



Adaptive responses to learning in later life: a negotiated process of social, emotional and intellectual growth.

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Summary

Educational activities for older adults post-work are currently undervalued, yet there is general concern about how 'mature societies'¹ will cope. Research shows that learning can make a difference but what kind of learning do older adults want? This case study explores how ways of learning adapt or change through life, and the influence of internal and external forces. It examines learning styles and older adults' conceptualisation of different ways of learning, drawing on the experience of a sample attending short courses at a city university. Recent insights from neuroscience and adult development are used for analysis to bridge the gap between important neuroscience research and teaching and learning.

Introduction

Every case study should present a problem to solve and provide enough information for readers to see implications for the wider world. I shall arrange the facts as I found them, so readers can "experience" the same things as I did as an educational practitioner within the Centre for Lifelong Learning (CLL), University of Strathclyde, when I investigated ways of learning as part of my doctoral studies. Glasgow has been an important place for learning in higher education for hundreds of years, but twenty five years ago a completely new kind of pilot programme was launched by the University. It aimed to attract older adults who had left the workforce or were working part-time. Today, despite the University's ambition to become one of the world's leading technological universities, the Learning in Later Life Programme (3Ls), as it is known, has become firmly embedded as a core activity: it is one of the largest programmes of its kind anywhere, with its daytime classes open to people regardless of previous educational achievement.

When the 3Ls began no classes were accredited, but now some classes enable students to earn university points if they submit work for assessment (no exams). These classes are also eligible for funding assistance, for anyone over 16 living in Scotland on an income of £22,000 a year or less (or dependent on benefits). Submitting work is optional, as far as funding is concerned, which makes these classes an attractive proposition. However, many people pay the going rate, with a normal ten-week class costing around £85. Some people accumulate credit points by default (minimum 10 points per class) rather than start out with this intention. Sometimes students in applied arts, writing or language studies, for example, are persuaded to submit as they are producing work in any case as they progress. On gaining 120 credits students can become the recipients of a Certificate of Higher Education in Lifelong Learning. This is a particular Scottish dimension as funding has virtually dried up for similar short courses in England and Wales.

¹ Harper. S. (2006). Mature Societies: Planning for Our Future Selves. *Daedalus*, 135:1, 20-31.



Context of learning later

To understand the problem I identified, first one has to consider that the 3Ls programme does not exist in isolation, but in the context of extending life expectancy as a global phenomenon. The projected statistics by governments of ‘mature societies’ are now common knowledge with, for example, half the population of Western Europe expected to be aged over 50 by 2030. The period of life after mainstream work is often called the ‘*Third Age*’ and it requires new personal and social redefinitions, as life post-work can now constitute a third of one’s adult existence. Therefore, do older adults just want more of the same when they sign up for a class? Do they prefer to sit and listen intently to an ‘expert’ teacher transmitting knowledge as they probably did in their youth or in traditional liberal adult education classes? Or are there more innovative and more appropriate ways to engage diverse adult minds which are a better fit and will contribute to ‘ageing well’ and strengthening one’s intellect? Longevity without maintaining a certain quality of life is of concern to both individuals and society at large.

Learning in later life is essentially a social, civic and humanitarian issue which initially was embraced by the concept of lifelong learning, as defined by the European Commission. However, during the 21st century, the emphasis in later learning has shifted relentlessly towards the economic imperative of staying at work or retraining, with public resources for adults post-work diminishing exponentially. Despite older adults by force of numbers having more political influence, one might wonder why there has not been more of a public outcry, similar to the protests over proposed health service cuts. I am persuaded that learning later will continue to be perceived by the general population as peripheral and justifiably dispensable when compared to mainstream education, while it continues to be viewed firstly, as ‘edutainment’ – essentially a pleasant whiling away of time by middle-class folk; secondly, as having little or no impact on health, wellbeing or intellect; and thirdly, as having no repercussions for society if it disappears altogether. Social gerontologist Brian Findsen alluded to these issues when he reported to *Scotland’s Futures Forum*²:

“That many older people do not currently assert their claims for formal education provision reflects their misguided belief that education is only for younger folk.”

