

ICT and Lifelong Learning: Hong Kong's Experience for Elderly Learners

[doi:10.3991/ijet.v5i2.1166](https://doi.org/10.3991/ijet.v5i2.1166)

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Abstract—Learning plays a key role in ageing societies as it can help to address many of the related challenges and opportunities. Opportunities to learn should be given to senior citizens through appropriate local lifelong learning programmes. There is a need to improve research and development on learning tools and approaches designed to meet the different needs of older people. ICT has an important role to play in developing learning opportunities for older people both as a topic in its own right and as a means of learning in the so called knowledge society. This paper reports on a Hong Kong case survey understanding the role of ICT in lifelong learning for elderly and its impact of learning activity. The survey results suggest numbers of areas should be taken into consideration for older people as both learners and mentors.

Index Terms—ICT, lifelong learning, elderly, social capital, Hong Kong

I. INTRODUCTION

In recent years the notion of lifelong learning has attracted much interest in the public debate, in particular with regard to strategies for fostering development in a knowledge-based society and economy. The possibility to use ICTs as a means to apply in lifelong learning has been discussed extensively. Academic research including work at publicly funded research centres such as the Oxford Internet Institute [1] and the Pew Internet & American Life Project [2], as well as research by National Statistical Institutes in the US have started to look into the ways in which the Internet and other ICTs exert a direct, tangible influence on people's learning. In recent years, most stories about the phenomenal growth of the Internet have emphasised its diffusion, as it has reached beyond the first one billion users worldwide. In Hong Kong, the Internet has diffused only gradually since 2005 to reach 70 percent of households and individuals at the age of 14 and over in Hong Kong, increasing from 58% in 2003 and 66% in 2007. Life stage remained one of the main factors associated with Internet use. In 2009, 100% of students, compared to only 86% of employed people, 34% of retired and 48% of unemployed people used the Internet. However the number of retired people using the Internet increased from 22% in 2003 to 30% in 2005 remaining at such a high level thereafter (34% in 2009) [3].

The study on which this article is based was supported by the local NGOs to find out the learning needs and preferences of the use of ICT in elderly lifelong learning and any barriers that prevent the learners from participating in learning activities. The findings of this study can provide

territory wide information on the organized educational activities of elderly people. The information serves as an important input in the development of educational programs targeted specifically at this segment of the older population in the area of the use of ICTs.

II. INFORMATION TECHNOLOGY AND LIFELONG LEARNING

"Technology can make lifelong learning a reality" [4] is in a nutshell presented the North American point of view. With electronic tools, people can (theoretically) learn virtually anytime and anyplace they choose without obstacles in place, time and social status.

UNESCO's "Policy Paper for Change and Development in Higher Education" urges higher education institutions to make greater use of the advantages offered by the advancements of communication technologies so that "each university should become an open university offering possibilities for distance learning and learning in various points in time" [5]. The e-learning is not seen as a shift from the traditional to open learning, but rather as a support to conventional learning processes with the use of modern information technology and distance educational methods. Modern implementation of e-learning in educational institutions can be considered as the result of the convergence process of distance and conventional education.

As recent reports demonstrate clearly, the pace of e-learning is accelerating, and it is likely to take a growing share of higher education. According to the cited UNESCO report [5] open and distance learning is one of the most rapidly growing fields of education, and its potential impact on all education delivery systems has been greatly accentuated through the development of ICT – based technologies, and in particular the World Wide Web. E-learning at the tertiary levels shows a two-track development pattern. On the one hand, numerous open universities have emerged to absorb large numbers of new learners, while, on the other hand, increasing numbers of traditional universities have begun to offer their programmes also through distance education. The development of new information and communication technologies has reinforced this trend.

Due to the overall development and wide implementation of e-learning and because of high number of students that will participate in lifelong learning it is evident that e-learning is going to provide technical foundation on which efficient lifelong learning will be built. Nevertheless, to come to this point the e-learning has still to become inex-

pensive, user friendly, actively motivating, multimedia supported and widely accessible.

III. ICT AND INEQUALITIES IN EDUCATIONAL PARTICIPATION

Another of the fundamental limitations to ICT-based lifelong education is proving to be relatively modest levels of take-up and, crucially, the social composition of those learners who are taking part. Levels of participation in all forms of ICT-based formal education remain relatively low [6] and overall patterns vary between subject area and level of qualification [7]. Similarly, although there is evidence of adults using ICT to learn informally, this is very much a minor activity when compared to everyday uses of ICT such as word-processing and e-mail.

