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EFFECTS OF LONGHAND NOTE TAKING ON THE LEARNING ACQUISITION OF LETRAS UNDERGRADUATES: A CASE STUDY

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ABSTRACT

This research aims at investigating the relevance of note taking in higher education learning contexts. The hypothesis held in the present work is that learning is enhanced when one takes handwritten notes. The theoretical framework is based on works by Oxford (1990, 2001, 2003), on the notion of learning strategies and their relevance for advancing studies; Cavalcanti (2012) and Pinho (2014) who have expanded on the concept of note taking and its contributions to the academic context; Kiewra et al. (1991), Mueller and Oppenheim (2014), and Lichty (2022), who have unfolded the cognitive processes involved in note taking. Through a study case, an interview was conducted with a B.Ed. in English undergraduate student at the Federal University of Pernambuco. The results have revealed that handwritten note taking enhances the informant's learning. However, familiarity with note-taking strategies and modalities influence the process and outcomes of note taking. It is paramount that students become aware of the resourcefulness of note taking, and that they really need to be informed and taught in higher education as to the relevance of not taking and further application of other learning strategies.

Keywords: Learning strategies; Higher education; Note taking; Case study;

RESUMO

Essa pesquisa busca investigar a relevância da tomada de notas para o aprendizado no ensino superior. A hipótese proposta neste trabalho é de que a tomada de notas à mão otimiza a aprendizagem. O arcabouço teórico desta pesquisa consiste nas obras de Oxford (1990, 2001, 2003), sobre as estratégias de aprendizagem e sua relevância para o aprimoramento dos estudos. A pesquisa também é baseada nas contribuições de Cavalcanti (2012) e Pinho (2014), que expandiram o conceito de anotações e as suas contribuições para o contexto acadêmico. A pesquisa também foi amparada por Kiewra et al. (1991), Mueller e Oppenheim (2014), e Lichty (2022), que destrincharam os processos cognitivos envolvidos na tomada de notas. Através de um estudo de caso, uma entrevista foi conduzida com uma estudante de graduação da licenciatura na UFPE. Os resultados revelaram que anotações à mão elevaram o aprendizado da informante. Entretanto, a familiaridade com as estratégias e modalidades da tomada de notas influencia o processo e os resultados da prática. A conclusão nesta pesquisa aponta para a relevância que os alunos tomem consciência do poder da tomada de notas, e que é muito necessário que sejam informados e ensinados tanto sobre a relevância da tomada de notas como sobre a aplicação de outras estratégias de aprendizagem no ensino superior.

Palavras-chave: Estratégias de aprendizagem; Ensino superior; Tomada de notas; Estudo de caso.

"by small and simple things are great things brought to pass"
(The Book of Mormon, Alma 37, 6)

1. Introduction

The aim of this paper is to investigate the role of longhand note taking to advancing academic performance. Oxford (1990) explains that, for a long time, the teaching of learning strategies was disregarded by many educators for various reasons, the main one being possibly due to the mistaken idea that the whole responsibility for student's learning should be placed in the teacher's hands. With that in mind, the focus used to be placed on the improvement of teaching, and not in the students' responsiveness towards their learning. However, research has provoked a shift from this previous standpoint to the one that understands that the way students carry on their studies matters a great deal to their academic success, especially when it comes to acquiring higher education. Oxford (1990, p. 8), goes on explaining that "learning strategies are specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations".

Among the many existing classifications of learning strategies, this work is based on Oxford's system of Language Learning Strategies (1990). However, this research pursued a different perspective than Oxford's, as it is focused on learning acquisition in general, instead of solely language acquisition. In the system proposed by Oxford (1990), learning strategies are divided into main classes: direct and indirect. Each class comprises three subdivisions. Hence, memory, cognitive, and compensation fall under the direct class, while the indirect class is composed of metacognitive, affective and social. Amid the cognitive group of direct strategies, *taking notes* is the target strategy dealt with in this work. Considering that note taking does not seem to be a disseminated practice as it is "underrated" (Pinho, 2014), the following research questions arise: a) What is the nature of the cognitive strategy of note taking? b) Does technology hinder or help with note taking?

In view of the fact of the relevance of note taking, the assumption made in this work is that if students are aware of and use handwritten notes in their undergraduate studies, they are very likely to have significant improvements in their learning acquisition and retrieval. As such, the main objective of this research aims at investigating likely effects of *handwritten notes* on the students' acquisition of knowledge or skills in their academic life. As a secondary objective, the present research investigates the cognitive work of encoding, storing and retrieving involved in note taking.

To this effect, the present work seeks not only to reflect on the possible relevance of the use of handwritten notes to support students in their learning acquisition process, and the (possible) integration of their handwritten notes in their studies. At the same time, it points out the relevance of instructing the students in at least the basics of learning strategies, especially an underestimated strategy such as longhand note taking.

1. Learning Strategies

Learning strategies have long been studied in the field of Applied Linguistics, by scholars such as Rubin (1975), Brown (1980), Wenden (1987), Oxford (1990), O'Malley and Chamot (1990), and Ellis (1994) among others. Oxford (1990) defines learning strategies as "specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations". Therefore, it could be said that learning strategies are ways students find to consciously manipulate their learning process in order to learn what they need to learn in the most efficient way. As a result, learning strategies work as tools that boost students' learning experiences, just like the tactics athletes use to play better and ultimately win the games.

Many were the attempts to create a system in order to classify the learning strategies (see Naiman *et al.*, 1978; Wong-Fillmore, 1979; Rubin, 1987; O'Malley and Chamot, 1990; Wenden, 1991; Shi, 2017). However, this work is focused on the system proposed by Oxford (1990), because of its unique comprehensiveness (Ellis, 1994; Shi, 2017) and its perceived richness of detail, systematicity and lightness on technical terminology. Yet, it should be highlighted that although Oxford's work focuses on applying learning strategies to language acquisition, this research

pursued a different perspective and is focused on learning acquisition in general. But this divergence of perspective does not alter the relevance of the author´s system to this research, once she also refers to it as “strategy system”.