I also believe that providers in general have not made sufficient effort to find out how and why older adults might want to learn, with traditional subjects and top-down modes of delivery often the only fare on offer. This contributes to a lack of interest by the wider population, leading to general indifference and the misguided beliefs mentioned in the quote above. Therefore, I set out to explore mature learners’ actual preferred ways of learning by recruiting accessible learners attending the 3Ls programme.

Research methods

As a tutor I had contact with many of the 55 participants prior to the research and had established good rapport and trust through an open participative teaching style.

² Scotland's Futures Forum (2007, p.18). *Growing older and wiser together: A futures view on positive ageing*. Edinburgh: Scottish Government. P.18. Retrieved from <http://www.scotlandfutureforum.org/assets/library/files/application/1215680454.pdf>



However, I am not alone in running classes along these lines, as all CLL tutors are encouraged to put learners at the heart of the process. I judged the participants to be a normal cross-section of typical 3Ls students who tend to be ‘learning-rich’³, with life experience of education. Therefore, the participants were not representative of older adults in general, as many post-work adults are marginalised for a variety of reasons with marked inequalities of access.

The design was a mixed methods study, initially using questionnaires (quantitative) and then four focus groups (qualitative), to explore the subjective explanatory frameworks people use to make sense of their learning and changes in learning styles over time. Data from focus groups are a product of group dynamics and the particular socio-cultural context, and validity attaches to the meaning participants give to the data and the inferences drawn by the researcher. Focus groups lie at the heart of a social constructionist perspective which aims to account for ways in which people are actively engaged in the construction of their own reality. I decided this method offered the greatest likelihood of new insights.

Therefore, I make no pretence of wearing a cloak of neutrality and acknowledge that this research was a co-operative enterprise highlighting the role of interactions, language and situatedness, sharing views and connecting perspectives, and guided by my beliefs. Denzin and Lincoln⁴ wrote that the practices which qualitative researchers recruit “*makes the world visible in different ways*” and Johnson and Onwuegbuzie⁵, when discussing mixed methods, stated that in qualitative domains the researcher is “*the primary ‘instrument’ of data collection.*” Thus, my research falls squarely within an interpretive framework. However, it should be able to generate insights relevant to wider contexts.

Neuroscience perspective

As sole researcher I carry ultimate responsibility for the way the research was gathered, analysed and interpreted. Central to my interpretation is my academic background in psychology and adult learning, and my deepening knowledge of recent developments in the neurosciences, which has provided me with a better scientific understanding of the workings of the brain, and the science behind the maxim of “Use it or lose it”⁶. Before these discoveries, renowned educational theorists - Dewey, Piaget and Vygotsky - presented a contemporary view of learning which hypothesised that human beings construct new knowledge and understanding based on what they already know and believe.

It follows that learners’ starting points cannot be summarily brushed aside and the slate wiped clean. So teachers need to explore students’ incomplete understandings, false beliefs and mistaken concepts and this is especially true for mature adults with deeply embedded life experiences, some of which can be quite negative. Discoveries at the

³ Sargant, N. (2000). *The Learning Divide Revisited*. Leicester: NIACE.

⁴ Denzin, N. & Lincoln, Y. S. (2008, p.5). *Strategies of Qualitative Inquiry*. London: Sage.

⁵ Johnson, R. B. & Onwuegbuzie, A.J. (2004, p.18). Mixed Methods Research: A Research Paradigm whose time has come. *Educational Researcher*, 33, 7, 14–26.

⁶ OECD Organisation for Economic Cooperation and Development (2007). *Understanding the brain: the birth of a learning science*. Paris: OECD Publishing.

interface of neuroscience and adult learning⁷ confirm many educationalists' intuitive insights, but also point to the continuing development of the brain right through life and the importance of motivation. Activities need to involve personal effort and desire in connecting new knowledge to old before the re-sculpting and regenerating of neural networks occurs.