Empirical work also suggests that although ICT-based learning is taking place, it is having little impact on the overall patterns of (non)participation in education. Indeed, analyses of large-scale United Kingdom-wide datasets suggest that non-participation in education remains a significant and deep-rooted trend with or without ICT based initiatives [8]. This has been confirmed by other qualitative studies. For example, the evaluation by Reference [9] of ICT-based learning centres found that they tend to attract largely traditional learners, many of whom already had access to IT at home. The overall conclusion from the above analysis is that whether or not an individual participates in learning appears to be a lifelong pattern, set in place at school-leaving age, and intrinsically related to long-term social, economic and educational factors. Crucially, access to ICT does not in itself seem to make people any more likely to participate in education and (re)engage with learning. It can be concluded that at the moment ICT is increasing educational activity among those who were already learners rather than widening participation to those who had previously not taken part in formal or informal learning.

IV. RESEARCH OBJECTIVES

This research project is intended to fill the gap in work around the impact of ICT on lifelong learning courses for older people in Hong Kong. The target group is the learners with age over 60. This will support 'Elder Education Program' in its campaign for a better quality of life of older people in Hong Kong.

This research strives to address three main objectives:

- To study the trend and current development in the area of the use of ICT in lifelong education for older persons;
- To understand the lifelong learning educational needs of elderly people in ICT;
- To identify useful and relevant features which Hong Kong may learn from the above studies in formulating appropriate measures to promote lifelong learning opportunities for older persons.;

Beside that, additional data on the importance assigned to social empowerment of older people due to the use of ICT in their learning courses, as well as the identification of particularly affected social groups was collected to provide essential context information in order to identify prevalence and strategy for the policy formation framework.

V. RESEARCH METHODOLOGY

The research was carried out in two stages, using two very different methodological approaches: While the first stage was based on a review of already existing material, the second stage relied on original primary research.

1. In the first stage, a desk review of relevant policy documents reflecting the latest trends on the use of ICT on lifelong learning for elderly was carried out. Research methods required for this stage included a literature review, documentary analysis of policy documents, and some secondary data analysis.
2. In the second stage, original empirical research was conducted. Interactive online survey was chosen as the appropriate research method to gather exploratory but nevertheless detailed information on the objectives of the research. To qualify for the study, participants had to be between the ages of 55-70. A primary focus of the 30-question survey was to better understand the experiences and behaviors of the aging e-learning, so the survey included many questions asked only of people who were studying, either full- or part-time. This approach was essential to collect the required data and the measurement of old-age ICT ability and its application on lifelong learning materials in particular. It also proved very useful for obtaining detailed background knowledge, public debate and variation in various setting.

The online learning initiatives were organized in the context of an experimental 8-month education programme in various elderly centers in Hong Kong aimed at introducing a large number of over-60s to the basics of ICT. It envisaged a mixed learning path of onsite and distance activities. Distance activities could take the following forms:

- Computer-assisted training, to be carried out autonomously at home and based on the reinforcement of classroom learning;
- Online collaborative learning, aimed at an in-depth examination of some topics related to the use of Internet, and targeted at a limited sample of elders that resulted totally autonomous in the use of ICT.

Participants were indicated by their respective classroom teachers on the basis of the satisfaction of a number of conditions, such as basic understanding of the use of e-mail and Web browsing, and availability of internet access at home. The course was aimed at developing two specific skills which are essential to a social net worker - the optimum use of search engines for information and resource retrieval; the establishment and management of web services based on social networking. The special approach adopted in this course was based on an online learning strategy characterized by a strong network interaction between all actors (tutor and group of participants).

Empirical part of our qualitative research study was based on semi-structured interviews with persons who represented different focus groups: course tutors, elderly learners (Students), voluntary organizations aiming at educating elderly people, public and private home care and elderly nursing homes, as well as welfare development institutions. Several focus group discussions were organized to serve as a supplementary component of the study, exploring the educational issues faced by elderly learners, i.e., those aged 60 and above, and the role life-

long education could play in their quest for better living at this turning point of their life and beyond. Focus group meeting was necessary to extend the range of the research and to minimise the risk of relying on the inevitably one-sided perspective of any particular social actor. In the initial stage of the study, a number of the above mentioned focus groups who had previously participated in lifelong learning courses, were interviewed (face-to-face). Over fifty such individuals were identified across a number of educational institutions in Hong Kong who subsequently accepted an invitation to participate as respondents. The interviews were conducted in a semi-structured manner and began by asking the respondent to outline his or her prior experience with the use of ICT.

