Universities, Ignore Silver Students at your Peril

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INTRODUCTION

As higher education institutions compete to gain competitive advantage in the areas of student enrolment, engagement, graduate numbers, and programme delivery, are these institutes at risk of missing out on one of the largest growing markets? The cohort of persons aged 65 years and over, is expected to double in size by 2040. But the cohort of those who are currently aged 55+ years is not extensively targeted by higher education institutions globally. Platitudes about 'mature students' are often used when discussing this demographic, but educational departments identify any person over 23 years as a 'mature' student. Hence, is this term truly targeting the senior population and lifelong learning curiosity? Persons who are 65 years have a lifetime of experience at the time of their retirement, and on average have an additional 20 years in which to share that experience with rates of volunteering highest among the 65 to 74 year old age group [1]. By identifying the barriers of the 50+ year's cohort to transition to education in different forms and different levels, we can prepare the ground work for easing their inclusion in higher education institutions at, or before retirement.

1 OVERVIEW

As you stroll around the grounds, corridors and rooms of a modern University, and you observe a fifty something year old person, with a laptop, or leafing through a portfolio of hand written notes, do not automatically assume they are Faculty. You might be pleasantly surprised that they are in fact students. Intellectual pursuits are worth nurturing at all ages and Universities should be in a position to foster curiosity whenever it occurs and apply it for the better good of society at large. For some people, both curiosity and circumstance may have aligned in their youth, supporting a seamless, continuous transition progressing from secondary to third level education. However, for others this alignment may transpire at a later time in their lives [2]. Age friendly universities (AFU's) are not "universities for old people", akin to a sophisticated geriatric day-care, but surroundings where the exploration of ones' curiosity is best supported through an intergenerational educating experience [3, 4, 5].

2 BACKGROUND AT A NATIONAL INSTRUMENT LEVEL

In 2019 the United Nations (UN) recorded a seismic tipping point in the world's demographic profile. It reported, that for the first time in human history, the cohort of the world's population under 5 years old was less than the cohort who were 65 years plus [6]. This single fact has far reaching consequences, if we consider a crude life cycle economics as illustrated in Fig. 1.
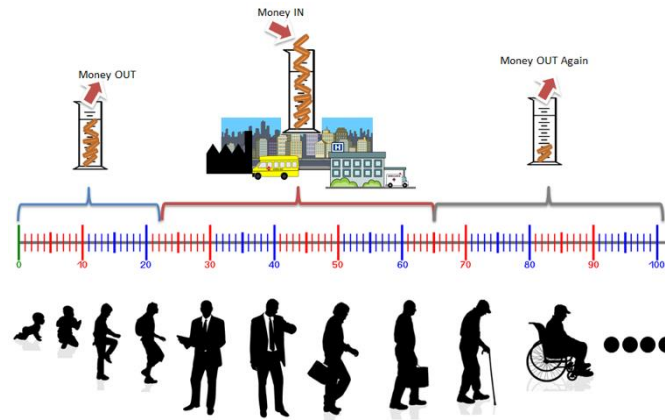

Fig. 1. Life Cycle Economics.

This illustration takes a narrow economic view. It does not include love, experience, compassion, belonging or empathy, it is simply a monitory lens. Consider the idea of a money jar, where the funds can be added or removed. When an individual is born and grows into an adult, there is a window of time when substantial money is paid out of the jar to support them (e.g. maternity leave, education, healthcare, transportation etc.). When individuals take their place in our economy, they then begin to contribute to that economy in the form of taxes, spending and purchases, so that citizen begins to replenish the money jar. Then when the individual retires at 65 years (which will be used as the benchmark age for this paper), funds begin to be removed again to pay for healthcare, pensions, social costs and public services. But the real world equivalent of the money jar is simply our economy and it's a collective pool of money, not an individual bank of cash for each person. The standard of living of a country is connected to the balance of contribution and expenditure to the nation's fiscal budget. In a democracy, if the contribution is greater than expenditure, the standard of living of the society is improved, and if there is a net loss the standard of living decreases. The European Innovation Partnership on Active and Healthy Ageing (EIP on AHA) started in 2011 and invested € 4 billion between 2016-2018 [7] on a quadruple helix framework which includes government/public, academic, industrial and citizen-oriented considerations [8]. Therefore, the EU can offer a fertile environment for silver students to gather, but Universities must offer services to encourage them to stay, and the supporting environment to permit them to thrive and flourish. Teaching the same way that we always have is just not going to work for this demographic.