Neuroscience has also revealed that learning is greatly enhanced in a collaborative context: our brains have evolved to work best when our emotions are positively charged through shared experience. Indeed a lifestyle characterised by engagement in intellectual and social activities is associated with continuing cognitive health, and the phenomena⁸ of neuroplasticity (changing brain cell connections) and neurogenesis (new brain cells). This new knowledge is challenging many long-held beliefs about inevitable mental decline. As Gene Cohen⁹ former director of the Centre for Ageing, Health and Humanities at George Washington University stated:

"The brain's ability to grow new neurons is one of the most exciting discoveries of neuroscience and a dramatic reason for optimism about the brain's potential in the second half of life."

The business of translating current neuroscience insights into classroom practices had a chequered start in the final decade of the 20th century, being described as 'a bridge too far'¹⁰. However, now there is much known of relevance to mature learners, from the need to maintain mental capital by adopting "*cognitively-protective lifestyles.....to reduce cardiovascular risk factors, and increased activity and engagement*", as Deary and Gow¹¹ discovered from their major review of international research in biomedical, physical and social science fields.

Results and Analysis

The questionnaires and focus groups generated a vast quantity of data and only a fraction is displayed below to provide a flavour of the results. (Download thesis for full report¹²) The Honey & Mumford¹³ Learning Styles Questionnaire (LSQ) demonstrated its usefulness as a self development tool in helping the participants focus on how they learned, as indicated by the following sample statements:

"Interesting to consider different styles and gain insights into my own preferences." Magda

"I found it surprising I had such an even spread." Nan

"I discovered I was a strong activist." Claire

"It made me think about my attitudes." Joseph

"It covered a broad range of behaviour." Eddy

"It takes out the subjectivity and was carried out in an interesting way." Ernest

⁷ Johnson, S. & Taylor, K. (Eds.), 2006. *The Neuroscience of Adult Learning: Adult & Continuing Education*.

⁸ Doidge, N. (2007). *The Brain That Changes Itself: Stories of Personal Triumph from the frontiers of brain science*. New York: Penguin Books.

⁹ Cohen, G.D. (2005, p.13). *The Mature Mind: The Positive Power of the Ageing Brain*. New York: Basic Book.

¹⁰ Bruar, J.T. (1997). Education and the brain: A bridge too far. *Educational Researcher*, 26, 8, 4-12.

¹¹ Deary, I. & Gow, A. (2008). *Determinants of Normal Cognitive Ageing: Implications for Mental Capital*. London: Government Office for Science: Foresight Project.

¹² Bissland, V. L. (2011) *Ways of Learning in Later Life: Older Adults' Voices*
<http://lifelongscotland.tripod.com/brainpower/contact.html>

¹³ Honey, P., & Mumford A., (2000). *The Learning Styles Questionnaire 80-item*. Maidenhead: Peter Honey.

"I thought I really was a pragmatist, but I realise I have these other things as well." Linda
"The LSQ highlighted changes influenced by age and showed up contradictions." Jill

Contradictions are never far away when learning styles enter the educational arena, but the LSQ made some sort of intuitive sense, with 85% agreeing with their results. It helped participants compare present ways of learning to the 'old days', although learning styles cannot be divorced from the learning context. However, it was interesting that later in the focus groups, discussants generally dropped the 'activist', 'pragmatist', 'reflector' and 'theorist' labels assigned by the LSQ and used their own constructs. Not surprisingly, these concepts were not fully integrated into their meaning systems. Just as most children nowadays are taught to become more conscious of how they learn, more attention could be given to raising awareness in mature students of individual differences, the biology of learning¹⁴, and how to capitalise on styles and strategies to increase success. The range of participants' learning styles encompassed a mix of 14 single or combined styles which, if this diversity is typical, indicate that a wide range of imaginative classroom practices need to be used by tutors to keep everyone engaged.