In Oxford’s system, the strategies are divided into two main classes: direct and indirect. The former has to do with “dealing with [the content] in a variety of specific tasks and situations", that is, actually making use of the subjects in ways that will support the learners’ understanding, practice and recall of content. The latter encompasses strategies more related to “general management of learning”, in other words, actions centered on maneuvering the process of acquiring knowledge and holding fast to it till the end in a consistent and productive way. Under the direct class, another set of strategies emerges and forms the following subgroups: memory, cognitive and compensation strategies and the indirect class is subdivided into metacognitive, affective, and social strategies. Despite the division of the strategies into two classes, Oxford points out that they are all connected and assist each other. For example, upon employing the indirect, metacognitive strategies to center, arrange, plan and evaluate their learning, one would naturally utilize analyzing and reasoning, which are cognitive strategies in themselves.

In a more recent research, Oxford (2003) posited that a more effective combination for successful learning would be to merge (language) learning strategies with learners' styles. She defined learning styles as “the general approaches – for example, global or analytic, auditory or visual – that students use in acquiring a new language or in learning any other subject” (Oxford, 2003, p. 2). In that sense, each student would have specific, personalized learning preferences which, according to Dunn and Griggs (1988), mentioned by Oxford (2003), would be determined both biologically and developmentally. In that line of thought, Oxford (2003, p.2) argues that when learners are able to align their learning styles with suitable learning strategies and the (L2) task at hand “these strategies become a useful toolkit for active, conscious, and purposeful self-regulation of learning”. Therefore, in that logic, the more style-related strategies students would know, the more resources they would have to resort to in order to enhance their learning. However, in spite of the wide set of strategies available, students very often have no idea of their existence, so they end up always making use of the same strategies and sometimes fail to enhance their learning even more (Ehrman; Oxford, 1989; Oxford, 1996a, 1996b; Oxford 2003). In such a context, strategy instruction provided by teachers should do

well to help students become more proficient in these areas and thus enjoy the remarkable benefits thereof.

1.2 Learning Strategies in Higher Education

According to Sterk (2018), learning would be a “form of growing”, and “if [one] really want[s] to learn something worthwhile” it would “hurt”, because just like in growing, it would require “confrontation with [oneself] and [one’s] environment”. If we were to consider Sterk’s statements, one specific type of student that would certainly suffer from that “learning pain”, with higher and sudden intensity, would be the university student. Lynn (2015) points out that it is common for students to go through secondary school without acquiring the skills necessary for the upcoming, more demanding higher level of education. Therefore, the result is that many freshmen start university with the heavy load of having to acquire and deal with an incredibly large amount of complex information, lacking the bare preparatory foundations - in terms of skills and learning strategies - that would subsidize their new academic reality and demands. In that context, the discussion on the relevance of learning strategies to the university students, in special, becomes more urgent and necessary, bearing in mind the great power those strategies hold to aid learners and “make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations” (Oxford, 1990, p. 8), as it has already been discussed previously in this work.

Pinho (2014), argues that one of the main competencies university students lack is that of actually *processing information.* In her own words: “students, in the classes, frequently limit themselves to collecting and storing information, with little or none structuralization or organization thereof[1]” (Pinho, 2014, p. 241-242[2]) and that it would prevent them from managing information in a way which would, in turn, hinder them from really understanding information and setting the stage for more knowledge to be produced.

Given the hitherto mentioned context, it becomes paramount that (those) students learn strategies that can specifically aid them in the operation of *processing*

[1] TN. All quotes in Portuguese have been translated by the author.
[2]“Os alunos, nas aulas, limitam-se, frequentemente, a recolher e a armazenar, sem qualquer grau de estruturação ou organização, a informação (...)”

information for later production therefrom. Amid the cognitive group of direct strategies proposed by Oxford (1990), there is a specific strategy that may be of great help for that specific purpose, as it would help students create structure for input and output.

2. Note-taking: An underestimated learning strategy

Note taking is known in the dictionaries as the action of making annotations while attending a lecture, for example (Collins, 2023). In the classroom, taking notes has been referred to as a "register made by the students about the information instructed by the teacher, both orally and written."[3] (Cavalcanti, 2012, p. 520). Furthermore, the act of taking notes could be considered as "[an] attempt from the annotator to particularly systematize and organize knowledge"[4] (Moraes 2005, p. 11 apud Cavalcanti, 2012, p. 52, on). This "attempt" can be done in several ways or styles, ranging from a more systematic spectrum to a rather less complex one, depending on the learner's level of proficiency on the subject, among other aspects that will not be discussed now.

According to Bessonat (1995), quoted by Pinho (2014, p. 251), in addition to the note taking functions of systematizing and organizing knowledge for later consultation, there would also be an array of other benefits pertaining to note taking:

> It allows the conservation and acquisition of knowledge through the use of the written language, syntax, associations and graphism; it enables the development of many social competencies; it helps to render autonomous personal perspectives related to the consulted documental sources, due to the successive reformulations that it requires; it fosters a rich articulation between the processes of comprehension, reading and writing; it implies and develops very elaborate cognitive operations; it is a formative exercise, because it develops the ability to synthesize things; facilitates the treatment of the reorganized and synthesized information, according to specific purposes; it updates the essentials of an initiation of a university work, due to the multiple restructuring and condensations to which it submits information.[5]