3 EDUCATION FRAMEWORK

Prior to industrialisation, education was predominantly focused on the enlightenment of a culture [9]. When astute industrial leaders began to accumulate wealth, they reinvested a portion of this affluence into their local infrastructure [10] [11]. These investments had the principal objective to prepare the youth to take their place in the benefactor's economy of the future. Government took over this role, with a view to the betterment of the national wealth and the associated standard of living [11]. The configuration of the present-day education system is reflected in the industrial sector. Where departments of speciality are separated into

subjects. Educational courses could be comparable to factory lines with quality control testing at regular steps in the process [10]. The demand for a particular education stream is often tied by market forces to the requirements of the economy [10] [11]. Therefore, proportions of graduates fluctuate as the needs in the economy are to be fulfilled with the production of doctors, engineers, accountants etc.

When an older student enters education they bring considerable life experiences. Silver students <u>want</u> to be in education, they <u>want</u> to be engaged and they are curious [4], whilst traditionally, younger students, may be curious, but they <u>have</u> to be in education, if they aspire to occupying a respectable position in the economy of the future. So could this life experience cross-pollinate in an intergenerational educational setting, benefiting the younger student, as well as support the older student. But the further education of the older group is not specifically targeted at the time of writing. Perhaps this is because from a national perspective there is a perception that they are no longer net contributors to the economy as a member of the traditional work force. But as UN research has shown the cohort of 65+ years, is expected to double by 2040 [6], it will be difficult to sustain this imbalance of contribution verses expenditure within the economy of the future. So, an alternative plan should be considered where those among this older group who wish to stay challenged, curious beyond retirement can retrain to support the 65 plus years cohort, and satisfy their own needs at the same time.

4   DEMOGRAPHIC & CULTURAL CHARACTERISTICS

In this section the demographic and cultural characteristics of silver students are examined.

4.1 Social Cues

As the first paragraph of this paper notes, there is an inherent bias in our social construct, which perceives that only the young should go to college and university as students. This is a profoundly damaging social cue, because it indicates that the older cohort cannot, should not, or do not learn new material. Hidden, in this cue is the perception of sudden transition at retirement age, where somebody morphs overnight from a fit and able person to a frail disabled person in need of constant assistance and care. This is not the reality, but perception can be a strong limiter to potential [4]. Strong role models, visible and present in our community can encourage and motivate others to achieve better. If a silver student completed their degree in their 60's (irrespective of whether they are female or male), and are now instigating positive change in our community, it can be a positive influence to others to follow their dreams too.

4.2 Social Conscience

According to the Oxford dictionary 'conscience' is considered as ones' personal moral conduct to the daily living experience. However, when conscience broadens to include a sense of responsibility or concern for the problems and injustices of the greater community, it forms the cornerstone of a civil society. At the time of retirement most individuals have lived through at least one boom-bust cycle of the economy and the emotional turmoil that accompanies it. They have created an inner resilience to help them cope with a variety of different, sometimes difficult, life situations [1] [12]. On occasions they are likely to have experienced compassion, tolerance, fairness, acceptance, resourcefulness, composure, persistence and building of social networks [13] [14]. This experience brings along with it a set of life familiarity at a social level that is not learnt in an educational environment and is usually mentored by influencers in the community. These are community based life lessons that a lot of youths would not have experienced yet, but have been seen to occur in intergenerational learning environments [4] [15].

4.2.1 Volunteerism

Social participation, and predominantly fruitful activities such as caregiving, volunteering, and informal helping, have been shown to greatly benefit the health and wellbeing of both the persons delivering and receiving a service [12] [1]. These benefits are wide ranging and include better quality of life, improved physical and psychological health, and reduced morbidity. As such, social participation is considered to be an essential component of successful ageing. At a societal level, these activities also strengthen ties within communities by promoting robust social networks and inter-personal ties which in turn encourage interpersonal trust, and reciprocity [12]. Volunteering is also an important feature of Irish life, as evidenced by the fact that adults' aged 50 years and older in Ireland have the second highest engagement in unpaid volunteering, among the 28 European Members [1]. A similar percentage of men and women volunteer with rates of volunteering highest among the 65 to 74 year old age group [1]. While rates of social participation are high, efforts to increase volunteering and social participation among older adults should be encouraged and enable them continue with their volunteering engagement through the joy and passion of further higher level learning [12].

