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RESEARCH ARTICLE

A DIDACTIC PROPOSAL FOR TRANSLATOR TRAINING WITH AN EDUCATIONAL LEARNING THEORY 'CONNECTIVISM': FROM CLOUD COMPUTING TO CLOUD BASED TRANSLATION SYSTEMS

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ABSTRACT

The present research summarizes industrial ages from 1.0 to 5.0. Then, evolutions of cloud computing, types of cloud services such as SaaS, PaaS, IaaS, DBaaS and deployment models of cloud computing is presented in the light of current studies. Organizations and institutions concerned cloud market are enumerated. Cloud based translation systems are mentioned extendedly. Technological transformation from cloud computing to cloud based translation systems has changed the social habits in translation industry. This is a reason why benefits of cloud computing to translation industry are cited. Cloud computing enters the translator's technological environment. Translator training will undoubtedly have to adapt their courses to technological developments. The comparison between traditional cat and cloud translation, the difference between connectivism and connectionism is highlighted. A new type of translation training is integrated with an educational learning theory called "Connectivism" to meet the needs of translators. As technology is shaping translation, the process of translator training should be improved considering technological revolution.

Keywords: cloud computing, learning theory, connectivism, translator training

1. INTRODUCTION

New technologies and technological advances are leading to new concepts and practices in all sectors of industry but especially in translation industry. Cloud computing is one of this, which is considered to be the most predominant information technology. A new technological shift is starting to take place in the translation sector: a translator has new online resources that are easily accessible. Thanks to cloud computing which deploys in business, education, research and government; resources are uncomplicated to obtain and straightforward to use.

The English term "cloud computing" first appeared in the United States in early 2007 with the launch of the first edition of Cloud Expo in New York. The term "cloud computing" was introduced by Google CEO Eric Schmidt. Several terms currently designate this new concept in French : "informatique en nuage", "informatique dans les nuages", "infonuagique" or even "informatique dématérialisée". There are several examples in different languages: "Bulut bilişim" in Turkish, "La computación en la nube" in Spanish, "Nube computing" in Italian, "Computação em nuvem" in Portuguese, "Rechnerwolke" or "Datenwolke" in German. But "cloud computing" is a common term and mainly used by all languages. The word "cloud" is a metaphor for Internet. The reference to clouds comes from the fact that the Internet is often represented in the form of clouds in computer diagrams which illustrate the interconnection of networks, in particular to symbolize the virtual ubiquity.

1.1. Research Questions

How technology affects translation sector? What kind of technologies, cloud services and deployment models of cloud computing exist? How technological transformation from cloud computing to cloud based translation systems has changed the social habits in translation industry? Why a new type of translation training should be integrated with an educational learning theory called "CONNECTIVISM" TO MEET THE NEEDS OF TRANSLATORS?

1.2. Literature Review

1.2.1. Technological revolution from industry 1.0 to 5.0

Technological changes, digital transformation affect industrial ages which have been advanced from day to day. As a consequence, cloud computing affects to a great extent translation industry. Industry 1.0 to 5.0, web 1.0 to 5.0 or technology 1.0 to 5.0 are the commonly used terms. Technology evolves every twentieth year.

With a Web 1.0, mechanical production will replace craftsmanship. In 1960s, technology 1.0 was burst. Within the factories, the machines will be powered by steam engines created by James Watt in 1769. Personal websites are example of web 1.0.

With a Web 2.0, the automotive industry, chemical industry was changed. A mass production of identical products developed in 1980. Cloud computing is an example of Web 2.0.

With a Web 3.0, in the middle of the 20th century, computer technologies and electronics aroused. Robotics came in sight. The production in factories was automated in 2000.

With a Web 4.0, exist in 2020, digital transformation came into view. Personalization of products and services are essential.

With a Web 5.0, that will exist between the years 2020 and 2040, human efficiency and productivity is a main goal that is designed for humans, not robots. But robots' productivity, consistency and speed are combined with creativity of human beings. It is predictable that Web 5.0 will be as intelligent as human brain.

