Theoretical Approach to Enhance Information Literacy and Lifelong Learning Through Montessori Methodology

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Abstract

This work is a theoretical proposal to apply the strongest points from the Montessori methodology to improve information literacy through lifelong learning. Since lifelong learning includes cognition and skills, information literacy permits the solving of problems as well as effectively communicating and interacting with the environment. This means having abilities and skills that through adequate training permit the acquisition of new knowledge or improving knowledge on any topic, within a formal or informal environment. It also could permit seeking, managing, and comparing information. However, there are some questions that arise with older individuals. Since lifelong learning usually takes place in informal environments, getting resources to learn may be a difficult task. Learning difficulties also involve information abstraction, text comprehension, and technological barriers. Consequently, lifelong learning and information literacy are likely to be affected. The question comes up as to which pedagogical methodology may fit better for lifelong learning and the acquisition of better information literacy skills. Task breakdown, guided repetition, and ordering activities from simple to complex are essential keys in the Montessori methodology, which help not only older people but also children to enhance information literacy as well as assist with lifelong learning.

Keywords: Montessori Method, Information Literacy, Lifelong learning, adult learning, e-learning, MOOC

Introduction

This article highlights that the Montessori methodology can benefit people in information literacy through lifelong learning. Many literature reviews on information literacy and lifelong learning exist. However, the subject of learning methodologies which help training at different ages is rarely studied. Lifelong learning affects a person throughout their life since it affects to its whole working life. Over time, a person's ability to train both in formal and informal environments

decreases. In addition, physiological ability decreases. However, the ability to learn still exists. Thus, it is appropriate to propose a pedagogical methodology to accompany training in later life.

The Montessori model has been chosen for a variety of reasons. It can be observed throughout the scientific literature that the Montessori Method can be applied not only to children in school. In medicine, there are also innumerable cases where it is shown that this method helps people with dementia or Alzheimer's (Lin, Watson, Wu et al., 2011). This indicates that the Montessori learning methodology is applicable in several phases of a person's life. The Montessori Method, in addition to being inclusive, also incorporates learning and improving literacy.

Objective of the theoretical approximation

This article presents the three concepts together. First, it presents the Montessori Method as a pedagogical model. Second, the concept of information literacy is defined as an ability to select and use information. Finally, the lifelong learning concept is described as a need for training at any age.

Bearing in mind the meaning of each of the elements, this article tries to respond to the following questions:

Q1: Is it possible to carry out a theoretical approximation between the Montessori Method and the concept of lifelong learning?

Q2: Is it possible to approach an online training system adapted for age, which includes information literacy and the Montessori Method, and is applicable to lifelong learning?

The Montessori method

The Montessori Method is a pedagogical learning system initiated by Dr. Maria Montessori in Rome in 1900. The methodology is based on a model in which children learn skills and techniques with a teacher as a guide, through a course tailored to each child. There are many aspects of the Montessori methodology that can be emphasized. However, one of the learnings from Montessori classes is that the lessons that are taught should embody the concepts of brevity, simplicity and objectivity. On the other hand, the role of the teacher changes and they become a facilitator–guide when they observe the actions of the children (Gutek, 2004).

In addition, there are several elements – such as self-education multi-age classes, a prepared environment, and the teacher as a guide – that are necessary within the methodology of Montessori at an early age (Haskins, 2010). Fidelity to the Montessori Method is due both to the use of materials and to teachers' training in this methodology. Otherwise, it is difficult to explain the high commitment to this methodology in US schools. (Debs, 2016).

In the Montessori Method, the students experience a learning itinerary adapted for their measurement. This is both for the student's advantage and to cater for students with exclusion risks or students who need special education. This issue of individualization may be included in sections of inclusive education (Debs and Brown, 2017).

Although all of these concepts are applied according to children through the Montessori Method, in an informal and formal learning environment with adults, it should also be possible to create scenarios using these three concepts. Often, adults are not accustomed to studying; they haven't done it in a while or they just don't have enough motivation. This means that with the passage of time and age, traits appear, such as an inability to comprehend abstraction and limited concentration in reading or mental agility, depending on the type of activity.

Starting from the basis that an adult needs training throughout his or her working life, an option would be to consider the design of scenario training, using the help of the three concepts discussed above. It should be considered that in these scenarios a teacher where its main role is working as a guide must be present and that their work should be based on observation, even if this scenario is virtual.

In this circumstance, it would be possible to design learning scenarios, even in real time. The Montessori Method is a constructivist methodology where the student is at the centre of learning and one of the elements emphasized in this learning is science inquiry (Rinke, Gimbel and Haskell, 2012). However, a translation can be made to adult-centred and customized learning, where the adult also controls the learning time.