[3] "as anotações serão caracterizadas como o registro escrito que os alunos fazem das informações ministradas pelo professor, tanto oralmente quanto por escrito".
[4] "a tentativa de sistematização e organização particular do anotador, dos conhecimentos escolares".
[5] "Permite a conservação e apropriação do conhecimento através da utilização da linguagem escrita, sintaxe, associações e grafismo; possibilita o desenvolvimento de competências sociais diversas; ajuda a autonomizar o ponto de vista pessoal relativamente às fontes documentais consultadas, graças às reformulações sucessivas que uma boa TDN (tomada de notas) obriga; possibilita uma articulação rica entre os processos de compreensão, leitura e escrita; implica e desenvolve operações cognitivas muito elaboradas; é um exercício formador, pelas

According to these premises, taking notes is considered to be an ability that can impact a student's ability to build knowledge profoundly, due to the myriad of potentialities embedded in the act. A particular advantage of note taking as pointed out in the above quote is to "imply and develop *very elaborate cognitive operations*" (Italics used here for emphasis). The American Psychological Association (2023) defines cognitive operations as "any of the mental functions assumed to be involved in the acquisition, storage, interpretation, manipulation, transformation, and use of knowledge (...) [and] this term is often used simultaneously with mental process". Among the operations that note taking would "imply and support" are the processes of encoding, storing and retrieving information, which are essential to learning and memory, according to Melton (1963), cited by McDermott, and Roediger, (2023) and involve the acquisition and the construction of knowledge as well as its ultimate recall. In the coming section, each of these cognitive processes in relation to note taking will be described in more detail.

2.1 Taking Notes and cognitive processes

Encoding can be defined as the initial stage of learning, which is done by "[selectively] perceiving information and relating it to past knowledge" through a process called "recoding" (McDermott; Roediger, 2023). It materializes when information is taken from the environment and is transformed into one's own words (Haynes; McCarley; Williams, 2015 apud Lichty, 2022). Thus, the newly encoded information sets the stage for greater learning to happen. Hence, the use of strategies to support that initial learning stage becomes paramount, so that better learning can take place. According to Luo, Kiewra, Flanigan, and Peteranetz, (2018, p. 948), cited by Lichy (2022, p.10-11), it has been discovered that notes, especially the generative type (that involves paraphrasing or summarizing), increases encoding rates because it "encourages students to paraphrase, organize, and integrate new lesson material in line with related prior knowledge". This connection-making fostered by note taking is beneficial because this is exactly how the brain learns: by making connections and associations with related knowledge (Cunnington, 2019).

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capacidades de síntese que desenvolve; facilita o tratamento da informação reorganizada e sintetizada de acordo com objetivos precisos; atualiza aspectos essenciais de uma iniciação ao trabalho universitário, devido à reestruturação e condensações múltiplas a que submete à informação."

Notwithstanding, even the best encoding cannot guarantee that the acquired information will be available for retrieval in the long run, because it comprises only the initial phase of the complex process of learning acquisition. Therefore, the newly captured knowledge does not have strength to subsist on its own unless extra work is done in order ~~for it~~ to be retained for later use. This context, then, reveals the importance of the process known as *storing information* and the strategies that can promote it.

According to Rice University (2023), “storage is the creation of a permanent record of information”. It happens when the person reviews information from time to time, and thus allows neural paths to be strengthened and makes it possible for long term memories to be created. According to Norris (2017), quoted by Cunnington (2019), long term memories are important to the learning process because they can be considered to be the product of what is learned. Hence, the better the quality of storing, in terms of reviewing and applying the acquired knowledge, the better the ultimate knowledge acquisition. It is true that storage occurs inside the brain, but there are strategies to foster it outwardly. Di Vesta and Grey (1972), cited by Kiewra *et. al.* (1991), not only claimed that the process of note taking served as an encoding booster, but they also argued that the product of note taking could serve as an *external storage mechanism* that would allow for the organized information (on a notebook, for example) to be reviewed later on. Boch and Piolat (2005), referenced by Vazquez (2017 p.10) claim that a later review of notes “reinforces the integration of the knowledge and its storage in long term memory”. Lichty (2022) supports Kobayashi’s argument (2005) that using the external storage function of note taking is pivotal for a student's achievement, pointing out that “note taking is not as beneficial when the notes are not reviewed after the fact”. Those contributions lead to the conclusion that it is essential to find and implement ways to stimulate information storage in the brain and that note taking can have a special role in it.

Finally, concerning recall, Lichty (2022, p.11) conceives it as “our ability to retrieve or remember information that has been stored away for some period of time”. As it has already been discussed, investing in good encoding and storing through note taking (and other strategies) is vital to creating long term memories (or knowledge) that will be remembered for use in a more distant future.

Given all the arguments related to note taking and to the learning acquisition process discussed above, the question that arises is whether there is a better way to

make notes, especially at college level. This issue will be discussed in the next session.

3. Note- taking strategies and their effectiveness

Considering that the value of note taking has been acknowledged, the researchers' focus turned to analyzing which modality of notes would be most efficient for acquiring knowledge, especially with the advent of technology in the classroom. As such, questions as to which note taking medium would be more beneficial - longhand (i.e. paper-pencil) or typed notes - started to raise. Mueller and Oppenheim (2014) indicate that although typed notes are faster and provide a larger amount of notes, longhand note taking is better to improve learning performance (in terms of encoding and of recall of conceptual information) because it would foster deeper cognitive processing by encouraging students to reframe information in their own words, whereas typed notes would register mostly verbatim notes (less self-generated content). Following these results, Lau (2022, p. 9) explains that further replication studies were proposed, however, not all attempts were successful at providing evidence that could support the original findings and a set of studies have identified some benefits to typing notes. Notwithstanding, as Mueller and Oppenheim (2014) have suggested, longhand note taking may promote deeper processing, over the advantages of larger and faster notes that the keyboard offers. Additionally, a study carried out by Osugi and colleagues (2019) and Shell, Strouth and Reynolds (2021) found that “stylus” use could better improve learning compared to longhand.