For our study, we focused on organized educational activities that provide opportunities for “formal” learning to the elderly. The learning is “formal” in the sense that the learning experiences are structured and organized, usually involving a set of lessons or units of study, and the learning process spans over a reasonably long period. The learning styles need not be limited to classroom or group settings only.

VI. RESULTS

A. How they use ICT??

The survey data suggests that the share of elderly learners who actively contribute to the Internet, including uploading self-created content, is indeed considerable. 40% of elderly learners have, in the 3 months prior to the survey, posted messages to chat sites, newsgroups or online discussion forums; 20% have uploaded self-created text, images, photos, videos, or music to any website to be shared; 5% have designed or maintained an own website; and 20% publish an own blog. The most popular chat site is *FACEBOOK* which not only limits to other peers but also to the younger generation. The data suggest that the Internet is perceived by respondents as of high importance for communication with people. If engagement on chat sites, newsgroups or discussion forums and creating a profile on a social networking site are added, the share rises to 70%.

Other more recent applications of the Internet are also utilised by large shares of elderly learners. This includes Internet online phone calls (70%) and desktop-based video telephony (20%). Closer inspection of our survey data confirms earlier research [10] according to which people with strong social ties to foreign countries (including ethnic minorities) are amongst the strongest users of these kinds of new communication services, as they allow for inexpensive and frequent contact regardless of distance.

B. Elderly learners – A homogeneous group

One of the key findings in this study is the importance of differentiating the learning activities of e and elderly learners on several dimensions such as age, prior education level and prior ICT experience. Unlike the situation in 60s and early 70s – perhaps the last generation fortunate enough to have broad access to receive more formal education – Boomer employees age 55-59 face greater difficulty in using IT-related products. This study shows that people in different age groups have significantly different perceptions about the types of learning materials they want, why they study and what lifelong learning actually means.

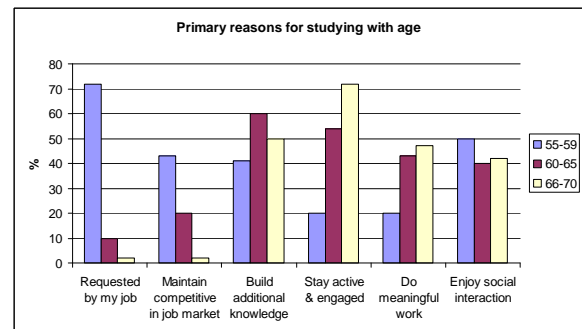


Figure 1. Primary reasons for studying with age

Among the survey’s respondents, those age 60-65 and 66-70 are the least confident using ICT in their learning courses, with approximately 64% worried that they will not be able to learn comfortably with IT-related materials. Aging Baby Boomers (age 55-59) are considerably more confident (69%) on the issue of ICT learning. As a result, more than 62% of age 60-65 and 66-70 wish they had done better IT training.

One of the most important findings in this study is the significant shift that occurs in the motivations for continuing learning as individuals age. For people age 55-59, economic reasons clearly dominate. Of those currently in the workplace, about 72% of this age group cited the need for “requested by my job” as a primary reason for studying. This was followed by the desire to “maintain competitive in the job market” (43%) and “build additional knowledge” (41%). Among 60- 65 year-olds, the need for “additional knowledge” (60%) was the most frequently mentioned reason for studying. But after that, a shift in priorities appears as the desire to “stay active and engaged” (54%) and “do meaningful work” (43%) follow in second and third place. For 66-70 year-olds, this shift in priorities is dramatic, with 72% choosing “want to stay active and engaged” as their primary reason for studying. Their second choice is “want the opportunity to do meaningful work” (47%) and third choice is “enjoy social interaction with colleagues” (42%). These findings have important implications for educationists because they suggest that recruiting and retaining elderly learners in their sixties requires special attention to course design and study environment and suitable IT support.

