathetic and more pro-social students than was the case as same-age schools. It is not unreasonable to hypothesise that multi-age groups not so much satisfy the need and access to desired friends but remove such a need. Same-age environments inevitably place limitations on the development of friendship networks, and this can lead to distortions in student views of friendship and a curtailing of their development and importance. Same-age grouping provides a limited and potentially harmful pool of friendship resources less likely to meet the needs of lonely girls, anxious boys and children generally. Research appears to support the idea that in a mixed-age setting, even for a short time each day, the perceived need to seek social status and affirmation via inappropriate and influential role models is mitigated by the close and loose-ties network (Granovetter, 1954) of a multi-age social milieu. Hopefully, researchers will investigate these matters further, but the suggestion should not be discounted that same-age organisation in schools is the cause of lost wellbeing, a design issue that can be fixed rather than a people issue that can’t!

As both papers suggest, there is a connection between grouping strategies, psychology and victimisation, which brings us to bullying, a significant cause of depression, self-harm and anxiety that can have life-long effects. Dieter Wolke (2017), a leading researcher on bullying notes that ‘1 in 3 children have been bullied at some time in their lives: 10-14% experience chronic bullying lasting for more than six months.’ According to Wolke, ‘being bullied by peers is the most frequent form of abuse encountered by children, much higher than abuse by parents or other adult perpetrators.’ It is estimated by a leading children’s charity that 16,000 children in the UK fail to attend school because of bullying. Wolker states:

Children who were victims of bullying are at higher risk for common somatic problems, internalizing problems and anxiety disorder or depression disorder and at highly increased risk to self-harm or think about suicide in adolescence. The mental health problems of victims and bully/victims remain in adulthood. Indeed, we showed that peer bullying in childhood has more adverse effects on diagnosed anxiety and mood disorders than being physically or sexually abused or neglected by parents.

It is argued (Bronfenbrenner, 1970), that the concentration of same-age peer groups is a major factor in aggressive, antisocial, and destructive acts in the US. Similarly, Salmivalli’s (2009: 2016) meta-review of peer-group bullying indicates that groups populated by same-age peers are not as safe as schools assume.

The group (i.e., classroom) in which bullying takes place differs from many social groups in two important respects: the membership is same-age and involuntary, which means that victims cannot easily escape their situatedness. Other group members cannot just leave, either. Although students cannot choose their classmates, social selection processes (Kandel, 1978) take place within classrooms, resulting in cliques and friendship dyads that consist of similar others. (p. 116)

Even in mixed-age organisation, group membership is involuntary and must be exercised with considerable care to achieve what Cesar Milan (*the dog whisperer*) calls ‘a balanced pack’. There is mounting evidence (Salmivalli) that bullying is very much a group process (O’Connell, 1999; Salmivalli et al., 1997; Sutton and Smith, 1999) and any intervention should be ‘targeted at the peer group.’ Given that most schools are based entirely on same-age structures, it can be reasonably argued that this kind of organisational practice provides the perfect seedbed for bullying to occur. If, for example, bullying involves issues of status, then bullying behaviour is most likely to happen at times when status is important (LaFontana and Cillessen, 2009). These might include times before and after school transfer or when same-age peer groups are formed in the receiving school.

Once these same-age groups are formed in schools, any strategies for external intervention are extremely limited. The question arises as to why schools should choose to ignore research, social psychology, and child development, and continue to use the same-age system as the basis for communication, relational development, and organization, given that it is unsafe and unhealthy to do so. Any answer can only appeal to a combination of tradition, misinterpretation, and assumption, the closed cognition of the school as a living autopoietic system. The research strongly infers that schools reliant on same-age grouping may be far more harmful to a child’s development than beneficial; they are unquestionably restrictive and seem to unnecessarily put at risk the social and psychological well-being of young people for the convenience of testing by age.

Learning

The wide-ranging overview of McClellan & Kinsey (1999), notes that the interest in social behaviour is of importance because of its role in cognitive development (Rogoff, 1990: Tizard, 1986; Vygotsky, 1978). While the dominant universal school model is the factory in form (Cuban, 1989), McClellan and Kinsey note in their overview of same-age and mixed-age classrooms that same-age structures seem to be out of kilter with neural research:

…there is increasing evidence that this model is inconsistent with a wealth of recent research on the developing human brain (Caine & Caine, 1991; Huttenlocher, 1990; Kandel & Hawkins, 1992) and the kinds of educational strategies that bring about optimal learning and development. Ample research (see Ames, 1992; Johnson, Johnson, Johnson-Holubee, & Roy, 1984; Johnson, 1991; McClellan, 1994) demonstrates that children think more, learn more, remember more, take greater pleasure in learning, spend more time on task, and are more productive than in individualistic or competitive structures.