4.2.2 Retirement & Independence

When a person is in a working environment a level of social participation occurs directly (e.g. reading documents and meetings) and indirectly (e.g. traveling, meals and breaks) related to this framework. On a regular basis people need both familiarity (e.g. routine, predictability) and novelty (e.g. to be inquisitive about something). When a person retires from this dominant activity of work, the direct and indirect interactions are disrupted [16] [12]. It is important to have a system to replace this framework, otherwise it can result in isolation and loss of confidence when engaging with the community, and the possibility of greatly impairing in a negative way the health and wellbeing of the individual. This must occur prior to retirement where the formal disruptive transition occurs. If the person was an integrated part of a community with supports from groups they volunteer for or work with, or are in college with, this integration can be made less onerous [4].

4.3 Education

Literacy and numeracy skills are significant indicators of a more inclusive society, specifying active participation in the labour market, volunteerism, education and training, and in social and civic life in the community [1]. If we compare older students with younger students in the further education setting. The absenteeism rate for older students is less. When in group settings an older student team will deliberate longer before arriving at a decision, the solutions provided will be more socially acceptable, and there is a greater likelihood of project success. Mature students have demonstrated a higher level of self-rated dignity [1]. The Irish Longitudinal Study on Ageing (TILDA) research has shown that 7.1% of older adults have an appetite for classes and lectures prior to retirement, which increases to 12% after retirement even though the cohort is not actively recruited [12]. Education in social life skills are core to some university courses, such as, engineering, science and the arts. They form an integral part of accreditation by professional bodies. This has been understood to occur naturally in intergenerational learning environments, rather than as part of separate subjects [3] [17].

4.4 Cognitive function.

Detailed research presented by TILDA has shown that the majority of older adults continue to perform well on core cognitive tests [1]. They noted that there was a slight decline in verbal memory scores and in verbal fluency. However, there was no decline in prospective memory

[1]. The research clearly found that the older adults that were socially integrated had the highest verbal fluency scores, when compared to the more isolated cohort.

4.5 Life expectancy

Research undertaken by the TILDA group based in Trinity College have examined at length the Irish population over 50 years of age [1]. Their research demonstrates that a person at age 65 years, living in a comfortable home (i.e. warm, easy to navigate, accessible, in the community etc.) would expect to live on average 20 additional years, with the first ten of those years being relatively healthy (i.e. with minor medical intervention) [12]. Extrapolating this data, there would be a strong indication that the life expectancy would be 85 years, and the healthy period being 75 years approximately. Further research also shows that these ages can be extended when the person is engaged actively in some social activity and amongst volunteers.

4.6 Mobility

Frailty is a dynamic process that can change over time in both directions between the different states of frailty namely robustness, pre-frailty (an intermediate state) and frailty. Frailty is more prevalent among people who are living alone, are widowed, and is highly correlated to formal educational attainment [1]. Frailty was twice as prevalent among those who attained a primary level of education only, compared to those who attained secondary level and over three-times more prevalent compared to those who attained third level education. There is a correlation between depression and mobility in particular, balance, fall, fear of fall, stand 'up and go' and gait (i.e. walk, stride) [1, 18]. The inclusion in education later in life can reduce the levels of frailty and increase robustness and resilience in attendees.

5   PROPOSED FRAMEWORK ACTIVITIES

If universities wish to seriously embrace the silver student economy, believe their engagement will truly benefit our society at large, and lead the way forward, what steps should come about to ensure this vision is realised? There are four principle interwoven themes that need to be addressed by this proposed framework:

1. Policy and national instruments.
2. Finance and funding.
3. Business and management.
4. Ground up activities and initiatives.

From the outset, it is critical for the narrative around this topic to change on the national stage. Is the question 'are we doing this activity to help the older population', or 'are we supporting and enabling the silver students doing this activity to have a better quality of life, whilst in tandem helping the economy'? Clarity, around the rationale and motivation for the core effort is important for the architecture of the solution. Education of the population decision makers and politicians needs to be undertaken. This is not an economic patch, it is a radical disruptive change and needs a radical solution. Themes 1 and 2 align with this action and the discussion must also include social appetite and inertia that will be required to mature and sustain this activity at a society level. If a true co-creation relationship was established with the older cohort (not just tell them what they are getting, but include them in the process at all levels) the solutions offered would be more rounded to the larger population, there would be less likelihood of failure and there would be an earlier adoption of the service by that demographic. Born into this refocused education paradigm from the outset, should be a seamless transition in and out of education at any point in their life.