The type of elderly learners choose to pursue also varies with age. Among learners age 60-65 who left the workplace and then returned to study, the number one reason for “ICT learning” was “to try something new and different” (20%). This option was chosen much less frequently by 55-59 year-olds (12%) and 66-70 year-olds (7%), suggesting that learning in their early 60s are particularly eager for new experiences and challenges.

When asked if their concept of “ICT” had changed, 47% of aging Boomers (age 55-59) said “yes.” Roughly 44% said “no,” and 8% were “not sure.” Older respondents were less likely to say their understanding of ICT had changed. For 60-65 year-olds, 40% said “yes” as did 31% of 66-70 year-olds.

Finally, learners are far more likely to pursue alternative study arrangements – e.g., self-learning, part-time study – as they age. While 28% of respondents age 55-59 listed themselves as “receiving formal training,” more than one-third (36%) of 60-65 year-olds and 42% of 66-70 year-olds study by themselves. The oldest learners sur-

veyed (age 66-70) also demonstrate a strong preference for part-time study. Flexible learning timetable and course contents are the key. The implications are clear for trainers who want to attract potential students: give older learners what they crave – new experiences and challenges with substantial degree of flexibility.

C. Benefits of e-learning for human capital development

An interesting feature that emerged was the way in which the people questioned had directed their own professional development and fostering of expertise in respect of the role of e-learning in their human capital development.

There was a strong consensus on the importance of the various identified benefits of e-learning from the learners' perspective. All the listed benefits were regarded as 'Very important' or 'Important' by the majority from our survey (Table I).

The strong recognition given to the impact of e-learning in fostering lifelong learning, majority who gave a response regarding this as 'Important' or 'Very important' is a significant finding. This is significant in the context of an ageing workforce and suggests that further consideration will need to be given to ways that e-learning can encourage and support learning throughout life, with particular attention to key transition points into the various phases of life. Once mature age learners have confidence in using technology, they generally go on to learn more uses of the technology and adopt more technology for learning purposes. This was a comment made by many elderly learners.

There was a general agreement that e-learning can support an individualized approach to learning and that for the mature aged this was important given their diverse life and work experiences. Identity capital was defined in the questionnaire as involving such qualities as confidence and self esteem, and hence a strong influence on the motivation and capacity of students to tackle and master new skills.

D. Key characteristics of the mature aged as learners

Learner characteristics are becoming more important as learners become more discerning consumers of education and training, and more articulate about their needs and preferences.

The author notes that the mature aged do not form a uniform group, and sub-divided them into four segments, according to their position in the labour market and the general nature of their skills development interests:

- People in employment who wish to upgrade their skills to cope with changes in their existing jobs
- People in employment who wish to upgrade their skills in order to seek promotion in the same or a similar company
- People in employment who are considering a substantial change in direction and
- People not in employment who are seeking to re-skill in order to enter the workforce.

People in employment who are considering a substantial change in direction could be doing so because of changes in the economy and declining jobs in the area they work in now, or as insurance for a time when their current career was no longer possible, or due to changes in their own life circumstances. The mature aged students linked to the providers in our national consultations included many seeking a new career by upgrading their qualifications to a higher level, for example aged care workers seeking to become enrolled nurses.

VII. RESULTS DISCUSSION

A. Social Capital

ICT radically open up new ways in which to address the basic challenges of regional development in the knowledge-based society. The transformative potential of ICT resides, in particular, in the way they enable *networking, learning and innovation, and empowerment*. A horizontal theme that runs through all of these is social capital. According to our survey results, there is a significant growth in the number of elderly people who use the internet for social purposes, i.e. to connect with others. The number increased from less than 20% in 2005 to 60% in 2008. ICT in the form of interest-oriented online discussion groups or networking spaces to develop new connection with like-minded people in what are looser, more fluid, differentiated, interest-based, elective and far-flung networks for a wide variety of purposes, including professional skill and career networks, common hobbies and socializing or self-help groups to cope with specific problems.

There is ample evidence to suggest that ICT are helping to expand, transform and diversify social capital. And they do so by providing:

- Tools for communication and collaborative information sharing, ranging from simple email to interactive publishing tools such as blogs and to sophisticated collaborative work platforms that allow to jointly create, annotate and share information items, such as wikis or social tagging applications.
- Meeting spaces, where like-minded people can gather and socialize. These online spaces started with the bulletin boards of the early internet, then morphed into tens of thousands of thematic discussion groups carried by Usenet or on websites and are by now developing into sophisticated multimedia online social networking sites such as MySpace or Facebook populated by well over hundred million users and their networks of friends, as well as increasingly

TABLE I.