Many schools see mixed-age tutor groups as ideal preparation for the development of student leadership and mentoring. This is consistent with evidence (Fuchs et al., 1996) that in these groups, students are more effective in facilitating cognitive growth in others and in helping others to solve problems (social and intellectual) just as Vygotsky suggests. It is difficult to find a dissenting view in the literature (albeit studies of younger age-groups in the main) regarding the considerable social and cognitive advantages of mixed-age grouping. While there is a debate surrounding the suitability and effectiveness of multi-age classrooms (in a high-stakes system), there was no contrarian view about the considerable social and learning benefits. It seems that the social, cognitive and psychological case for mixed-age groups is both positive and unambiguous.

**Concluding Remarks**

Song et al. (2009) explain the history of the multi-age system and how it ‘peaked’ in the 1990s (USA) and why it remains contentious and under-supported as a teaching and learning construct outside of primary schools. VT schools in the UK, Australia and New Zealand, neatly side-step this area gaining all the advantages of multi-age grouping without the challenge of multi-age classroom. This has not stopped some pioneering schools in the UK dabbling in multi-age teaching groups with success. Miller (1995) asked if multi-age grouping practices are the missing link in the educational reform debate He suggested a re-examination of long-held assumptions, i.e. that student learning is chronological, that students require the same amount of time to master subjects, and whether students work at the same rate. Miller believes that grouping by age may be ‘creating a significant barrier to meeting the goals of equity and instructional excellence in schools,’ a point echoed in *A Nation at Risk* (1983).

Goodlad and Anderson (1987) wrote of the US system:

Many teachers probably do not realize fully how unfaithful to gradedness they find it necessary to be in their daily work with children. That each child's unique needs must be accepted in good spirit is rarely resisted by such teachers.

In 1992 the Swedish education system was marketized with a voucher system and the introduction of for-profit schools, opening the door to a new high-risk ideology and the subsequent deterioration in mental health described by Henrekson and Weströmm (2018). There is a telling (and humorous) passage in the Henrekson and Wennström paper (2018: 21) I’d like to share.

According to Pollitt (2008, p.16), organizational culture is a “constraint from the past,” the endurance of which public sector reformers frequently underestimate. As Wilson (2000, p. 368) described, “Every social grouping, whether a neighbourhood, a nation, or an organization, acquires a culture; changing that culture is like moving a cemetery: it is always difficult, and some believe it is sacrilegious.”

Same-age schools can choose to continue on their current same-age course. They can create a small self-defeating army of anti-bullying ambassadors (and be unable to see why this is counterproductive) or make sure that every child has ambassadorial responsibilities by designing citizenship into the way the school operates. They can hire more support staff, counsellors and health care professionals (making cuts elsewhere) or use the power of the existing pack to create the safe tutorial places from which students can explore and grow. They can intentionally limit friendships by age, inadvertently introducing bullying on day one of secondary school, and then choosing to spend five years trying to fix what they broke. They can bring in expanded pro-social programmes by the bucket load and hire ‘that group,’ the one that teaches kids how to get along for half an hour; or they can have mixed-age grouping every day and ensure that every child is a leader and mentor and all staff employed by the school are form tutors, including all support staff, admin workers and the school’s management team. Same-age schools can continue with their pretence of parent partnership, or they can create a mixed-age system dependent on social collaboration and input from all actors.

Around 200 school children commit suicide each year in the UK and figures are increasing for universities, statistics reflected across the world. It seems to me that schools where every child is attached, known, belongs and given leadership responsibilities they would not otherwise have, is the least schools can do. Only a VT system with its design DNA, can do this. The Nobel prize-winner, J. M. Coetzee (1980) used the magistrate, a character from his book *Waiting for the Barbarians,* to say this:

The new men of the Empire are the ones who believe in fresh starts, new chapters, clean pages; I struggle on with the old story, hoping that, before it is finished, it will reveal to me why it was that I thought it worth the trouble.

Schools are worth the trouble but only schools can make the change. They will make the change when they recognise the benefits of abandoning the past and are encouraged to unlearn one system and adopt another.

**Declaration of Interest**

As the author, systems practitioner and participant observer and having long experience with both systems I declare a bias on behalf of teachers and students. In the last section above my unevenness of hand for effect, tilts towards systemic change and the mixed-age approach. The author is not funded for his research but does occasionally receive royalties for publications that fall considerably short of the hours spent on them.