1.2.2. Evolutions of cloud computing

John McCarthy is an artificial intelligence and timesharing pioneer in 1960. Cloud computing plays a widespread role in the translation world. "In the mid-1960s, an American computer scientist named J.C.R. Licklider came up with an idea for an interconnected system of computers. In 1969, Bob Taylor and Larry Roberts develop ARPANET (Advanced Research Projects Agency Network)" (Ecpi Blog, 2020).

In 1970, technology evolved. Virtual machines were first released in 1972 by computer giant IBM. Cloud computing ensures platforms and software necessary in a translation world. In 2006, cloud services were expanded. In 2013, technology grew instantly. In 2020, cloud computing has a high availability.

Furht (2010: 15) states that cloud computing components involve computer hardware, storage, infrastructure, computer software, operating systems and platform virtualization. Dell, HP, IBM, Sun are the computer hardware vendors. Sun, EMC, IBM are the storage vendors. Cisco, Juniper Networks, Brocade Communication are the infrastructure management vendors. 3tera, Eucalyptus, G-Eclipse, Hadoop are the examples of computer softwares. Solaris, AIX, Linux (Red Hat, Ubuntu) are the operating systems. Citrix, VMWare, IBM, Xen, Linux KVM, Microsoft, Sun xVM are the platform virtualization vendors.

Amazon, Apple, Citrix, CA Technologies, Hewlett-Packard, Google, IBM, Microsoft, Oracle, SalesForce, VMWare, SOA are the main forces and big players in cloud technology. Red Hat, Apache, Cloud Foundry, Eucalyptus and Ubuntu, Open Stack, Open Cirrus are the open sources.

1.2.2.1. Types of cloud services

Cloud services are divided into categorizes. There are main delivery models of cloud services: SaaS, PaaS, IaaS, DBaaS.

- ✓ SaaS: "Software as a Service", that is to say the supply of software online; include email systems. At the end user level, SaaS (Software as a Service) corresponds to the use of software accessible via an Internet browser. Google Apps for Education iCloud Apple.
- ✓ PaaS: "Platform as a Service", that is to say the provision of an online application development platform; Google Gears, Google App Engine is an example of PaaS.
- ✓ IaaS: "Infrastructure as a Service", corresponds to the provision of resources by a supplier for various applications (servers, storage spaces, computing systems, software applications, databases. data, etc.). "IaaS still holds the upper hand: IaaS segment makes the cloud model possible" (Rivard, 2012: 33). Amazon EC2, Cloudera, Microsoft Azure are examples of IaaS.
- ✓ DBaaS: "Database as a Service" called relational cloud. "A DBaaS promises to move much of the operational burden of provisioning, configuration, scaling, performance tuning, backup, privacy, and access control from the database users to the service operator, offering lower overall costs to users" (Curino, Carlo et al., 2011: 235). IBM Db2, Amazon Relational Database Service (RDS), Amazon Aurora, Oracle Database Cloud Service are the DBaaS provider.

1.2.2.2. Deployment models of cloud computing

There are several types of cloud solutions: public, private, hybrid, community and federated.

Public cloud: Open access resources that provide services through a network open to the public. Many consumer services such as messaging electronic, online storage and social networks / media are public cloud services.

Private cloud: A private cloud provides the highest level of security and control. Proprietary computer network provided for one organization. For example, a government or a company uses a private cloud.

Hybrid cloud: It is a combination of public and private cloud.

Community clouds: Shared resources/services, provided to a limited group of users, managed and hosted internally or by a third party.

Federated clouds: It refers to managing geographically separate multiple public clouds.

1.2.3. The Cloud Market: Organizations and Institutions

Distributed Management Task Force (DMTF) develops standards of computer systems.

Open Data Center Alliance was founded in 2010, so as to provide standards for cloud computing.

Open Grid Forum (OGF) is formed in 2006 for standardization of grid computing.

Open Cloud Consortium (OCC) provides the standards for cloud computing.

Organization for the advancement of structured information standards (OASIS) was founded in 1993, works on the development of open standards for security.

Open Management Group (OMG) was founded in 1989 for computer industry standards.

Cloud Security Alliance (CSA) was formed in 2008 which provides security assurance within cloud computing.