According to Shell, Strouth and Reynolds (2021, p. 4), “A stylus is a digital pen that can be used on a touchscreen device to take handwritten notes”. The authors explain that when compared to longhand note taking, one can expect similar effects, since they share similar physical processes as well as complexity, flexibility, and spatial strategies. Furthermore, apart from the fact that the stylus is a digital procedure, according to Pfeuffer *et al.* (2017), cited by Shell, Strouth, and Reynolds, (2021, p. 4), it also provides room for notes to be “saved, organized, converted to text, and edited”. Hence, stylus may prove advantageous since it merges “the advantages of longhand and technology-assisted note-taking”. Nonetheless, when Shell, Strouth and Reynolds (2021) investigated the impact of longhand, keyboard, and stylus note taking on academic performance in college classes, they concluded

that, although students performed better using their preferred note-taking method, both stylus and longhand note taking provided advantages in course grades and conferred higher perceived recall and learners' engagement.

4. Methodology

This is a qualitative study in nature, that is, it provides deeper insights into real-world problems as the case of note taking as a learning strategy in higher education. The research experience aimed at evaluating the impact that note taking instruction had on recall of ideas and learning acquisition after note taking during lectures in the particular context of the study carried out. By means of an empirical investigation in the form of a study case, a detailed examination of note taking in higher education is proposed considering the variables of note taking instruction and recall of ideas. The independent variable was note-taking training, and the dependent one was recall of ideas. To that end, a semi-structured interview was conducted with a voluntary participant in order to collect the data required and to evaluate it in a reliable and valid manner.

The questionnaire consisted of 20 questions (see Appendix 1) aimed at obtaining information respecting the participant's (1) previous knowledge on learning strategies, (2) comprehension of the concept of note taking and her use of it, (3) discernment on the pros and cons between longhand and digital notes, (4) perception around the challenges to taking notes at university. The interviewee's identity is preserved in agreement with ethical procedures and the pseudonym *"Alycia"* is used instead. The interview was conducted in the premises of the *Universidade Federal de Pernambuco*, on August 8th and lasted about 20 minutes. The cell phone application Whatsapp was used to record the interview. A transcription of the interview was carried out in accordance with transcribed conforming to the Portuguese norms of punctuation and indications of hesitation and pauses.

5. A look into Alycia's knowledge and use of note taking as a learning strategy

According to the data collected from the informant during the interview, it was possible to divide this analysis into three categories: (1) “prior knowledge" and “metacognitive” aspects; (2) note taking specific elements; (3) digital versus handwritten note taking. A discussion on the findings is carried below.

5.1 Alycias's prior knowledge of learning strategies and note taking

The findings collected from questions (4), (5), (6) and (7) indicate that the informant, henceforth Alycia, has some understanding of learning strategies in general. She conceives strategies as processes used “to absorb knowledge [and] to study”. As to practical examples, she considers “taking notes, speaking out loud, reading, (...)” and “watching videos on YouTube about the subject”. When asked about how she had learned about these strategies, Alycia explained that it happened through what she called “real life experiences”, that is, what her friends and family members had shared with her in relation to strategies used to learn better. In relation to which strategy she actually uses to study, Alycia mentioned note taking, summarizing and highlighting. Considering that the two last activities could be involved in note taking, it can be concluded that it is the main strategy she uses to study.

The results show that Alycia has a vague, unclear notion of learning strategies and the vast myriad of existing ones as specified by scholars, such as Oxford (1990). She demonstrated that when she considered learning strategies *just* as ways to “absorb knowledge and study”. Although she brought up some examples of strategies, not all of them were actual strategies. For example, she referred to *reading* as a strategy, when it is, in fact, a *skill.* Her limited view of learning strategies can prevent her from understanding and enjoying the whole amount of benefits that they can offer if applied effectively, especially from a high education perspective, beyond just aiding knowledge absorption. Alycia also seems not to understand much about the strategy she implements to study the most (note taking), once she could not realize the connection between summarizing and highlighting to the processes involved in note taking, for example. The next section will present Alycia’s view in reference to note taking.

5.2 Alycia's note taking experiences and resources

This section addresses the participant's practical understanding of note taking based on her answers to questions (8), (13), (16), (19) and (20). In general, it is possible to claim that she is aware of the need to reorganize and revisit her notes and that it is beneficial to memory. The participant says that: "When [she is] going to study later, there's already notes and stuff that [she has] already prepare[d]" and that it helps her to further her studies, as reported in "maybe there's a question that 'oh, I didn't understand this part', so I write the question down and, when I'm going to study, and, 'oh, I have to go back to this part' and stuff like that". She also mentions that, when she is taking notes, she can even experience *déjà vu* of previous notes she had taken. In her own words: "sometimes you get déjà vu, when you take notes (...). Like, I write something, I'm like, 'I already wrote this before' and I come back to [it] and [think] 'oh, I can make a link between these two subjects' and stuff like that.".

The participant's answers demonstrate her understanding of the value of note taking for facilitating later consolidation of content, which is closely connected to a result pointed out by Hartley (1983) and Kiewra (1985) cited in Kiewra *et. al.* (1991) concerning the external storage mechanism function of note taking, which attests that "students who reviewed their notes had higher achievements in performance tests". The participant also alludes to the connection between the note-taking process and building upon previous knowledge through a sense of *déjà vu* she experiences while taking new notes from notes she had taken previously. This statement goes in line with the findings already reported that taking generative notes provokes connections with already known knowledge (Lichty, 2022).