The main issue explored in the focus groups was changes in ways of learning over time, and around 80% reported significant shifts. Rote learning in school (and lectures later) had been the norm. People overwhelmingly did not want or need this any more, as the comments below illustrate:

"You sat there and the teacher put out the material without any interaction on your part. Then, later on in life you realise that was not the best way for you." Jonathan

"I enjoy hands-on now. I learn so much more in that way, than just sitting listening to somebody talking." Kim

"Since I have retired, moving on to doing, rather than learning by rote, certainly has become much more attractive to me." Martin

"If you are getting the visuals and the practical aspects, I find it is more conducive to my way of working." Aiden

Work had been a powerful catalyst for change as new methods in team-building and professional development introduced people to more interactive, experiential and cooperative learning. Julia talked about the 'culture shock' she experienced:

"I went back to do a post-grad qualification and that was a culture shock because it was a completely different way of learning. You were being taught to work with each other."

Andy also explained enthusiastically the transformative nature of collaborative learning with colleagues, compared to his formal education:

"I'd like to think it worked both ways – they learned from my experience. You are learning from people you respect and whose values you respect."

What came across in general was the expression of deeply-held feelings. It is now understood that emotions and learning are inseparably entwined¹⁵ because of the way the

¹⁴ Zull, J. (2002). *The art of changing the brain: Enriching teaching by exploring the biology of learning*. Sterling, Virginia: Stylus Publication.

¹⁵ Immordino-Yang, M.H. & Damasio, A. (2007). *We Feel, Therefore We Learn: The Relevance of Affective*

brain is hardwired and through the chemicals that flood our neural networks when we feel positive and inspired. These neuro-chemicals help new connections to form. In contrast, the organising and planning part of the brain¹⁶ (the frontal cortex) shuts down when stress chemicals are in circulation, triggering a survival ‘fight or flight’ state that interferes profoundly with concentration and learning.

Learning is embedded in social processes where we experience personal change and make sense of real-life experiences. This suggests an optimum classroom environment involves medium challenge and low threat, so taking risks and learning from mistakes would be the norm. This runs counter to our culture in Scotland where a lack of confidence to speak out, combined with hiding one’s true feelings, run deep¹⁷. The influential developmental psychologist Paul Baltes¹⁸ drew attention to the power of culture, which he stated in uncompromising terms, was as important *“for brain development as the presence of oxygen”*. But a culture which inhibits learning needs to change. It pays to speak out even if it turns out you are wrong: there is more to gain than to lose. This point was made elegantly by participant Harriet when discussing the value of discussion in boosting confidence:

“When you have this continuing dialogue it is one way of overcoming the fear people have of admitting they don’t understand something. Because, by developing the whole issue, you are picking up just a wee bit more information and in among that will be the vital clue, to not only your understanding, but having a depth of understanding. It gives you the confidence to say – ‘Yes, I know about this’.”

Harriet goes on to make the point that, without opportunities in a classroom to discuss difficult points one-to-one, the learner is being “short-changed”. This metaphor implies that, where the teacher does most of the talking and explaining, individual students are being denied opportunities to find their own voices and develop their own understanding. Building in this simple activation (and variations) is one of the most effective ways of making learning happen¹⁹. It is a form of experiential learning involving action – even if only a speech act - which engages the brain, not only intellectually but also socially, through shared experience. As Cozolino and Sprokay²⁰ stated:

“Brains grow best in this context of interactive discovery and through co-creation of stories that shape and support memories of what is being learned.”

This type of ‘healthy’ learning environment creates internal shifts in attitudes both towards self and others, creating a virtual cycle of growth. This was borne out by a variety of participants’ statements:

and Social Neuroscience to Education. *Mind, Brain and Education*, 1, 1, 3-10.

¹⁶ Goldberg, E. (2009). *The New Executive Brain: Frontal Lobes in a Complex World*. New York: Oxford University Press.

¹⁷ Craig, C. (2011). *The Scots’ Crisis of Confidence*. Glendaruel: Argyll Publishing.

¹⁸ Baltes, P. B. Rösler, F. & Reuter-Lorenz, P.A. (2006, p.21). Prologue: biocultural coconstructivism as a theoretical metascript. In P. B. Baltes, P.A Reuter-Lorenz & F. Rösler (Eds.) *Lifespan development and the brain: the perspective of biocultural co-constructivism* (pp. 3-34). Cambridge: Cambridge University Press.