 **References:**

Anthony, S., Viguerie, P. & Waldeck, A. Corporate longevity: Turbulence ahead for large organizations. Accessed 24/08/18 online at Innosight. https://www.innosight.com/wp-content/uploads/2016/08/Corporate-Longevity-2016-Final.pdf.

Adams, J. (1953). Achievement and social adjustment of pupils in combination classes enrolling pupils of more than one grade level. *Journal of Educational Research, 4*, pp. 151-155.

Ainsworth, M. D. S. (1982). Attachment: Retrospect and prospect. In C. M. Parkes & J. Stevenson-Hinde (Eds.), The place of attachment in human behavior (pp. 3-30). New York: Basic Books.

Ames, Carole. 1992. Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84*(3), 261-271

Argyris, C. (1976). Single-loop and double-loop models in research on decision making. *Administrative science quarterly*, 363-375.

Argyris, C. & Schön, D. A. 1978. *Organizational Learning: a Theory of Action Perspective*. Reading, Mass. Addison-Wesley.

Ashby, W. R., & Goldstein, J. (2011). Variety, constraint, and the law of requisite variety. *Emergence: Complexity and Organization*, *13*(1/2), 190.

Atkinson, J. (2018). The myth of the learning organisation. Available on the Heart of the Art website. https://www.heartoftheart.org. Accessed 20/08/18.

Ball, S. J. (2003). The teacher's soul and the terrors of performativity. *Journal of education policy*, 18(2), 215-228.

Barnard, P. A. 2010. *Vertical Tutoring: Notes on school management, learning relationships and school improvement.* Grosvenor House Publishing.

Barnard, P. A. 2013. *The Systems Thinking School: Redesigning Schools from the Inside-Out.* New York and London: Rowman and Littlefield.

Barnard, P. A. 2015. *From School Delusion to Design: Mixed-Age Groups and Values-Led Transformation*. New York & London: Rowman and Littlefield.

Barnard, P. A. (2018a). A Tale of Two Systems and the Same-Age Assumption: A situational analysis and interpretation outlining systemic differences generated by age-related organisation in secondary schools. Currently available on the research page at [www.verticaltutoring.org](http://www.verticaltutoring.org). Awaiting Publication.

Barnard, P. A. (2018). *Socially collaborative schools: the heretic’s guide to mixed-age tutor groups, systems design, and the goal of goodness*. Rowman and Littlefield, New York & London.

Bates, A. (2013). Transcending systems thinking in education reform: Implications for policy-makers and school leaders. *Journal of Education Policy*, *28*(1), 38-54.

Bowker, J. C., & Spencer, S. V. (2010). Friendship and adjustment: A focus on mixed-grade friendships. *Journal of youth and adolescence*, *39*(11), 1318-1329.

Bowlby, J. (1969). *Attachment and Loss*. Vol. 1: Attachment. New York: Basic Books.

Bowlby, J. (1951). Maternal care and mental health. World Health Organization Monograph, Serial No. 2

Bretherton, I. (1992). The origins of attachment theory: John Bowlby and Mary Ainsworth. *Developmental psychology*, *28*(5), 759.

Bronfenbrenner, U. 1977. Towards an experimental ecology of human development. *American Psychologist*, 32(7):513-531.

Bronfenbrenner, Urie. 1970. *Two worlds of childhood: U.S. and U.S.S.R.* New York: Pocket Books.

Bronfenbrenner, U. (1988). Interacting systems in human development. Research paradigms:

 Present and future. *Persons in context: Developmental processes*, *2*, 25-citation\_lastpage.

Bronfenbrenner, U. (1990) Discovering What Families Do, in *Rebuilding the Nest: A New Commitment to the American Family*. Family Service America, 1990.

Caine, R. N., & Caine, G. (1991). Making connections: Teaching and the human brain. Alexandria, VA: Association for Supervision and Curriculum Development. ED 335-141.

Cilliers, P. (2001). Boundaries, hierarchies and networks in complex systems. *International Journal of Innovation Management*, *5*(02), 135-147.

Coetzee, J. M. (2015). *Waiting for the Barbarians*. Random House.

Cuban, Larry. 1989. The at-risk label and the problem of urban school reform. *Phi Delta Kappan, 70*(10), 780-784.

Eriksson, M., Ghazinour, M., & Hammarström, A. (2018). Different uses of Bronfenbrenner’s ecological theory in public mental health research: what is their value for guiding public mental health policy and practice?. *Social Theory & Health*, 1-20.