Furthermore, it is evident that the participant is aware that note taking is influenced by other cognitive phenomena and that this affects the quality of the process. According to the interviewee, the quality of her notes depends on a very important factor: her mood. She states that "depending on the day, depending on my mood or stuff like that, sometimes I take notes: I understand it all. Sometimes I take notes (...) [and] still I [do not] understand". This observation works in tandem with the results of a study conducted by Brand, Reimer and Opwist (2007), that concluded that either mood (positive or negative) may hamper or promote the processing of information.

The fact that the participant is conscious of how her feelings impact her engagement with note taking is significant, because it demonstrates her ability to observe: one of the main skills in the path to self-regulation (see Bandura 1991; Cavalcanti, 2012). However, the participant might require some information regarding which strategies to employ when she acknowledges that her mood is hindering her learning, so as to not only exercise observation, but also practice self-reaction (Bandura, 1989; Bandura; Azzi; Polydoro, 2008). Oxford (1990) has referred to these strategies as “affective” ones. The author considers them as strategies which would indirectly support learning by assisting students in self-regulating their emotions to prevent negative feelings from jeopardizing their learning processes.

Finally, the participant is aware that external factors can hinder note-taking. Along with the “mood interference”, Alycia also reported another factor that would hinder or promote the effectiveness of her note taking: the pace of lectures. She explains that “sometimes the professors speak too fast” and that she does not have time to write things down. Alycia has also said that she has never tried any specific, well defined methods for taking notes and that she has never had actual training on how to take notes in college, specifically, because all she knows and does in relation to note taking is based on “life experience”. Indeed, research shows that the process of note taking in a college setting demands a lot from a student, since it involves “listening to new and often unfamiliar information, transcribing that information quickly enough to keep pace with the lecture, and deciding how to organize the material to reflect the relationships stated by the speaker” (Dezure; Kaplan; Deerman, 2021, p. 2). Thus, it becomes extremely necessary that faculty reflect upon “how they lecture " and “what [they] do while [they] lecture” in order to help students improve their ability to take notes during the lessons (Dezure; Kaplan; Deerman. 2001, p. 2).

Moreover, connected to the relevance of teaching about note taking in college classrooms, Pinho (2014) argues that a lot of professors do not seem to “activate” this strategy in the classroom because they might regard it as solely the students’ responsibility. However, this thought would prevent them from actually intervening in the (supposed) “origin of one of the gaps that the students often present in their written productions: the poor mastery of content”[6] (Pinho, 2014, p. 253). In that

[6] “origem de uma das lacunas que os escritos dos alunos denotam: o mau domínio dos conteúdos.”

sense, again, it is important that professors really seek to understand this learning strategy and all of its potential within a university classroom (in terms of its relationship with encoding, storing and recall of information, as discussed above in a more comprehensible manner for the purpose of better supporting their students through the whole process of acquiring and transforming learning.

5.3 Digital versus handwritten note taking

This last part of the analysis covers data from questions (9), (10), (11) and (12) and it is focused on the participant's perceptions regarding the differences between digital and handwritten note taking based on her personal experience. When asked about the way she preferred to take notes (digitally or longhand), Alycia responded that taking longhand notes seems to allow her to better "graphically transfer" and organize the flow of insights that come into her mind while she is dealing with the fast input of the new information. For example, she uses arrows and sort of "tree ramifications" to indicate perceived connections and text boxes, highlighter marks and capitalized words for emphasis (Alycia also used coloured highlighter marks to organize the information by topics)[7]. In that sense, it appears that this paper-pen process gives her the ideal "setting" and flexibility to personalize her comprehension in a way that makes more sense to her, according to her learning style. In accordance with her own words: "I like to highlight stuff, I like to make it pretty (…) and visually, like, pleasing, so I can (...) get motivated and, like, learn more", it is possible to claim that her learning style is the "visual" one.

Closely related to what Oxford (2003) has postulated on the benefits of associating learning strategies and learner's style, Alycia's reasons for choosing handwritten notes over digital ones seems to refer to the fact that they allow her to align them with her own (supposed) learning style, a connection that, apparently, has been made almost intuitively. On the other hand, regarding digital notes, she only uses them if she does not have her notebook for her longhand note taking. In these situations, her sole, more familiar alternative is to use the note taking app on her iPhone (she has never made use of any other type of apps). Nevertheless, Alycia

[7] In order to better understand what Alycia meant in her answers, we have asked her to share some of her 'raw' notes, both handwritten and digital ones. Therefore, those examples come from her note samples (see Appendix 1 and 2).

reported that digital notes requires her “to be fast[er] ” and “more organized”, that is, in a manner that would hinder her from (1) keeping up with her flow of insights and (2) personalizing her notes in a more “familiar way”, something she referred to as her own “system”, which she considers to be more helpful. This fact reinforces the fact that learning style constitutes an important element in terms of learning strategies.

Despite the fact that Alycia considers longhand notes more useful and practical, it is important to reflect on how nearly inexperienced she is with note-taking apps (in terms of being aware of and engaging with other possibilities, such as stylus note taking) and how it may have some influence over her note-taking preferences. Therefore, what stands out here is the fact that learning styles represent an important issue to be taken into account considering that they might differ from one learner to the other.

6. Concluding remarks

In conclusion, this study suggests that the awareness and use of learning strategies, such as note taking, in the academic setting is desirable because they provide students with an unlimited set of tools that can help them better manage the highly demanding university environment. The nature of the cognitive strategy of note taking has also been investigated and the findings show that the cognitive work that it generates exerts significant influence in the learning processes known as encoding, storing and retrieving. Considering the relevance of note taking on such processes, emphasis should be made in relation to its learning and application by university students for the improvement of their academic performance. In addition, the results indicate that the impact of note taking on the overall learning acquisition of the participant has been intensified when the informant made use of the paper-pen modality in her best emotional conditions.

