
MONOCHRONIC VS. POLYCHRONIC: A PROFILE OF ACADEMIC TIME USE AMONG ONLINE DISTANCE EDUCATION STUDENTS

*Ana Maria Neves, Lina Morgado, Laboratory of Distance Education and eLearning,
Universidade Aberta, Portugal*

Abstract

The results presented are part of a doctoral thesis which is being finalized. The research is centred on the online distance learning student experience in higher education, considering the variable time management, its relationship with technologies, and the virtualization of teaching and learning. Exploratory in nature, the research takes the form of a case study using a mixed methodology. One of the main objectives of the study is to contribute to the construction of a theoretical framework on the distance learning student time variable. We present a profile of academic time use by e-students (monochronic or polychronic) and suggest an intermediate profile. The conclusions point out that the profile of academic time use varies according to the degree of the course attended. It was found that undergraduate students show a more polychronic profile than masters and doctoral students.

Keywords: distance education students, virtual time, monochronicity, polychronicity

Introduction

In the traditional university (face-to-face), students are expected to arrive at the classroom at the indicated time and occupy a place in the physical space. There is a predetermined time for teaching and there is generally a tolerance for delays, after which time the student is often prevented from entering. This is the experience of chronological time in Western societies in general. The internet appears as a disruptive technology. Studying online in distance learning settings means living in a new dimension, a new way of inhabiting time and space. The virtual time that results from the digitalization of societies is, at the same time, ephemeral, synchronous and asynchronous, present and future (Duncheon & Tierney, 2013); it is timeless time, without sequence, undifferentiated and eternal (Castells, 2005). Virtual reality represents the clearest example of disruption, insofar as it allows us to simulate and evaluate the consequences of a particular action in a time that does not yet

exist, enabling the correction of a predictable reality, tested in the virtual dimension (Lee & Whitney, 2002).

With regard to online distance education, Duchéon and Tierney, interviewed by Cottier and Lanéelle (2016) identify changes inflicted by virtual time: the limits of space and time have disappeared – learning takes place in a virtual class, where colleagues, teachers and content are potentially available anytime, anywhere; time flexibility has been expanded – activities and schedules can be organized according to individual availability and asynchrony favours international classes and classes in which geography and time zones are not limitations; the pace is faster and multitasking is favoured.

Online Academic Time

In an increasingly fast-paced society, time is a capital resource and a critical success factor, so much so that the skills related to the ability to manage time are already considered key competences of the 21st century (Langa, 2013). Time is a unidirectional and irreversible resource; it cannot be stored for consumption in periods of grace. When time is not well managed, it is lost and cannot be replaced (Langa, 2013). In other words, time is the only resource that runs out doing absolutely nothing.

Despite all the changes stimulated by technologies, most organizations continue to govern themselves with chronological time as their reference point. The distance students are faced with the need to change their view between contexts, depending on whether they are working in a chronological logic of organization or in a logic of virtual organization (Duchéon & Tierney in Cottier & Lanéelle, 2016). For example, when the distance students have a certain deadline to meet, they are faced with a chronological logic of organization. However, when faced with an asynchronous activity that will be performed in a team, they may have to organize themselves according to a logic of virtual organization in negotiation with their colleagues.

Difficulties in time management are one of the main regrets of online distance learning students, who report struggling with too many tasks related to their academic life and which they have difficulty reconciling with family support and professional activities (Sánchez-Elvira Panigua & González Brignardello, 2014). Several studies indicate that distance students show a high deficit of organization and planning of their time, which leads to great anxiety and stress in the period before the assessment tests (Langa, 2013; MacCann, Forgarty, & Roberts, 2012; Sánchez-Elvira Panigua & González Brignardello, 2014) and can result in withdrawal and retention. However, time management skills are not independent of personality and, as such, can be trained, a need that is increasingly pressing as teaching virtualization grows (MacCann, Forgarty, & Roberts, 2012; Nadinloyi

Monochronic vs. Polychronic: A Profile of Academic Time use Among Online Distance Education Students

et al., 2013). Reinforcing this position, the recent studies by Heo and Han (2018) point to a negative correlation between the high stress levels of online students and the predisposition for autonomous and self-directed learning.