¹⁹ Race, P. (2010). *Making Learning Happen* (2nd Edition). London: Sage.

²⁰ Cozolino, L. & Sprokay, S. (2006, p.11). Neuroscience and adult learning, *New Directions for Adult and Continuing Education*, 110, 11-19.

"You are enthusiastic and you remember - and you want to take it further." Claire
"I learn better now than ever because I now have the confidence to ask questions." Chrissie
"I am much more interested in how I see it – how it fits with what I think about life." Diana
"I think I have become more aware of having more interests than I thought and perhaps I ignored these." Mhairi
"And part of the learning process isnot only saying what you think yourself, but learning, sometimes, with great surprise, what other people's perceptions are." Harriet.

Although the findings of this study are limited by its small scale and the fact that participants were drawn from a few classes within the 3Ls programme, they suggest, if only in a tentative way, that adults benefit from being active in the learning process, and from collaborating with one another and the tutor, in finding meaning. This is a different quality of experience from learning for "acquisition"²¹ and could be more aptly described as learning for enrichment. The participants displayed considerable adaptability to changing circumstances and to inner drives. However, learning had tended to feature throughout their lives. For the 'learning-deprived' who are less favourably placed to grasp opportunities with confidence, all the social, cognitive and emotional advantages which accrue from being immersed in a nurturing learning environment are denied.

From Research to Practice

Cognitive and biological ageing is a fast-growing area of funded research²² as the world faces up to ageing populations. If researchers can point to practices throughout life which may prevent or reduce cognitive decline and boost mental capital to minimise years of dependency, then now is the time. In this paper I have drawn on neuroscience research that reinforces not only the 'use or lose it' philosophy, but also suggests that 'using it' in collaboration with others pays dividends.

The indications are that throughout our lives we would benefit from learning in interactive, participative and sociable ways, but never more so than in later life, if the responses of the participants in my research are reliable indicators. New experiential ways of learning are already happening in schools, colleges and universities and in innovative businesses, but educators slip back very easily into the old ways of doing things when novelty wears off and other pressures mount. The challenge is how to convey the message that 'talking ain't teaching' and that the brain is not wired to learn well in a passive way. It needs a paradigm shift so there is no going back, so that education is transformed, not only for the majority of older people, but also for the huge swathe of citizens whose potential to become productive members of society never materialises and who cost the state millions in the long run.

²¹ Coffield, F. (2008, p.8). *Just Suppose Teaching and Learning Became the First Priority*. London: Learning and Skills Network.

²² Deary, I. & Gow, A. (2008). *Determinants of Normal Cognitive Ageing: Implications for Mental Capital*. London: Government Office for Science: Foresight Project.



How will a paradigm shift come about? When will the tipping point be reached when enough people understand the implications of brain research for adult learning to be transformed inexorably. More and more, teachers want and need to know about how learners think. Neuroscientists, on the other hand, would like to know how teachers' questions can drive neuroscience research. As I see it, currently there are three potential audiences to target. There are increasing number of older adults who want to know with increasing urgency the best ways to retain their sharpness; there is the general public who need to become better informed about neuroscience and the difference learning makes as a lifelong process, so they are willing to support public programmes; and there are the educators themselves who need to use the principles and substance of research to reform their own practice and explain to their students the reasons for the changes, closing the circle. In this way, the whole perception of learning and the brain will undergo a sea change and move towards overcoming failure and reducing inequities. As leading developmental psychologist Uta Frith²³ said in her report to the working group on *Neuroscience and Lifelong Learning*:

“Growing understanding of the neurological basis of learning could help most individuals to become fulfilled and productive members of society who can respond with resilience to changing circumstances in their lives.”

²³ Frith, U. (2011, p.9). *Brain Waves Module 2: Neuroscience: implications for education and lifelong learning*. RS Policy document 02/11. London: The Royal Society.