Flood, R. & Romm, N. (2018). A systemic approach to processes of power in learning organizations: Part 1 – literature, theory, and methodology of triple loop learning. *The Learning Organization*, Vol. 25, No. 4 pp. 260-272. Emerald Publishing Ltd.

Fook, J. (2010). Beyond reflective practice: reworking the “critical” in critical reflection. *Beyond reflective practice: New approaches to professional lifelong learning*, 37-51.

Fuchs, Lynn S.; Fuchs, D.; Karns, K.; Hamlett, C. L.; Dupka, S.; & Katzaroff, M. 1996. The relation between student ability and the quality and effectiveness of explanations. *American Education Research Journal, 33*(3), 631-664.

George, R., & Clay, J. (2013). Challenging pedagogy: Emotional disruptions, young girls, parents and schools. *Sociological Research Online*, *18*(2), 1-9.

Glouberman, S., & Zimmerman, B. (2002). Complicated and complex systems: what would successful reform of Medicare look like? *Romanow Papers*, *2*, 21-53.

Goodlad, J. & Anderson, H. (1987). *The nongraded elementary school*. Teachers College Press.

Granovetter, M. S. 1973. The strength of weak ties. *The American Journal of Sociology*, 78(6): 1360-1380.

Grisold, T., Kaiser, A. & Hafner, J. (2017). Unlearning before creating new knowledge: A cognitive process. Proceedings of the 50th Hawaii International Conference on system sciences/2017. Available online at [http://hdl.handle.net/10125/41723. Accessed 20/08/18](http://hdl.handle.net/10125/41723.%20Accessed%2020/08/18).

Hargreaves, A., & O'Connor, M. T. (2018). *Collaborative Professionalism: When Teaching Together Means Learning for All*. Corwin Press.

Hazen, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of personality and social psychology*, *52*(3), 511-524.

Henrekson, M. & Wennström, (2018). “Post-truth” schooling and marketized education: Explaining the decline in Sweden’s School Quality. Online: https://www.etla.fi/wp-content/uploads/Henrekson-and-Wennstr%C3%B6m-Aug-12-2018.pdf.

Huttenlocher, D. P., & Ullman, S. (1990). Recognizing solid objects by alignment with an image. *International Journal of Computer Vision*, *5*(2), 195-212.

Johnson, David W., & Johnson, Roger T. (1991). *Learning together and alone: Cooperative, competitive, and individualistic learning.* Englewood Cliffs, NJ: Prentice Hall.

Johnson, David W.; Johnson, Roger T.; Johnson-Holubee, Edith; & Roy, Patricia. (1984). *Circles of learning: Cooperation in the classroom.* Alexandria, VA: Association for Supervision and Curriculum Development.

Kandel, Eric R., & Hawkins, Robert D. 1992. The biological basis of learning and individuality. *Scientific American, 267*(3), 79-86.

Kessler, R. C., Angermeyer, M., Anthony, J. C., De Graaf, R. O. N., Demyttenaere, K., Gasquet, I., & Kawakami, N. (2007). Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World Psychiatry*, *6*(3), 168.

King, K. S., & Frick, T. (1999, April). Transforming education: Case studies in systems thinking.  *Annual meeting of the American Educational Research Association, April* (pp. 21-23).

LaFontana, K. & Cillessen, A. (2010). Developmental changes in the priority of perceived status in childhood and adolescence. *Social Development*, Vol. 19, Issue 1. Wiley Online Library.

Laloux, F. (2014). *Reinventing organizations: A guide to creating organizations inspired by the next stage of human consciousness*. Nelson Parker. Belgium.

Lease, A. M., Musgrove, K. T., & Axelrod, J. L. (2002). Dimensions of social status in preadolescent peer groups: Likability, perceived popularity, and social dominance. *Social Development*, *11*(4), 508-533.

Leonard, J. (2011). Using Bronfenbrenner’s ecological theory to understand community partnerships: A historical case study of one urban high school. *Urban Education*, *46*(5), 987-1010.

Luhmann, N. (1986). The autopoiesis of social systems. In F. Geyer & J Van d. Zeuwen, (eds.) *Sociocybernetic Paradoxes: Observation, control and evolution self-steering systems*. Pp. 172-192. Sage, London.

Luhman, N. (2000). *Organisation und Entscheidung*. Opladen: Westdeutscher Verlag.

Luhmann, N. (2003). Organization. In T. Baaken, & t. Hernes (eds.) *Autopoietic organization theory. Drawing on Niklas Luhmann’s social systems perspective*. Copenhagen et al. Copenhagen Business School Press, pp. 31-52.

Maturana, H. & Varela, F. (2008). *Autopoiesis and cognition: The realization of the living*. Dordrecht: Reidel.