Storage Networking Industry Association (SNIA) was formed in December 1997 in order to develop standards and education programs.

EuroCloud is an independent non-profit organization where organizations form all European countries can apply to participate in and take an active role in the design of cloud industry standards.

Open Cloud Manifesto proposes rules of open standards for cloud computing.

1.3. Cloud Based Translation Systems

Cloud based translation management systems can be used on a computer, tablet and phone. Its convenience and easy accessibility at all times stands out amongst others. In the past, the license of the translation programs was purchased and installed on a computer. Now, it is replaced by cloud based translation management systems. Developing technology reveals important improvements in translation studies and facilitates the work of the translator. Thus, we can access a translation project anywhere and anytime with an account. Cloud based translation systems necessitate membership information to access a translation project. In other words, the internet connection is sufficient to access these essential systems. It is a collaborative translation platform indeed; data is located on a remote server.

It is an obvious fact that the translation management systems are moved to the virtual (online) environment. Terminology management systems, alignment tools are integrated in computer aided technologies; translation memory systems and computer aided translation tools give place to cloud based translation systems.

The first cloud based translation management system is Lingotek in 2006. Then Memsource Cloud, Nubuto, XTM Cloud, Wordfast Anywhere, Smartcat, Wordbee have started to exist with similar operating system. The microcomputer has given rise to automatic terminology file management systems having some features: ease of input, import facilities, query facilities, user friendliness, structural flexibility and export facilities.

It should be emphasized that most of the terminology bases are integrated in cloud based translation systems and they are stored in several formats. Based on research in the 1950s, terminology files and machine aided translation systems were ambitiously developed to enable computers to translate texts. Machine translation has spawned machine aided translation (MAT) systems which can be useful for certain applications.

With a machine aided terminological research, any terminologist must completely master all aspects of traditional methods: identifying terms, determining the constituents of complex terms, and deciding what

context should be cited to bring out semantically relevant descriptors. Computers can't substitute for these basic abilities.

Table 3.1. The Comparison Between Traditional Cat and Cloud Translation

Item compared	**Traditional CAT**	**Cloud Translation**
Pre translation	Artificial random arrangement of translators, manual preparation terminology database	Automatic preparation of translators, corpus and terminology
Task management	Manually assign tasks to translators, the translation task management are done by Email and telephone	Effective implementation of translation process management online
Content requirements	Ordinary	Good
Cost and quality	Hire professional translators, making the translation costs too high	Through continuous learning, the cloud platform will improve the quality of translation, and compress the costs

As mentioned above, Table 3.1. "shows some differences between the traditional CAT and cloud translation through translation technology and translation environment" (Ren, 2015: 334). Pre translation, task management, content requirements, cost and quality are the items compared. According to Ren (2015), cloud translation ensures and improves the translation quality, decreases translation costs in comparison with a traditional computer aided translation. Cloud management components are the followings: automation and orchestration, security, cost management, performance monitoring, governance and compliance.

Traditional computer aided translation is static and manual however; cloud translation is dynamic and automated. Traditional computer aided translation has a real working environment but, cloud translation involves virtualization of the working environment. Traditional computer aided translation can be purchased however; cloud translation is rental; you can subscribe with pay-per-use. Traditional one necessitates solo work with static resources while cloud translation entails collaborative community with dynamic resources. Traditional one comprises ad hoc accessibility, cloud translation includes real-time accessibility. Traditional one requires to installation on a single physical computer, cloud translation don't require installation and you can access via any computer connected to the Internet.

Software as a service (SaaS) designate software that is offered as a service only accessible through Internet. Robert (2011: 16-17) reveals the following nine software services having different features. These cloud based translation tools are suggestible for future translators, they propose a complete professional working environment with a project management, terminology, computer aided translation, automatic revision and pre-translation functionalities.

ByteTranslation (Italy): Product: Boltran - Target audience: occasional translators - Functionality: translation memory (compatibility with the. tmx format) - Special feature: free software – Free.

Crowdin (Ukraine): Product: Crowdin - Target audience: locators - Features: CAT with translation memories, flow management and collaborative tools - Particularity: intended for the localization of software interfaces and Web interfaces intended for mobile telephony – Free.