Notwithstanding the results, the fact that Alycia had little acquaintance with digital note taking methods (apart from the rather basic app she has on her cellphone) and a huge familiarity and experience with handwritten notes makes it difficult to come up with a just answer to the question as to how technology would hinder or help with note-taking, for the disparity of knowledge and expertise between these two modalities may have influenced the interviewee’s preferences and perceptions when asked to appraise them in contrast to one another. Consequently,

the outcome of this research cannot be generalized once a different participant, whose proficiency in both longhand and digital notes were akin, could have said something completely different. In spite of this fact, findings also demonstrate the importance to promote the faculty's awareness in relation to the importance of instructing their students in at least the basics of learning strategies (from cognitive to affective ones), considering their potential to make learning "easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations", as stated by Oxford (1990, p. 8). Moreover, and more substantially, it is also paramount that the professors devote deliberate reflection upon the relevance of note taking to acquire, retain and transform knowledge in order to facilitate its due implementation by their students in the classrooms.

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Appendix

Interview Transcription

1) Which undergraduate course are you enrolled in? Which level?

- The last one.

2) As an undergraduate student, do you face any difficulties in terms of effectively acquiring knowledge? Yes or no?

- Yes.

3) If your answer is "yes", describe the difficulties and challenges you face.

- Because we studied something that should be put into practice, like being a teacher and stuff like that. I understand sometimes the theory, but I cannot *relate* it to the practice, because I have never been a teacher before.
- When there's a lot of texts (...) we have to read and absorb the knowledge. That's really hard, I tend to, like, make notes, write down the most important aspects of the text and maybe, like … you know what? Sometimes, I just speak like I'm a teacher. Like I'm teaching someone something just to see if I actually understood the subject.
-

4) Do you know what learning strategies are? Explain.

- Hum (...) I think I do. It's like, ah, strategies we use to absorb knowledge, to study. So, maybe like, taking notes, speaking out loud, ah, reading, or like, watching videos on YouTube about the subject…

5) If you know anything about learning strategies, where have you learned about it?

- Uh, real life experience? It's, like, my friends telling me how they do it; maybe a teacher told me sometimes though maybe you should do that ;my mother likes taking notes and I do that, too. (...) Nobody just stop[ped] and told me "oh, look, there are *these* things you can do. You can do that and that". *Just* real life experience.

6) Do you use any learning strategy(ies) to study? Yes or no?

- Yeah.

7) If your answer is "yes", describe which one(s).

- Like I mentioned before, I normally take notes and do, like, a summary of the most important aspects of the subject I'm studying. Like, I put the topic and write down. I like to highlight stuff, I like to make it pretty (laughs) and visually, like, pleasing, so I can, like, get motivated and, like, learn more.

8) Do you ever take notes in class? Yes or no?

- Yes, I do.

9) If your answer is "yes", do you do it longhand or digitally? Explain.

I prefer to write down, 'cause like my thoughts and (sighs) everything that I'm learning and hearing, they can like …more like be, (ununderstandable) It's really bad, but you understand what I mean? Like I have written something down, but then another thing comes up and then (...) it's a mess! And then when I get home and I, uh, (…) organize [it].

10) Have you ever used any apps to take notes?

- If I don't have my notebook [with] me, I do use the note taking app on the iphone.

11) You said that when you have your notebook with you you take longhand notes, but when you don't have your device with you, you take notes digitally. Do you see any difference between taking notes longhand and digitally?

- Yes. When I do it digitally, it has to be more (...) organized, my thoughts. Because I'm going to write stuff. I can always come back and put it there, but it has to be more organized .When I take notes longhand, it can be a mess, like, I can come up with anything on the spot, put [it] there. I can highlight. I can put it [in] another color. You know what I mean? it makes more sense to me to write stuff down than to type down.

12) How come that taking longhand notes make more sense to you than typing?

- 'Cause I have a system. I'm gonna write the subject. I'm going to write what I understood about the class. I'm gonna write the slides of the professor, but then I'm gonna also write (...) the stuff I (...) the "extrapolated", (her "inferences"). But that makes more sense if I write [things] down. It's, like, the process is physical for me. I have to write [things] down. (...) When I write stuff down, it's more "my style", for example: the subject is in blue, the questions are in red or something, and the stuff I understood is in black (...) Most of the time it is easier for me

to write down, because it's my style, something I'm comfortable with, something I've been doing my whole life. When I type stuff, like, digitally, it's not "my style". I have to organize myself better in my thoughts, because I cannot just *"come back"* (...) I can't, like, "enter stuff" … It's weird for me, It's not my style. I have to be fast, I can't come back later, I have to organize my thoughts more precisely, because I cannot "make a mess" in the digital app.

12.1) And the mess is more helpful for you?

- For *me*. Yeah.

13) Have you ever tried any methods for taking notes?

- [Yes]

14) If so, which ones?

- Only the most common one, just writing the topic, the subjects and maybe something that I infer from it.

15) Do you think you could benefit from learning an actual method for taking notes?

- Honestly, yes. Because maybe I'm doing something that is not helping me. Maybe if someone taught me a little bit, like, how to optimize my time better, that'd be great for me, you know? Maybe I'm doing something wrong.

16) What difference do you think taking notes makes in your studies? Explain.

- If I don't take notes, I don't pay attention. I'm gonna use a real life example. In [a given professor's name] classes, I understand it if I read the subject, the book, the text. I'm gonna relate to the class, I'm gonna understand some parts of it, but, sometimes, it goes in one ear and (laughs) [out] the other. So, if I don't write [things] down, If I don't do something, I'm not gonna pay attention.

17) Can you see any other benefit that it gives you?