Although the difficulties of time management are identified in all students, women perceive and use time in a different way when compared to men. Often it is women who most indicate that academic responsibilities take them away from family and childcare, often feeling guilty for the time they are no longer able to devote to the family (Stone & O’Shea, 2013; 2019).

The Use of Time: Monochronic and Polychronic

The way we perceive time, the way we organize our agendas and set priorities is closely linked to the context in which we were born and educated (Hall, 1959; Hall & Hall, 1990). Hence, the tendency for Northern Europeans, for example, to have a more monochronic profile than Africans, Arabs or Latin Americans (Fulmer et al., 2014).

Table 1: Characteristics of monochronic and polychronic people

Monochronic individuals	Polychronic individuals
Do one thing at a time	Do many things at once
Concentrate on the job	Are highly distractible and subject to interruptions
Take time commitments (deadlines, schedules) seriously	Consider time commitments an objective to be achieved, if possible
Are low-context and need information	Are high-context and already have information
Are committed to the job	Are committed to people and human relationships
Adhere religiously to plans	Change plans often and easily
Are concerned about not disturbing others, follow rules of privacy and consideration	Are more concerned with those who are closely related (family, friends, close business associates) than with privacy
Show great respect for private property, seldom borrow or lend	Borrow or lend things often and easily
Emphasize promptness	Base promptness on the relationship
Are accustomed to short-term relationships	Have strong tendency to build lifetime relationships

Based on Hall and Hall (1990, pp.15)

Although we cannot talk about people who are totally monochronic or totally polychronic, we can talk about profiles of time use that tend to be either monochronic or polychronic (Kaufman, Lane, & Lindquist, 1991). People who prefer a more monochronic use of time tend to do one task at a time, applying a high level of concentration to the development of the task, have difficulties in managing interruptions, and stick to their plans and schedules scrupulously. On the other hand, people who make use of time in a polychronic way are able to perform several tasks simultaneously and have no difficulty in changing their plans and agendas if necessary. The studies by Kaufman, Lane, and Lindquist (1991) conclude that there is no direct relationship between a more polychronic use of time and the variables age, sex, marital status or income. However, the authors conclude that individuals with higher levels of education and those who work more than 40 hours a week, as well as individuals who are linked to associative activities, tend to make a more polychronic use of time.

Monochronic vs. Polychronic: A Profile of Academic Time use Among Online Distance Education Students

However, in view of the emergence of the virtual time dimension, several authors have been exploring the perception, use and management of time in the online space by online distance learners (Barberà & Reimann, 2013; Capdeferro, Romero & Barberà; 2014; Stone & O'Shea, 2019). Studies indicate that women who attend online courses have a more polychronic profile in terms of the use of time (Stone & O'Shea, 2019). In the authors' opinion, the greater burden of responsibilities in terms of family management that has to be reconciled with professional and academic responsibilities is decisive in the use of more polychronic time and in multitasking (for example, cooking while studying).

Assuming the definitions of monochrony and polychrony proposed by Bluedorn, Kaufman, and Lane (1992), Hall (1959), Hall and Hall (1990), Kaufman and Lane (1992) and Kaufman, Lane, and Lindquist (1991), and adapting them to the context of the online student, we understand that a student who has the ability to perform various tasks at the same time (for example, typing on the computer while talking on the phone or watching a videoconference), and who values interpersonal relationships and interaction with classmates more, to the detriment of strict compliance with the temporal and timed order of an agenda or commitment, will tend to have a more polychronic profile. On the other hand, students who tend to be monochronic have an extremely organized attitude, plan their commitments in advance and focus on performing one task at a time, tending not to deepen affective relationships with colleagues or the class as a whole. An online distance student with these characteristics tends to prefer a well-structured activity calendar with a defined time allocated to each task (Capdeferro, Romero, & Barberà; 2014). In this context, there is a high probability that a monochronic student will experience difficulties in adapting to a poorly structured course, of a socio-constructivist nature, and controlled by the student. Likewise, students from a predominantly monochronic social and cultural reality may find it difficult to adapt to eLearning (Martinak, 2012). The flexibility of time, pace and place, which could be considered an asset, if not well managed, can degenerate into procrastination and, ultimately, lead to drop out. Therefore, a good student reception system, the support of peers and the guidance of teachers and tutors are essential (Barberà & Reimann, 2013; Capdeferro, Romero, & Barberà, 2014; Carreras & Valax, 2010; Miertschin, Goodson, & Stewart, 2015).