McClellan, D. & Kinsey, S. (1999). Children’s Social Behavior in Relation to Participation in Mixed-Age or Same-Age Classrooms. ECRP. Vol. 17; Number 1.

McClellan, D. (1994). Multiage grouping: Implications for education. In Panelle Chase & Jane Doan (Eds.), *Full circle: A new look at multiage education* (pp. 147-166). Portsmouth, NH: Heinemann.

Miller, W. 1995. Are multi-age grouping practices a missing link in the educational reform debate? *NASSP Bulletin, 79*(568), 27-32.

Mingers, J. (2002). Can social systems be autopoietic? Assessing Luhmann's social theory. *The Sociological Review*, *50*(2), 278-299.

O’Connell, P., Pepler, D. & Craig, W. (1999). Peer involvement in bullying: Insights and challenges for intervention. *Journal of Adolescence,* 22: 437-452: 112-120.

Parkhurst, J. T., & Hopmeyer, A. (1998). Sociometric popularity and peer-perceived popularity: Two distinct dimensions of peer status. *The Journal of Early Adolescence*, *18*(2), 125-144.

Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: a global public-health challenge. *The Lancet*, *369*(9569), 1302-1313.

Pedersen, S., Vitaro, F., Barker, E. D., & Borge, A. I. (2007). The timing of Middle‐Childhood peer rejection and friendship: Linking early behavior to Early‐Adolescent adjustment. *Child development*, *78*(4), 1037-1051.

Pirsig, R. M. (1999). *Zen and the art of motorcycle maintenance: An inquiry into values*. Random House.

Pollitt, C., Birchall, J., & Putman, K. (2016). *Decentralising public service management*. Macmillan International Higher Education.

Rogoff, B. M. 1990. *Apprenticeship in thinking: Cognitive development in social context.* New York: Oxford University Press.

Rutter, M., Ouston, J., Maughan, B., & Mortimore, P. (1979). 15,000 Hours. *Secondary Schools and their effects on Children. London*.

Salmivalli, C. (2009). Bullying and the peer group: A review. *Aggression and Violent Behaviour*, 15: Pp. 112-120.

 Salmivalli, C., Huttunen, A., & Lagerspetz, K. (1997). Peer networks and bullying in schools. *Scandinavian Journal of Psychology*, 38: 305–312.

Seddon, J. (2008). *Systems thinking in the public sector: the failure of the reform regime and a manifesto for a better way*. Triarchy Press, Axminster.

Seidl, D. (2004). Luhmann’s theory of autopoietic social systems. *Ludwig-Maximilians-Universität München-Munich School of Management*, 36-37.

Senge, P (2006). The fifth discipline: The art and practice of the learning organisation. Random House.

Song, R., Spradlin. T.E., and Plucker, A. 2009. The Advantages and Disadvantages of Multi-Age Classrooms in the Era of NCLB Accountability. *Education Policy Brief*. Center for Evaluation and Education Policy. Vol 7, Number 1; Winter, 2009.

Stacey, R. D. (2007). *Strategic management and organisational dynamics: The challenge of complexity to ways of thinking about organisations*. Pearson education.

Sutton, J., & Smith, P. K. 1999. Bullying as a group process: An adaptation of the participant role approach. *Aggressive Behaviour*, 25: 97–111.

Thomas, K. K., & Bowker, J. C. (2013). An investigation of desired friendships during early adolescence. *The Journal of Early Adolescence*, *33*(6), 867-890.

Tizard, B. 1986. Social relationships between adults and young children, and their impact on intellectual functioning. In Robert A. Hinde, Anne-Nelly Perret-Clermont, & Joan Stevenson-Hinde (Eds.), *Social relationships and cognitive development* (pp. 116-130). Oxford: Clarendon Press.

Tyack, D., & Cuban, L. (1995). *Tinkering toward utopia: A century of school reform*. Harvard University Press.

Trivers, R. (2011). *Deceit and self-deception: Fooling yourself the better to fool others*. Penguin, UK.

Whiteford, H., Harris, M., & Diminic, S. (2013). Mental health service system improvement: Translating evidence into policy. *Australian & New Zealand Journal of Psychiatry*, *47*(8), 703-706.

Wilson, E. O. (2000). *Sociobiology*. Harvard University Press.

Wolke, D. (2017). Peers and siblings matter for mental health: Long term consequences of bullying. 2017 ESCAP Congress, Geneva. Quotes are taken from the online abstract.

Vygotsky, L. (1978). Interaction between learning and development. *Readings on the development of children*, *23*(3), 34-41.