- When I'm going to study later, there's already notes and stuff that I['ve] already prepare[d], like, maybe there's a question that "oh, I didn't understand this part", so I write the question down and, when I'm going to study, and, "oh, I have to go back to this part" and stuff like that. 'Cause I'm not gonna remember, if i don't take notes. I don't know if it makes sense, but sometimes you get *Deja Vu,* when you take notes (...). Like, I write something, I'm like, "I already wrote this before" and I come back to [it] and [think] "oh, I can make a link between these two subjects" and stuff like that.

18) On a scale from 0 to 10 how much do you think you can remember after you take your notes and revise them during your studies?

- I'm going to say a seven. 'Cause, like, depending on the day, depending on my mood or stuff like that, sometimes I take notes: I understand it all. Sometimes I take notes (...) [and}] still I didn't understand (...). Usually, it's a seven.

19)What are the possible challenges in note-taking during the classes ?

- Okay, sometimes the professors speak too fast and I don't have time [to] write stuff down. Sometimes *they don't like* me to write stuff down. For example, I can take a picture, so I can write down, 'cause I'm short-sided (so that's a challenge) they don't like it, like [a professor's name]. Huh, if I don't understand something, I can write down, make a question, but, then, later, I am not gonna be able to ask again (..). I think that's it, right?, the fast pace of the professor.

20) Have you ever had actual training on using note-taking as a learning strategy in college? Yes or no?

- No, I didn't and I'm not gonna, probably [laughs].

ANNEXES

Annex 1 - participant’s handwritten notes sample.

- Eraser of identity
- seen as folklore

27 ♥ 02 ♥ 23

the Empire writes back

MY NOTES

(9)

Louis Owens + - Other destinies, other plots

NATIVE AMERICANS!

- what is an Indian?
- yearning to be Indian / "real Indian" / mixedbloods
- past ↳ lot of Indian blood
- myth x reality
- identity → invented
- 90% adopted into nonIndian families
- Recovering of identity / community
- novel as self-discovery / cultural recovery
- ethnic identity "we are what we imagine" MOMADAY
- contextual identity
- Indians who make it in both worlds SAM ENGLISH
- For Native Americans, speaker and listener are coparticipants in the telling of a story / the audience
- "Indian" = "not European"
- people's ignorance

words have power to create something

- language (pg 8-9)
- texts were oral and communal
- written literacy makes language lose the power "as creator of reality"
- one single author problem X story that defines people as a community ↳ a lot of beliefs
- it was a syncretic process (cultural survival)
- literature is authorless for the oral tradition
- originator ≠ conveyor (of the text)
- story + myth

word → image → meaning

(How orality influences memory!)

- particular language in a novel is always a particular way of viewing the world" pg 8

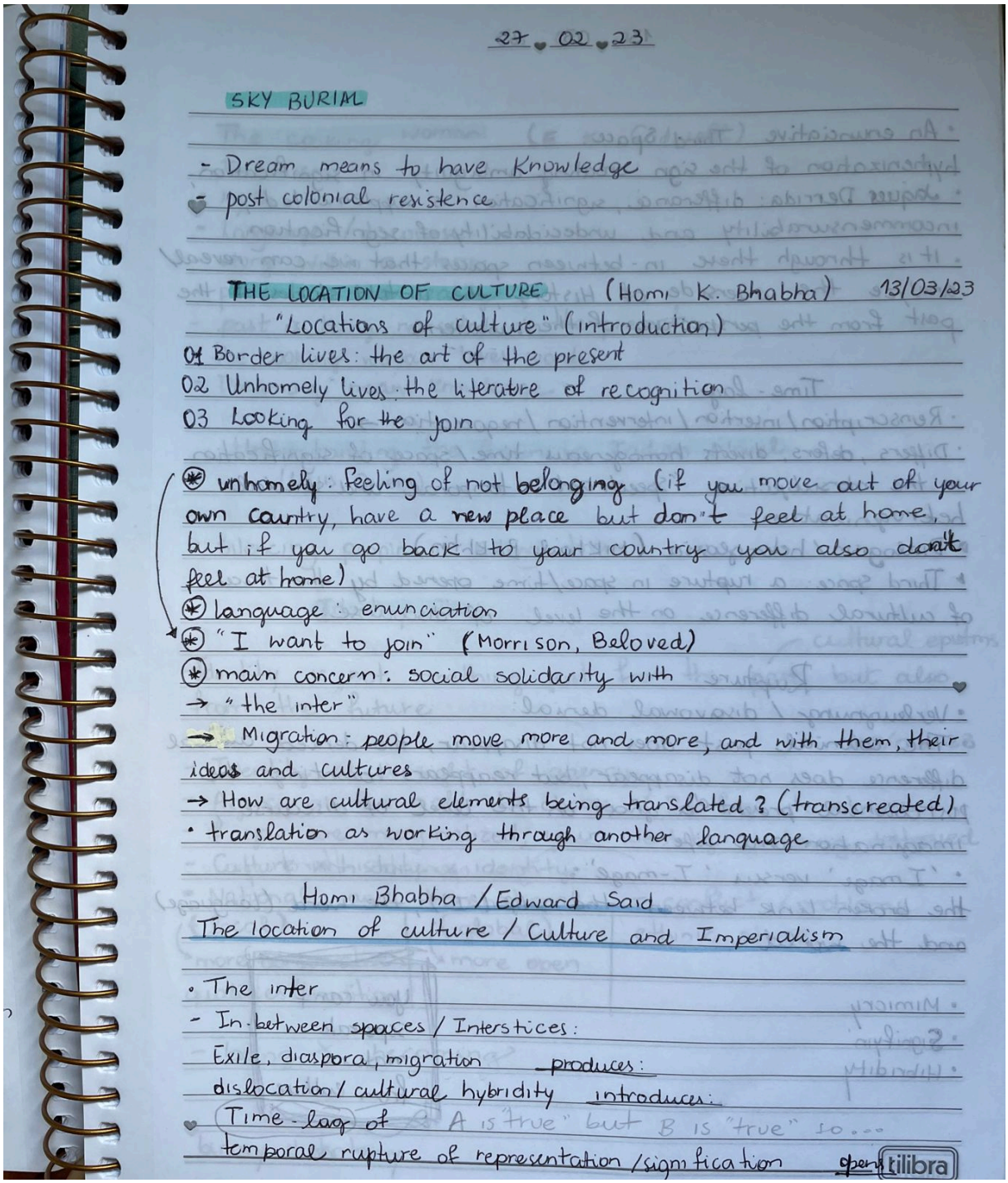
REMEMBER

* breakdown in the signifying chain of meaning (nuts)
* subject position // worldview (me → world)
* manque beat - lost and gain