Methodological Approach

Our research has an exploratory nature and takes the form of a case study which uses a mixed methodology of data collection and analysis. The participants in the study are online distance students at the Portuguese distance learning university which pedagogical model is based in asynchrony (Pereira et al., 2008). We resort to document analysis, collection and

analysis of online distance students' narratives, surveys and interviews, using intermethod triangulation based on qualitative and quantitative methods.

The survey was designed according to the research objectives and questions, taking into account the categories arising from the literature review, document analysis and analysis of the narratives. Aware of the importance of retaining respondents, we opted for the construction of a survey consisting of closed questions and alternative answers classified on a Likert scale of frequency or agreement. The question order was also designed with the aim of avoiding tiredness and maintaining the respondents' interest, avoiding a mounting effort curve. Ethical issues were assessed and ensured by the Ethics Committee of LE@D (Laboratory of Distance Education and eLearning), the research centre that hosted the present investigation, and the survey was validated by statistical experts.

For the treatment and statistical analysis, we used the SPSS software, version 25. In the treatment of the data presented in this article, the following procedures and statistical tests were performed: adjustment test, to test the proportion of the sample in relation to the universe; Pearson's Chi-Square test (χ^2); and Cronbach's alpha coefficient.

Results

Sample characterization

The data collected in the survey allows us to present the general profile of the distance students in our sample (N = 212): 55.7% of the respondents are women and 44.3% are men; the most represented age group is 41-50 (41%) and the average age is 43.2. 64.6% of respondents have dependent children or adults. As for nationality, 87.7% are Portuguese, followed by Brazilians (6.6%), Cape Verdeans (2.4%) and Mozambicans (1.9%). Other nationalities represent less than 1% of the sample. Portugal is the country of residence of 78.8% of respondents. In spite of a high percentage of students who have a professional activity (93.9%), 66.5% of respondents attend higher education full time. As for the degree attended, 55.2% are undergraduate students, 37.7% Master's students, and 7.1% PhD students.

The sample is representative of the public at a mature age who seek to realize in the online university the opportunities they have not had in the past due to professional, financial or family options. The most expressive data of this reality are the 39.3% of students who enrolled in an online degree via the skills recognition program for people over 23. In addition, 25.6% of the students entered due to a change of institution or course, and 20.5% entered after completing 12 years of schooling, often after dozens of years without studying.

Monochronic vs. Polychronic: A Profile of Academic Time use Among Online Distance Education Students

Profile of online distance students' time use: monochronic or polychronic?

In order to verify the profile of academic time use of the students in our sample, we defined 13 items in the survey whose scores would allow us to assess a more monochronic or a more polychronic profile, considering a Likert scale of five levels. Calculating the Cronbach's Alpha coefficient, a good internal consistency was found among the 13 items (Cronbach's Alpha = 0.849) (Table 2).