INTERVIEWEES' RATINGS OF THE BENEFITS OF E-LEARNING FOR MATURE AGE LEARNERS

Value and Benefits List provided for comment-	Very important	Important	Some Value	Not Important
Individualisation	65%	20%	15%	0%
Building identity capital	70%	20%	10%	0%
Flexibility	75%	20%	5%	0%
Fostering lifelong learning	45%	45%	10%	0%
Quality of learning	50%	30%	20%	0%
Other contributed by elderly learners				
— Improving communities/connections	90%	10%	0%	0%
— Learning to learn	80%	20%	0%	0%
— Accelerated pathways	70%	30%	0%	0%
— Enhancing reflection	50%	50%	0%	0%
— Can track individual progress	20%	80%	0%	0%

popular virtual words such as Second Life that mimic ambient aspects of real environments and enable participants to develop sophisticated online alter-egos.

The way the Internet being used is indeed strongly associated with levels of social capital, when the latter is defined in simplified terms as being made up by the level of trust, the number and diversity of social ties, and active membership in social groups. From our analysis, the intensity of using the Internet by elderly learners, measured in average hours per day, does not exert a significant influence, the fact that the Internet is used at more than one location as well as the relevance which is given to non-commercial uses of the Internet were both found as significant explanatory factor. By examining the use of Internet for communication versus entertainment, it provides the most critical basis for explaining the development of online friendships such as social networking, blogging and contributing self-created content is strongly associated with levels of social capital. Care should be taken, however, not to conclude that there is a direct causal link between ICT use and social capital. Rather, this is a case of mutual reinforcement: On the one hand, the more people are engaged within social networks and the more they put trust in fellow citizens, the higher is the utility which they can derive from using advanced Internet applications; on the other hand, the more experience people have gained in using such Internet applications, the easier it is for them to actively engage in social networks. These findings give support to the emerging view that the Internet is enabling persons with strong individual social capital to more effectively reproduce it.

B. Human Capital

Maintaining the skills levels, motivation, and employability of older workers raises a broad spectrum of issues that will need to be addressed by all stakeholders in ways that progress solutions that bring benefits to all. This will require that various myths about older workers that serve as barriers to the training and employment of mature age workers are surfaced and dispelled. We identify in these section key characteristics of the mature age workers as learners in general, and in relation to being engaged in e-learning, based on the available research and our national consultations.

Our survey results show that the mature aged can be effective workers from an employer perspective and that far from yearning for retirement, many older people both in work and out of employment want to go on learning and earning, but at their own pace. A published research study on some 2000 older workers perspectives on training and retention concludes that the central issue is not so much persuading older people to continue to work and learn as it is to remove perceived discriminatory barriers and disincentives [11].

We have concluded from this research evidence that the real story on the mature age worker is:

- Many are interested in continuing to work or return to work
- Many are willing to augment their skills through training
- Becoming competent with new technology, particularly computer skills is a common and high priority

But

They want flexibility, the opportunity to work part time and to learn new skill sets

- Supportive work and learning environments are important and
- Learning opportunities that stretch but not stress them, suited to their level of capability, are preferred.

The theme that technology will transform the way we learn. In our consideration of how the e-learning role had evolved, we examined international literature on this subject, as well as exploring trends in our e-survey. The impact of web 2.0 technologies has stimulated further interest in this subject. The survey results had concluded that e-learning had become more personal, social and flexible.

- More personal technology has enabled more individualized approaches to learning to be progressed with increase regard to individual need. Personalized learning is now more feasible.
- More social learning together in networks and communities with people connected to each other for learning enhances the quality of learning, the generation of new knowledge, and learning outcomes overall.
- More flexible new technologies enable learning anywhere/anytime to be a realistic objective.

These attributes are particularly relevant to the diverse needs of mature age workers (and older learners generally) so that we have concluded that e-learning has very significant potential in meeting the needs of mature age workers, including people returning to the workforce, that should be harnessed in comprehensive strategies to maintain the skill levels, motivation, and employability of mature age workers.