At a fundamental level, universities must begin to transition into influencers, enablers and authority figures, where they are viewed as experts within this niche market. The focus is not solely to ensure an extended lifespan, but a healthier, happier and affordable lifespan, with a better quality of life and greater dignity [3]. It is clear that this venture is not a silver bullet for all older persons, and so an effort should be made to clearly target persons who can be empowered to support the older population to become positive influencers of change and Citizigner's (Citizen Designers) of their environment of the future [19].

But education is only one part of this complex puzzle. The European Union has observed that simply investing in research, without developing at the same time a plan on how it will be commercialised, distributed and eventually used, and simply hoping businesses, industries and communities will prosper is setting the project up for failure [8]. They have shown that the most successful developed solutions have peppering of four ingredients, which they refer to as a quadruple helix framework which includes Government/Public, Academic, Industrial and Citizens [8] [7]. This activity aligns with theme 2 and 3.

The published 'Citizens' Assembly on Gender Equality' research has shown that an overwhelming proportion of the care and action, currently supporting the aged population in Ireland is reliant on the female cohort [20]. This has resulted in the female set being disproportionally disadvantaged, in the form of pensions, social support and their freedom, as some volunteerism involvement was thrust upon them. So it is important to ensure that future solutions developed support the female group to regain some of this lost social ground, and also encourage the male cohort to equally match the effort at all levels of support. This activity aligns with theme 1.

This education initiative must occur prior to retirement, where the formal disruptive transition occurs. Commitment and consistency is a trait, where human behaviour and performance can be conditioned by introducing small achievable steps linked to a sense of achievement and psychological reward [21, 22]. Consider the example of a couch to 5k programme. Couch to 5k is an exercise programme, where a person who spends a lot of their time sitting on a couch can progress from a sedentary lifestyle to run 5 kilometres. This is accomplished by creating a regime into their routine with a series of minor, manageable steps linked to a small personal sacrifice, connected to a larger positive sense of achievement. From this commitment and consistency effort a number of early ambassadors or champions for the programme are created. This activity also disrupts the social cues showing society at large that lifelong education is more than just a myth, it is truly present and achievable. People look at the achievements of others to determine their own course of action [23]. For the silver students to identify with the process they need to engage with people who are similar to them, that may include age, but principally with people who have a similar outlook on life or topics of interest [24]. So when is the optimum time to initiate this action? Very broadly speaking, if a person graduates at 22, they will be building their career, social and family lives until they are in their 50's. This is reflected by the noticeable increase in the rate of volunteerism in the cohort aged 50-64 years, which increases to the highest level at between 65-74 years [1]. In addition the completion of interventions at 65+ years is already too late: the older person does not have access to financial supports, such as, loans in which to fund the interventions, or take a calculated risk in a new venture, like developing a technology, or starting a business. A specific example to illustrate this issue relates to home renovations. Warm comfortable homes are associated with a reduced need for medical intervention in the first 10 years post retirement at 65 years. At the age of 65 years the opportunities to obtain loans is dramatically restricted, and the person would have to spend some of their savings early in their retirement. It would be more appropriate to initiate the intervention when the person is 50-55 years, where a loan

can be secured and paid back prior to retirement. But there is a lack of education directed at the 50+ year demographic to encourage them to prepare their homes, communities, businesses and lives in advance of their retirement. This activity aligns with theme 2 and 3.