Table 2: Cronbach's Alpha coefficient – Time Use Profile: Monochronic or Polychronic

	Scale Mean if item Deleted	Scale Variance if item Deleted	Corrected item total Correlation	Cronbach's Alpha if item Deleted
14.4. The online course helps my self-discipline	40,50	74,772	,367	,846
15.4. I follow my schedule strictly	41,33	72,402	,496	,839
15.6. I focus on a task at a time	41,13	74,292	,333	,848
15.7. I do the academic tasks according to what is defined in the curricular units schedule	40,84	70,676	,543	,835
15.8. Whenever I can, I use my daily commute (to and from work, for example) to study.	42,02	69,336	,411	,847
16.1. I plan my tasks daily.	41,42	68,310	,551	,835
16.2. I plan my tasks weekly.	41,10	67,066	,633	,829
16.3. I plan my tasks monthly.	41,62	69,374	,488	,839
16.4. I differentiate between urgent and important tasks.	40,45	70,571	,604	,832
16.5. I easily refuse leisure activities if they interfere with my academic plans.	40,88	70,080	,579	,833
16.6. I opt for the dedication to academic work instead of hobbies, social life or leisure.	40,94	69,191	,618	,831
16.7. I access the curricular units in the online platform daily.	40,68	71,527	,446	,842
16.8. I plan my off days to recover what I haven't managed to do during my working days.	40,58	69,979	,538	,836
N = 212	Nº itens: 13		Cronbach's Alpha = 0,849	

Observing and analysing the variation in responses, we found that 25% of the respondents rated the 13 items at the lowest levels, between 1.46 and 2.92, and these are the students we can consider to have a more pronounced polychronic time use profile. On the other hand, the students who classified the items between the values 3.98 and 4.92 are those with a more monochronic time use profile (Table 3).

Table 3: Extremes and Quartiles Diagram – Time Use Profile: Monochronic or Polychronic

	Percentiles						
	5	10	25	50	75	90	95
Weighted Average monochronic / polychronic	2,2808	2,5385	2,9231	3,4231	3,9808	4,3077	4,4615
Tukey's Hinges monochronic / polychronic			2,9231	3,4231	3,9615		

Considering that there are no people who always behave in a polychronic or in a monochronic way in all situations (Kaufman, Lane, & Lindquist, 1991), we have surpassed a purely interpretative view of the data and considered an intermediate profile between the monochronic and the polychronic styles. Thus, students with a mixed or intermediate profile are those who rate items between 2.92 and 3.98. At the extremes, we considered the profile to be more pronounced: below 2.92 students with a tendency for a monochronic use of time and above 3.98 students with a tendency for a polychronic use of time. Checking

Monochronic vs. Polychronic: A Profile of Academic Time use Among Online Distance Education Students

the percentages recorded in each of the styles (monochronic, intermediate and polychronic), we conclude that the highest average is obtained by the intermediate profile recorded in 47.2% of the sample. The remaining 52.8% are distributed by the monochronic (27.8%) and the polychronic (25%) profiles (Table 4).

Table 4: Time use profile: Monochronic or Polychronic

	Frequency	Valid %	Cumulative %
Polychronic	59	27,8	27,8
Intermediate	100	47,2	75,0
Monochronic	53	25,0	100,0
Total	212	100,0	100,0

Our research results allowed us to conclude that the time use profile varies according to the degree of the course that students take ($\chi^2_{(4)} = 9.821$; $p = 0.042$). Undergraduate students are those who show a more polychronic time use profile (34.2%) compared to master students (23.8%). PhD students are the ones who most show an intermediate profile between monochrony and polychrony (66.7%), and none of them obtained answers associated with polychronic behaviours regarding the use of academic time (Table 5).

When we cross the time use variables with the gender variable, we find that men (30.9%) tend to be more polychronic in terms of academic activities than women (25.4%); however, the observed differences are not significant ($\chi^2_{(2)} = 2.214$; $p = 0.339$) (Table 6).

Table 5: Course | Time use profile: Monochronic or Polychronic

			Polychronic	Intermediate	Monochronic	Total
Course Type	Graduation	fr	40	53	24	117
		% Course type	34,2%	45,3%	20,5%	100,0%
	Master	fr	19	37	24	80
		% Course type	23,8%	46,3%	30,0%	100,0%
PhD	fr	0	10	5	15	
	% Course type	0,0%	66,7%	33,3%	100,0%	
Total		fr	59	100	53	212
		% Course type	27,8%	47,2%	25,0%	100,0%