Google (United States): Product: Google Translator Toolkit - Target audience: amateur translators - Features: shared public translation memory or creation of a translation memory not shared or shared only with guest users (with the possibility of import a memory in. tmx format), terminology databases, instant messaging and systematic automatic pre-translation with Google Translate – Free.

GlobalSight Collaborate to Innovate (United States): Platform: GlobalSight - Target audience: translation and localization agencies, independent software publishers, translators and companies - Objectives: community for the collaborative development of a management system flexible and free translation (open source) - Paid: monthly.

Lingotek (United States): Product: Lingotek - Target audience: translation agencies and companies - Features: collaborative translation platform with public translation memory, terminology databases, project management and automatic pre-translation with Google Translate and Microsoft Bing - Paid: monthly.

GeoWorkz (United States): Product: Translation Workspace - Target audience: translators, translation agencies and companies - Features: CAT with project management, conversion, translation memories, terminology databases, revision, and quality assurance - Special feature: hybrid system with centralization of tools accessible only online (translation memories, terminology databases, etc.) and installation of tools on

your computer (specific toolbar in Word, XLIFF Editor software for load of tagged files, etc.) - Paid: monthly, with different rates depending on the number of words threshold chosen.

Wordbee (Luxembourg): Product: Wordbee Translator (a Freelance version and a Team version) - Target audience: translators, translation agencies and companies - Features: CAT with translation memories, project management, terminology databases, revision, collaborative tools and possibility of automatic pre-translation with Google Translate - Paying: semester or year.

Wordfast LLC (France): Product: Wordfast Anywhere - Target audience: translators - Functionalities: CAT with translation memories and terminology databases; optional public translation memory and automatic pre-translation – Free.

XTM International (United Kingdom): Product: XTM Cloud (three versions Freelance, Small Group and LSP) - Target audience: translators and translation agencies - Features: CAT with translation memories, terminology databases and flow management - Paid: monthly, with different prices depending on the number of words threshold chosen.

Every new technology can have both advantages and disadvantages. It is an indispensable fact that there are numerous advantages, which are highlighted and disadvantages which are overshadowed, of cloud computing for translators. Its advantages are the followings: scalability, reliability, sustainability, geographic location, device-location independent, security, accessibility, tools management, cost effectiveness, speed to manage huge data in a minute, 24x7 support.

Cloud computing is a safe and accurate system, increases system quality. In addition, the explosion of data created by the new digital marketplace pushes the limits of cost and complexity of the data centre. There is no need to send the files to be translated to students by e-mail, then to get the translations back by e-mail. When you allow the student to translate the files, they can see and translate them. The teachers can see how many have been translated, and can provide feedback on the system.

Wherever you have internet, you can translate whatever device you have (tablet, phone, computer etc.), you don't need an external hard drives. Not every cloud system wants money for membership, but those who want it also want very small numbers. It frees the translator from being tied to the desk and provides freedom as a venue. The project is translated on the web page using an internet browser. This innovation brings many conveniences to those who teach and learn translation.

You can do team work. You can easily chat with your translation team on the system, monitor the progress of the translation instantly, and comment and correct the translation. Even if the translator does not take part, she/he can enter an active project and examine the translators' translations. This is also useful for translation students. In addition to translation, you can manage your translation projects and other translators.

Requiring an internet connection is a major disadvantage of these systems as they require high speed network. Local time difference may create disadvantages in teamwork. Collaborative aspect of a system can turn into a disadvantage. Since the projects are presented to all translators in the relevant language pair at the same time, they have to make quick translations in order to compete with other translators. Confidentiality of information is unknown in cloud based translation systems.

Despite these systems' disadvantages, their advantages are predominant. Cloud systems are secured; translations are always stored on the cloud system. It gives a technical support from technical experts in case of necessity. This system provides a convenience for translators and makes the process easy and fast. Update is done automatically in cloud management systems. Lower cost, optimization, security are the main advantages. User no longer has to buy or install software. It is easy to learn to use these systems through webinars or videos.