A further important theme to emerge from our analysis was that there is now greater recognition of the value of e-learning as a tool for lifelong learning. This motivation to continue learning appeared to be because their e-learning experience had been positive in terms of building self esteem and confidence and the development of the key employability competence of learning to learn.

C. Personalization

The great time availability that characterizes the elderly along with the absence of spatial and temporal constraints peculiar to asynchronous communication, allow high flexibility in the participation to online learning activities. On the other hand, the elderly, compared to younger persons, need direct personal interaction since they are unfamiliar with technology tools and are emotionally and socially weaker. The necessary technology development itself seems to make some elderly learners feel uncomfortable. The variety of new technology features, services and functionalities may limit rather than stimulate the critical motivation in learners.

The personalization of the technology platform offers the learning organizations a method for enhancing the elderly learners' intimacy through their ICT services, which is, without any doubt, an additional motivation factor for the learner to whom the computer represents a major learning media. The technology providers will be forced to offer both highly sophisticated and at the same time "simple to use" e-learning functionalities. One of the

major solutions to combine these two directions is the personalization of the e-learning technology platform.

D. Life experience contribution

As it happens in adult learning, elders should acknowledge the intrinsic value of the suggested learning path. Learning must be contextualized and close to their own experiences and everyday life. Research result has shown that one of the major differences between elderly and young students is that elderly people bring information and experience that their younger classmates do not have. The background of older persons is varied and remarkable; the richness of their experience should be promoted and enhanced through self-regulated learning to make them feel responsible and autonomous, and through collaborative learning too, to promote knowledge exchange, sharing and construction. To design digital courses to help the elderly students, understanding this motivational gap is paramount.

Life experience has a considerable impact on several layers of elderly learners in ICT. The elderly population is generally characterized by their low level of education. The author strongly believes that typical activities carried out in traditional learning methodologies are not natural for the elderly in ICT learning, whereas they are for younger students.

E. Learner identity

Analysis of research result shows the learner identities which established are initially often very fragile, however if appropriately supported they can become strong, and can be a very important element in peoples' lives. In addressing this point we asked in the survey what brings elderly to learning? Results suggest the following reasons:

1. acquiring knowledge;
2. personal development;
3. helping their community;
4. social networking;
5. diversity;
6. stimulation; and
7. overcoming physical and mental health related problems

The research results also suggest that many elderly learners from the most socially under-represented groups do not have any strong motivation to engage in learning, and this reflects their earlier negative experiences of schooling, and their current social and economic position. Personal life history also plays a key role in the use of ICT as their learning tools. As to the characteristics and with respect to younger participants, the elders need motivations and such factor should be taken into account in course material design, in online activities and learning strategies selection, in group forming and tutoring style to be adopted. Further analysis of the survey results show that two types of status passage emerged as being of particular importance in the processes through which elderly learner re-engage in learning and its application of ICT.

- One impact of personal history on seniors is the effect of positive and negative social relationships established between the elderly people and their younger generation on the motivation and perception of usefulness of ICT. Even though social relationships play both positive and negative roles in aging,

in studies into ICT and the older population they tend to play a more positive role. For instance, grandchildren tend to be an encouraging element for the elderly to go online, as they relish being very close to them. The majority report that the most effective way to communicate with their grandchildren is through FACEBOOK and e-mail. Such intergenerational communication impact could make an effective catalyst to promote ICT in lifelong learning.

- Another impact is the social relationships established between the elderly learner and their social circles. Involvement in community and voluntary activities such as local family centres, community resource centres, which often involve a considerable amount of informal contact, learning and the use of IT, is also important in facilitating the returning to more formal learning. Such involvement increases self-confidence, extends social networks and increases knowledge about other educational provision in the local area.

F. More Emphasis on Knowledge Transfer

To effectively transfer knowledge from older to the next generation, learners will need to use a wide range of practices, including enhanced training and development, and better documentation systems with ICT support. Educationists will need to consider more alternative arrangements, such as flexible hours and ICT system, in order to keep older learners engaged and interested in this critical knowledge transfer. Study programs that provide ongoing development of new skills and knowledge (e.g., computer/PC classes) will be important investments to help ensure older learners feel a sense of challenge and meaning in their study.

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Manuscript received December 9th 2009. Published as resubmitted by the authors May 24th 2010.