Pearson Chi-Square $\chi^2_{(4)} = 9.821$; $p = 0.042$

Table 6: Sex/Gender | Time use profile: Monochronic or Polychronic

			Polychronic	Intermediate	Monochronic	Total
Gender	Female	fr	30	54	34	118
		%	25,4%	45,8%	28,8%	100,0%
	Male	fr	29	46	19	94
		%	30,9%	48,9%	20,2%	100,0%
Total		fr	59	100	53	212
		%	27,8%	47,2%	25,0%	100,0%

Pearson Chi-Square $\chi^2_{(2)} = 2.214$; $p = 0.339$

Considering that no significant differences were found in the use of time between men and women, our results are in agreement with the studies by Kaufman, Lane, and Lindquist (1991), who did not find an unequivocal relationship between the sex variables and a more polychronic profile. Still, we highlight the recent studies by Stone and O'Shea (2019),

which point to a more polychronic profile among women who study online. According to the authors, this trend arises as a result of a greater burden of domestic chores and family care among women, which requires a greater management effort to reconcile family, work and university.

Summary and Conclusions

The data indicate that undergraduate distance students tend to place less value on the temporal order of online course activities by committing themselves to several tasks at the same time, as opposed to master and doctoral students who tend to prefer more structured activities, with a time frame allocated to each of them.

The trend towards personalization of learning environments, virtualization and the internationalization of universities, which has been stimulated in the past decade, was unexpectedly and globally precipitated with the advent of Covid-19. The current reality justifies more than ever the development of research with the purpose of creating an evaluation scale of the profile of academic time use exclusively for online distance learning students, as well as understanding which profiles of time use are best adapt to the demands of teaching and learning online.

References

- Barberà, E., & Reimann, P. (2013). *Assessment and Evaluation of Time factors in Online Teaching and Learning*. Hershey: Igi Global.
- Bluedorn, A., Kaufman, C., & Lane, P. (1992). How many things do you like to do at once? An introduction to monochronic and polychronic time. *Academy of Management Executive*, 6(4), 17-26. doi:10.2307/4165091
- Capdeferro, N., Romero, M., & Barberà, E. (2014). Polychronicity: review of the literature and new configuration for the study of his hidden dimension of online learning. *Distance Education*, 35(3), 294-310. doi:10.1080/01587919.2015.955249
- Carreras, O., & Valax, M. F. (2010). Temporal structure and flexibility in distance work and learning. *eLC Research Paper series*, 1, 61-70. Barcelona: eLearn Center. UOC. hal-01628387f
- Castells, M. (2005). *A Sociedade em Rede. A Era da Informação: Economia, Sociedade e Cultura* (Vol. 1, 2nd ed.). Lisboa: Fundação Calouste Gulbenkian
- Cottier, P., & Lanéelle, X. (2016). Introduction au numéro thématique «Enseignement et formation en regime numérique: nouveaux rythmes, Nouvelles temporalités?» *DMS/DMK Distances et mediations des savoirs. Distance and Mediation of Knowledge [Online]*, 16. Retrieved from <https://journals.openedition.org/dms/1638>

Monochronic vs. Polychronic: A Profile of Academic Time use Among Online Distance Education Students