1.4. Towards A New Type Of Translation Training With An Educational Learning Theory "Connectivism"

Cloud computing enters the translator's technological environment. Translator training will undoubtedly have to adapt their courses to technological developments such as cloud based translation systems.

Canım (2017: 74) suggests that "conscious users could test new technologies critically, learn from other users' experiences and related scientific studies, and share their ideas and experiences about new technologies on various platforms". According to Céspedes, educators' responsibility is "to ensure that students are equipped with a sound academic knowledge that includes linguistic, cross cultural and

translation skills where technology is increasingly taking a centre stage" (2019: 105). It is an obvious fact that technology is indispensable for translators.

Translator training should support networking, collaborative work and the use of new dynamic functions. Because translators' new working environment will be a non-virtual reality.

"these strategies are "labelled" accordingly by translation scholars and they are used in the classroom to assess the level of equivalence between source and target texts: literal versus dynamic translation (Nida), semantic versus communicative (Newmark) literal versus idiomatic (Hervey/Higgins), foreignizing versus domesticating (Venuti). (…) functionalism and skopos theory (Reiss/Vermeer) brought professional practices closer to the curriculum by introducing the translator's brief and commission: what the purpose of the ST and TT? (motive) Who is it for? (audience) Where is the TT going to be published? (medium) etc. (Céspedes, 2019: 109-110).

Connectivism is a recent educational learning theory that has been proposed by George Siemens and Stephene Downs. Connectivism is similar to neo-constructivism developed by Lev Vygotsky. Because it concerns the new sciences and technologies of information. "The first point of connectivism is the individual. Personal knowledge consists of a system of networks, which supplies an organization, which in turn gives back to the system." (Duke, Harper, Johnstoni, 2013: 6). Google Docs, Twitter, Facebook are the technological tools associated with connectivism theory. Connectivism is about "the process of knowledge formation, a process which itself involves participants in networks coming together to discuss and develop their ideas" (Stevens, 2014: 151). Motivation, influence, creation of schemes, logic, experience are the factors of learning effectiveness.

Since it is impossible to experience everything, the learner can share and learn through collaboration. Second, the sheer amount of data available makes it impossible for a learner to know all that is needed to critically examine specific situations. Being able to tap into huge databases of knowledge in an instant empowers a learner to seek further knowledge. Such a capacity to acquire knowledge can facilitate research and assist in interpreting patterns. Third, explaining learning by means of traditional learning theories is severely limited by the rapid change brought about by technology. Connectivism is defined as actionable knowledge, where an understanding of where to find knowledge may be more important than answering how or what that knowledge encompasses (Duke, Harper, Johnstoni, 2013: 7).

Connectivism should not be confused with connectionism which is an approach used in cognitive science, neuroscience, psychology and philosophy of mind. Connectionism is about the process of making sense of information by establishing connections on networks. In connectivism, learning is considered as a process of developing networks. In other words, "know-how" and "know-what" are supplemented by "know-where" and the meta-learning is significant. "Connectivism, on the other hand, is not related to computer science research or theory; there are no theoretical, methodological or empirical associations between connectivism and connectionism" (Harasim, 2017: 87). In the connectionist approach, instead of transferring information, learners have direct contact with the source of information through networks. The transfer of knowledge from teacher to learner cannot be achieved, but participation is important, and that information may be formed as a result of active interaction of individuals with learning resources. It is important to sum up that connectivist teaching and learning as follows: Teaching is modelling and demonstrating, learning is practicing and reflecting. "Connectivism, outlines four foundations for learning, which include autonomy, connectedness, diversity, and openness" (Corbett, Spinello, 2020: 3).

Georges Siemens has proposed several connectivist practices for teachers on his blog. He advises to create blogs for the class; to use collaborative work for collaborative learning; to develop secure environments to create a more reassuring environment for students, to combine the experiences of students from various years; to experiment with various tools and approaches, to use existing and diversified educational resources such as videos, podcasts, interviews, games; to guide students towards lectures, videoconferences, online conferences, podcasts; to increase the pool of resources, for example arranging an email interview with some theorists and posting it on his blog; to improve students' capacities to participate in networks, and meta-skills such as verifying the authenticity of information; to encourage them to develop conceptual skills.