What topics should be considered? The focus of this framework was to encourage and support the return to education, in all its forms, of the older student. The merits of increased levels of education for this cohort have been shown to reduce frailty and morbidity, increase the levels of contribution back to the community in the form of social engagement and volunteerism, improve mental wellness, decrease isolation and depression, and in general reduce the need for medical interventions. These merits were not specifically linked to topics of discourse. However, history has shown that three fundamental topics, such as, transportation, energy and communication were at the core of the last four industrial revolutions. These topics have had substantial impact on the formation and evolution of our communities and cultures in the past, and it is extremely likely they will also influence them in the future. But decisions within these topics have been made by groups that under represent the elder cohort, as they are influencers for the economy of the future. Silver student education has the ability to offer a voice in the debates to the older cohort in these important topics. In 2020, a 'Green Deal' roadmap by the EU setting out its plan to make Europe climate neutral by 2050 [25]. This initiative includes green and efficient energy for industries, buildings (including homes), transportation (both private and public infrastructure) and the development of environmentally-friendly technologies. In March 2021, the EU unveiled Europe's Digital Decade and set out substantial initiatives to support Europe's digital transformation with the express intent to empower and include every citizen [26]. This initiative includes banking, remote telemedicine and telecare, transportation integration, internet and cyber services, digital media, digital skills and government and company e-services. EU4Health is EU's response to COVID-19, which has had a major impact on medical and healthcare staff, patients and health systems in Europe [27]. This initiative specifically specifies its focus to be disease prevention and health promotion in an ageing population, digital transformation of health systems and access to health care for vulnerable groups. All these initiatives will have substantial impacts on the evolution of our communities and cultures as we look to the future in Europe. But unless we educate the older groups they will be excluded from the debate. This demographic have a lifetime of experience and on average have an additional 20 years, in which to share that wisdom. This experience could be simply being present in the intergenerational learning environments [13]. Both the younger and older cohort perform better in a mixed intergenerational setting, where the social skills gained by the silver student can be coached by good example to the younger groups. The feeling by the older group of being relevant and integrated can lower depressions and improve mental wellness [28] [15] [29] [4].

Smart healthy age-friendly environments (SHAFE) groups in addition to many other social activities and societies (e.g. men sheds, book clubs, meals on wheels, Drogheda District Support 4 Older People (DDS4OP), Sustainable Energy Community (S.E.C.), Ardee age friendly town) have begun to develop intergenerational hands-on training, and hands-on supports specifically targeted at this 50 years plus cohort [30] [31]. These are ground up initiatives, which have been driven by needs in the community, tapping into the increased level of social engagement associated with this cohort [1]. But higher level infrastructures would need to be developed to manage this activity at a national level. Education can play a pivotal role in this infrastructures development. This activity aligns with theme 4.

6   CONCLUSION

The main vision behind this initiative was to highlight mutually beneficial symbiotic opportunities for education institutes to have a positive impact on our future by including the older students. These impacts are:

(1)   Supplementing the lowering of student numbers entering mainstream education with older students and using the intergeneration learning environment to cross-pollinate values between both groups.

(2)   Reducing the cost to our economy, by enabling older students to have a greater impact in their pre/post retirement phase of life, whilst fulfilling their curiosity in lifelong learning.

(3)   A framework to support a healthier, happier and affordable lifespan, with a better quality of life and greater dignity.

(4)   Reinforce the important role education plays in allowing a voice clearly articulate its opinions in key topics that sculpt our culture and communities.

The envisaged doubling of the 65 years plus cohort by 2040, as reported by the UN, illustrates that the largest growing market is in the 65 years plus set. However, this also signposts that the cost of providing public services and support will dramatically increase, and there will be less resources to sustain it in the economy. Hence, the economy needs to either increase its revenue streams, or it needs to become more efficient in utilising its existing services infrastructure.

Education of this pre/post retirement cohort has been seen to reduce morbidity, frailty and medical interventions and increase the level of inclusivity in the community. This research highlights the need to begin to recruit persons 50 years plus into mainstream education. Thereby, creating an opportunity for this demographic to re-evaluate and take stock of their lives before they retire and take a risk on their second act. With an opportunities to reskill for the second act entrepreneurs, and the 'doers' of our economy in the past can be empowered to become positive influencers and architects of change and Citizigner's (Citizen Designers) of their environment of the future.

7   REFERENCES

[1]   TILDA, The Irish LongituDinal Study on Ageing (TILDA), Department of health, 2016, pp. 14-18.

[2]   C. Dweck , "RSA ANIMATE: How To Help Every Child Fulfil Their Potential, TED talk seen on YouTube video," 2015. [Online]. Available: https://www.youtube.com/watch?v=YI9TVbAaI5s.. [Accessed 3 5 2017].

[3]   O. Keogh, "Mature students bring the benefits of their experience," *Irish Times,* 8th January 2002.

[4]   H. Graham, "Re-engaging with Education as an Older Mature Student: Their Challenges, Their Achievements, Their Stories.," 2015.

[5]   C. Kasworm, L. Sandmann and P. Sissel, "Adult Learners in Higher Education," in *Handbook of Adult and Continuing Education*, American Associations for Adult and Continuing Education, 2000, p. 449.

[6]   UN, World Population Aging 2019 Highlights, produced by the United Nations, Department of Economic and Social Affairs, 2019.