- Ducheon, J. C., & Tierney, W. G. (2013). Changing Conceptions of Time: Implications for Educational Research and Practice. *Review of Educational Research*, 83, 236-272. doi:10.3102/0034654313478492
- Fulmer, C. A., Crosby, B., & Gelfand, M. J. (2014). Cross-cultural perspectives on time. Time and Work. In A. J. Shipp & Y. Fried (Eds.), *Time and Work, Volume 2: How time impacts groups, organizations and methodological choices* (pp. 53-75). London: Psychology Press. doi:10.4324/9781315798370
- Hall, E. (1959). *The Silent Language*. New York: Doubleday & Company, Inc.
- Hall, E., & Hall, M. (1990). *Understanding Cultural Differences. German, French and Americans*. London: Intercultural Press.
- Heo, J., & Han, S. (2018). Effects of motivation, academic stress and age in predicting self-directed learning readiness (SDLR): Focused on online college students. *Education and Information Technologies*, 23(1), 61-71. doi:10.1007/s10639-017-9585-2
- Kaufman, C. F., Lane, P. M., & Lindquist, J. D. (1991). Exploring more than 24 hours a day: A preliminary investigation of polychronic time use. *Journal of Consumer Research*, 18(3), 392-401. doi:10.1086/209268
- Langa, C. (2013). Management of time resources for learning through individual study in higher education. *Procedia – Social and Behavioral Sciences*, 76, 13-18. doi:10.1016/j.sbspro.2013.04.065
- Lee, H., & Whitley, E. A. (2002). Time and Information Technology: Temporal Impacts on Individuals, Organizations and Society. *The Information Society*, 18(4), 235-240. doi:10.1080/01972240290075084
- MacCann, C., Forgarty, G., & Roberts, R. (2012). Strategies for success in education: Time management is more important for part-time than full-time community college students. *Learning and Individual Differences*, 22(5), 618-623. doi:10.1016/j.lindif.2011.09.015
- Martinak, M. L. (2012). Virtually Stress Free: Keeping Online Graduate Management Students Healthy From Afar. *The Journal of Continuing Higher Education*, 60(3), 165-174. doi:10.1080/07377363.2013.722419
- Miertschin, S., Goodson, C., & Stewart, B. (2016). Time Management Skills and Student Performance in Online Courses. *The ASEE Computers in Education (COeD) Journal*, 7(2), 37. Retrieved from <http://aseecoed.org/index.php/coed/article/view/236>

- Nadinloyi, K., Hajloo, N., Garamaleki, N., & Sadeghi, H. (2013). The Study Efficacy of Time Management Training on Increase Academic Time Management of Students. *Procedia – Social and Behavioral Sciences*, 84, 134-138. doi:10.1016/j.sbspro.2013.06.523
- Pereira, A., Quintas-Mendes, A., Morgado, L., Amante, L., & Bidarra, J. (2008). *Universidade Aberta's Pedagogical Model for Distance Education, A University for the Future*. Lisbon: Universidade Aberta. Retrived from <http://hdl.handle.net/10400.2/2388> (translation of the 1st Portuguese version 2007)
- Romero, M., Barberà, E. (2014). Computer-Based Creative Collaboration in Online Learning. *Proceedings of the Conference on New Horizons in Web-Based Learning*, 330-336. Berlin, Heidelberg: Springer. Retrieved from https://link.springer.com/chapter/10.1007/978-3-662-43454-3_34
- Sánchez-Elvira Panigua, A., & González Brignardello, M. (2014). Las Comunidades Virtuales de Acogida de la UNED: un espacio de investigación para el desarrollo de medidas de apoyo al estudiante nuevo. In A. Sánchez-Elvira Panigua & S. Lancho (Eds.), *Innovación en entornos de blended-learning* (Vol. II, pp. 189-218). Madrid: UNED. Retrieved from http://e-spacio.uned.es/fez/eserv/bibliuned:501062/LibroIV_Red.es.pdf
- Stone, C., & O'Shea, S. E. (2013). Time, money, leisure and guilt – the gendered challenges of higher education for mature-age students. *Australian Journal for Adult Learning*, 53(1), 95-116. Retrieved from https://ro.uow.edu.au/cgi/viewcontent.cgi?referer=https://scholar.google.pt/&httpsredir=1&article=1193&context=ss_papers
- Stone, C., & O'Shea, S. E. (2019). My children... think it's cool that Mum is a uni student: Women with caring responsibilities studying online. *Australasian Journal of Educational Technology*, 35(6), 97-110. doi:10.14742/ajet.5504

Acknowledgments

The results presented are part of a PhD research integrated in the Laboratory of Distance Education and eLearning (LE@D), an R&D unit at Universidade Aberta, Portugal. The PhD thesis is financed by a Research Grant with the reference SFRH / BD / 137859/2018, within the scope of the POCH - Human Capital Operational Program, co-funded by the European Social Fund and by national funds from MCTES through FCT – Foundation for Science and Technology.