According to Siemens, current theories of learning do not take into account the development of new knowledge. Connectivism and network learning are based on a continuous expansion of knowledge and each new connection gives access to new knowledge. The strength of the bonds and the level of interaction determine the magnitude of learning. Autonomous, self-directed, and self-managed connective learners on networks create their own learning environment according to their learning needs. For George Siemens,

connectivism is the sum of principles derived from the theory of chaos, networks, self-organization and complexity.

Siemens (2005: 5-6) identifies eight core principles of connectivism:

- ✓ Learning and knowledge rests in diversity of opinions.
- ✓ Learning is a process of connecting specialized nodes or information sources.
- ✓ Learning may reside in non-human appliances.
- ✓ Capacity to know more is more critical than what is currently known.
- ✓ Nurturing and maintaining connections is needed to facilitate continual learning.
- ✓ Ability to see connections between fields, ideas, and concepts is a core skill.
- ✓ Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
- ✓ Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

With a cloud based translation management system, an educator creates a realistic environment that resembles real translation agencies, redress the balance between learners and learning content protecting learner's freedom. Educator is an observer in a connectivist environment, specific approaches are chosen to attract learners notice. Educator is at the centre of connectivism theory because educator is the person who assists learners for connecting and creating learning networks, guides a learning environment to encourage and motive learners to explore knowledge personally, prepares a learner designed program of study to support autonomy of learners, puts forward numerous learning opportunities, teaches critical ideas, concepts to raise the consciousness, creates an environment where learners create, explore and connect a knowledge instead of informing from the educator, sustains learners to think critically in order to evaluate knowledge and develop competence. Educator brings into existence peer-to-peer learning so as to learners finds out from each other and pay attention to educator's suggestions.

"In addition to being used to design and develop learning opportunities, as seen in a number of connectivism, as a theory, offers proponents an explanation for the results being observed. These explanations appealed to specific phenomena – the utility of social networks, increased student motivation, the development of deep learning – and traced them back to features of connectivism, such as interaction, autonomy, or network effects" (Downes, 2020: 124).

In connectivism theory, learners find and share new information and learning experiences via network. They develop their skills to distinguish an information or to connect different fields and concepts. In connectivist environment, knowledge is created and peer education is supported. Furthermore, connectivism sustains intellectual development of learners. With a connectivism, learners hold the nature and levels of communication, state the content of the learning. Learners should make decisions from acquired information within the connectivist learning process.

2. CONCLUSION

In conclusion, this research deliberates the adventure of a cloud computing insisting on industrial ages. Technological transformation from cloud computing to cloud based translation systems has received wide attention and these innovations continue to evolve. Technology is shaping translation.

Translators should follow the advancements in technology. This research integrates translator training with an educational theory called connectivism. In a connectivist environment, knowledge is created and peer education is supported, an educator creates learning construction, learners' intellectual development is encouraged by connectivism theory.

Translators need to use modern technologies such as cloud based translation management tools in order to develop their skills. Thus, process of translator training should be improved. Universities are not yet aware of the challenges posed by cloud computing and therefore universities are increasingly finding themselves in competition with the emerging powers of the Internet in order to protect them from any external threat like a pandemic. Cloud computing, which is gradually arriving in the translation industry and starting to mobilize professional practices, is synonymous with simplification, scalability, pooling, productivity and efficiency. A

community cloud infrastructure should be established with interoperable standards for the purpose of connecting students, professional associations, employers and public authorities.

Consequently, cloud based translation systems' collaborative aspect resembles a connectivism because these systems and connectivist theory relieve translators to find out via network. This is why, it is an obvious fact that cloud based translation systems are considered as a lifelong learning tools. Besides, connectivism might contribute to collaborative translation.

It is true that cloud computing is growing substantially and will continue to progress eventually. However, it is impossible to predict the future of cloud translation next years because time passes more rapidly and technology evolves on a large scale. However, it is predictable that translation sector needs a technology awareness in all kinds of difficult situations, and translators able to adapt to all conditions.

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