In the case adults, they have the advantage of training consciousness. In the information society at present, an adult is aware of the process of continuous training, as well as of their need for such training. This need is caused by not only a personal desire for lifelong learning, but also to improve one's work situation. However, one of the drawbacks is a lack of study or reading habits, which may be because of one's own profession. Another drawback is also the time available for training, even if it is online. Often, time spent with family, leisure or hours of work prevent further training.

It can be deduced that in adults, especially those born between 1953 and 1975, there's a technological gap in digital learning, as from 1980 to 1990—when these individuals were already past their prime education years—there was a large expansion in the prevalence of personal computers. In many cases access to information and computer technologies (ICT) was not an affordable option in that decade, or the learning curve was very high. Also, the adoption of information technologies by this generation is very different from that of people born after 1990. Regarding the use of technology, it is described the trends in different types of software. It is explained ways in which technology enables the Montessori Method to be applied to learning.

Thus, the use of the senses while using the software is particularly based in the use of colours; sense perception is one of the aspects also mentioned in the Montessori methodology (Drigas and Gkeka, 2016). On the other hand, adults who decide to pursue lifelong learning are very likely to be unfamiliar with the Montessori Method (Walls, 2018). This may not necessarily influence a person's training, but it can help to improve information literacy.

In early ages, a low or poor literacy can be attributed to several factors, such as a low income (Lloyd et al, 2017). However, it can also occur among adults who have not had a compulsory basic education or who have stopped reading or writing regularly. Also, the fact that they have not experienced training for a long time implies that reading or writing could also worsen any previous level of literacy originally acquired.

A person's motivation for self-training relies on factors such as independence and autonomy. Thus, it has been observed that when pupils of schools have more autonomy, they are more intrinsically motivated. They also possess high levels of independence and trust, and this level of control improves after their academic career (Fraumeni-McBride, 2017).

Other authors have conducted a review of the literature in Medline on the Montessori methodology applied to dementia. Their findings are that, in older people, the Montessori Method is not only a beneficial action, but also complements other non-pharmacological interventions (Soares and Martin, 2012). Other authors also did research on the difficulties and advantages of teaching geometry with an approach to the Montessori Method. Because of that, the authors employed the Montessori Method as an inductive way to determine if participants used Waray, a language spoken in the Philippines, with indigenous terms instead of English (Oyzon et al., 2014).

Nowadays there are many learning opportunities, both online and in-person, it is worth keeping in mind that the figure of the teacher–guide is very different in a classroom environment compared with a virtual environment. In the classroom environment, there is physical contact and the adaptation of specific training itineraries seems to be easier. However, in a virtual environment, adapting technology to the observation method can be performed with actions within a portal, depending on the desired goals.

Information literacy

The issue of defining the concept of information literacy is confusing, as there are many types of literacy. Several concepts of literacy are digital, functional, visual, and cultural literacy, and different definitions of these can be found in the literature (Bawden, 2001). However, in this case it is necessary to connect with a pedagogical model, like the Montessori Method, with the skills that are then generated through

the information literacy organisation. One example involves the selection of information.

On the other hand, a model of information competencies can be designed or redesigned with even better competencies, pairing the type of information literacy with a pedagogical model that supports it. Information literate people are those who have learned how to learn and know how information is organized. Information literacy includes the ability to find information and know how to use it so that others can learn from it (ACRL, 2017). Information literate people are also prepared for lifelong learning because they always find the data they need for each decision they make.

The person who learns requires certain skills and attributes to make learning fruitful (Candy, 2002). Information literacy has many definitions. However, these have many points in common. These points are effective information-seeking, informed choice of information sources, information evaluation and selection, comfort in using a range of media to best advantage, awareness of issues to do with bias and reliability of information, and effectiveness in transmitting information to others (Webber and Johnston, 2000).

However, it is important to differentiate between information literacy and digital literacy. Both are not the same. Regarding digital literacy, the four competencies of digital literacy are the search for information on the Internet, hypertext browsing, knowledge assembly, and content assessment (Bawden, 2008). The rise of the use of smartphones as a tool for everyday use has made it easier for people to have access to information. However, there are still many issues for both adults and younger generations.

Take, for example, the distinction between false news and the truth. It is also necessary to differentiate between the technique of information retrieval from an electronic device and the selection of an appropriate source of information. These are contexts in which, although young people have easy access to information, many are not yet able to discriminate as to the quality of that information. These are aspects that young people have easy access to, although they are not yet able to discriminate in many cases. Therefore, literacy skills need to be improved, regardless of whether the model requires digital or information literacy.

It is more and more necessary not only to own information but also to know how to use it, especially information searched on electronic devices like mobile devices. Dependence on technology to manage information increasingly requires the design of strategies to help improve information literacy.