[7]   European_Commission, "European Innovation Partnership on Active and Healthy Ageing," 5 Febuary 2021. [Online]. Available: https://ec.europa.eu/eip/ageing/home_en.html. [Accessed Feburary 2021].

[8] E. Commission, "Guide to Research and Innovation Strategies for Smart Specialisations (RIS 3)," European Commission on Regional Policy, 2012.

[9] G. von Petzinger, Interviewee, *40,000-Year-Old Symbols Found in Caves Worldwide May Be the Earliest Written Language.* [Interview]. 1 March 2019.

[10] K. Robinson, Out of our minds, Capstone, ISBN 9780857081490, Reprinted in 2011, First printed 2001.

[11] J. Carl, "Industrialization and Public Education: Social Cohesion and Social Stratification," *International Handbook of Comparative Education,* vol. 22, 2009.

[12] TILDA, Embracing Retirement. The impact on Health, Social Paticipation and Wellbeing., The Irish Longitudinal Study on Ageing 2019., 2019.

[13] L. Berkman, T. Glass, I. Brissette and T. Seeman, From social integration to health: Durkheim in the new millennium, vol. 51(6), Social Science & Medicine., 2000, pp. 843-857.

[14] A. McMunn, J. Nazroo, M. Wahrendorf and E. Breeze, "Participation in socially productive activities, reciprocity and wellbeing in later life: Baseline results in England.," *Ageing & Society,* vol. 29, no. 5, p. 765–82, 2009.

[15] R. Collins, "Keeping it in the family? Re-focusing household sustainability," *Geoforum,* vol. 60, no. 3, pp. 22-32, 2015.

[16] J. Osborne, "Psychological Effects of the Transition to Retirement," *Canadian Journal of Counselling and Psychotherapy,* vol. 46, no. 1, pp. 45-58.

[17] A. Hargreaves and R. Dawe, "Paths of professional development: Contrived collegiality, collaborative culture, and the case of peer coaching.," *Teaching and Teacher Education,* vol. 6, pp. 227-241, 1990.

[18] T. Orna Donoghue, Writer, *Mobility in Older Irish Adults.* [Performance]. 2020.

[19] M. Zallio and J. McGrory, "Citizigner: Inclusive, User empowerment," 2018.

[20] Citizens_Assembly, "Recommendations of the Citizens' Assembly on Gender Equality," 2021.

[21] J. McGrory, "Smart-Healthy-Age Friendly Environments (SHAFE)," in *House of Lords Symposium on The Value of the Silver Economy using the Gold of the Future*, London, 2020.

[22] S. Martin, N. Goldstein and R. Cialdini, The Small Big: Small Changes That Spark Big Influence, ISBN-13: 978-1455584253 ed., Grand Central Publishing, 2014.

[23] R. B. Cialdini, Influence, New and Expanded : The Psychology of Persuasion, HarperCollins Publishers Inc, 2021.

[24] N. Goldstein, R. Cialdini and V. Griskevicius, "A Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels," *Journal of Consumer Research,* vol. 35, no. 3, pp. 472-482, 2008.

[25] European_Community, "A European Green Deal," [Online]. Available: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en.

[26] European_Community, "Shaping Europe's digital future," [Online]. Available: https://digital-strategy.ec.europa.eu/en/news/digital-day-2021-eu-countries-commit-key-digital-initiatives-europes-digital-decade.

[27] European_Community, "EU4Health 2021-2027," [Online]. Available: https://ec.europa.eu/health/funding/eu4health_en.

[28] J. L. B. B. J. Matz-Costa, "The Meaning and Measurement of Productive Engagement in Later Life.," *Social Indicators Research,* no. 118(3), p. 1293–314, 2014.

[29] A. Maslow, "A Theory of Human Motivation," *Psychological Review,* vol. 50, no. 4, 1943.

[30] EU_SHAFE, "Europe enabling Smart Healthy Age-Friendly Environments".

[31] W. V. Staalduinen, "Learning to implement Smart Healthy Age-Friendly Environments," *Translational Medicine @ UniSa,* vol. 23, no. 4, 2020.

[32] C. M. Trivette, C. J. Dunst, D. W. Hamby and C. O'Herin, "Characteristics and consequences of adult learning methods and strategies," *Tots n Tech Research Institute,* vol. Research Brief Volume 3, no. Number 1, 2009.