In a global society, it is important for a learning methodology to be present and to have proved its effect in a given target population. This fact is important because the right information use makes the citizen a knowledge generator in the long term. This

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generation of knowledge should then have a later influence in the economy. If the information is used to innovate and create new products, it thus can produce subsequent economic growth (Catts and Lau, 2008).

Moreover, the great abundance of information in many places, not only on the Internet, produces cross-relationships among the competencies and skills of different literacies. As an example, if a person speaks multiple languages, he or she can search, select, and retrieve in several languages in a totally different way. This leads to interrelationships among information, digital, and cultural literacy.

Lifelong Learning

Lifelong learning arises from the need in a globalized environment to be informed and to adapt to constant change in one's working or personal life. In the future, people who learn will not be bound by any geographical location. In addition, the tools they need for learning should be highly portable, individual and unobtrusive, adaptable, persistent, useful, and intuitive (Sharples, 2000).

Other authors also express the correlation between information literacy and lifelong learning. This means that the better one's training in information literacy, the better use one will make of tools throughout one's life.

One of their research areas of CRELL (Centre for Research and Education for Lifelong Learning) is adult skills and adult learning in lifelong learning. In its report, it is stated that in certain European countries, lifelong learning has relevance for adults in the formation of social trust (Da Costa et al., 2017).

In addition, other factors are considered that also influence lifelong learning, such as educational past, disability, level of income, cultural aspects, and even religion. (Rahanu et al., 2000)

Approximation to the theoretical proposal

Adults today have more and more problems related to information abstraction or retaining information they have learned, understanding texts, or simply accessing new technology. Thus, the selection and design of training itineraries according to age is made more and more necessary. There is also a need for an individualized plan. Participants in online training do not always have the same knowledge or education background. Training for an 18-year-old adult is not the same as for a person of 55 years old who may not have read or written for a long time. In this case, vocational training or training for personal needs is required.

To make a theoretical approximation between the Montessori Method, information literacy and lifelong learning, it will be considered especially progression over time. In an online training environment, access to resources is unlimited because the information is online. However, the time available for training is not unlimited.

That is when concepts of information literacy and the selection of information need to be formed. If the environment is formal, this information will become defined. However, in informal training environments, the selection of information requires previous analysis. This previous analysis depends on the background education.

It seems logical to think that a person who is in a virtual training environment, before starting the course, will perform a pre-knowledge audit of the contents they are going to study. This audit could include issues such as reading capacity measurement, technological ability, abstraction capacity, and other issues that may be affected by age. Depending on the result, training paths suitable for each person's capacities can be created. If we think of a virtual environment within a platform such as a MOOC (Massive Open Online Course), one can perform this audit by signing up to a course.

One of the big problems in a MOOC is the high rate of participant dropout (Belenger and Thornton, 2013). Reasons for this include low interaction with the teacher or participation in an online course purely for entertainment. However, with the proper methodology, the dropout rate can be reduced. In addition, when a training scenario is proposed with formal or informal training online, consideration is often not given to the diversity of the students or their capacity to finish the course.

It is certainly true that the concept of motivation is difficult to measure through a qualitative or quantitative methodology. However, other aspects can be measured, such as the level of prior knowledge or the willingness to acquire new skills. In addition, some MOOCs involve formal training, with starting and ending dates and a teacher in charge of the course. But there also are MOOCs that are offered as educational resources without any teacher in charge.

In this scenario, an audit of prior knowledge makes sense, so that customized learning paths can be assigned according to the capacity of the enrolled student. This can be done with a teacher who acts as a coach according to the Montessori Method or with intelligent analysis software in the case of a MOOC that is presented in the form of an open educational resource. This means that – if applying a Montessori methodology with the concepts of brevity, simplicity and objectivity – a person who is enrolled in a MOOC could take longer to acquire knowledge according to age or could perform the same training at different times. When applying an adult-centred model, the modules could be applied according to actual knowledge.

In case the option is to use knowledge analysis software, the software itself could make determinations according to the results of the audit of prior knowledge. This could define the information literacy level of a person. Adaptation of learning materials should be done according to age. Thus, it is possible to find software that employs themes with different colours, typefaces, or images, each appropriate for different ages of users.

At a conceptual level, modules targeted at young people could become more complex by applying the same concepts to an older age group. Usually, in a MOOC course, there is an intervention by a teacher, because they have specified dates for the completion of milestones. Therefore, the teacher tends to be virtually present in the development of a MOOC.

Conclusions

A theoretical model has been proposed to approximate the Montessori Method for information literacy and lifelong learning. It is certainly true that the Montessori Method is not the only pedagogical method, but it has been tested at different ages with positive results. In future work, the creation of online materials inspired by the Montessori Method will be considered. User testing of educational materials based on the Montessori Method will also be considered, and testing among different population groups will be necessary to consider which kinds of materials can be better adapted to specific targeted students.

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