tilibra

language disorients

dis orientation



27.02.23

SKY BURIAL

- Dream means to have Knowledge
- post colonial resistence

THE LOCATION OF CULTURE (Homi K. Bhabha) 13/03/23

"Locations of culture" (introduction)

01 Border lives: the art of the present
02 Unhomely lives: the literature of recognition
03 Looking for the join

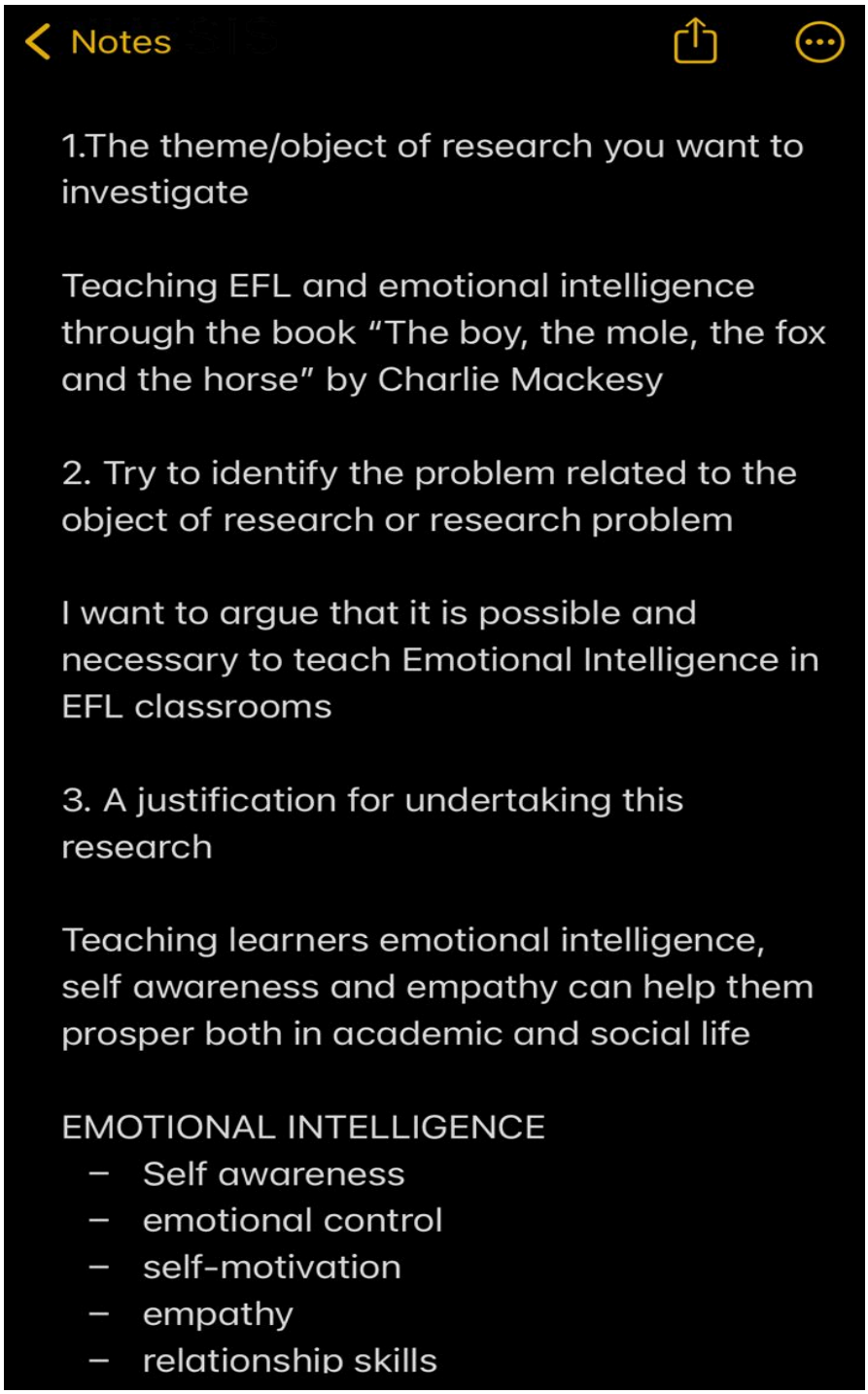
* unhomely: Feeling of not belonging (if you move out of your own country, have a new place but don't feel at home, but if you go back to your country you also don't feel at home)
* language: enunciation
* "I want to join" (Morrison, Beloved)
* main concern: social solidarity with
→ "the inter"
→ Migration: people move more and more, and with them, their ideas and cultures
→ How are cultural elements being translated? (transcreated)
• translation as working through another language

Homi Bhabha / Edward Said
The location of culture / Culture and Imperialism

• The inter
- In-between spaces / Interstices:
Exile, diaspora, migration produces:
dislocation / cultural hybridity introduces:
Time-lag of "A is true" but B is "true" so...
temporal rupture of representation / signification

Source: private communication (2023)

Annex 2 - participant's digital notes sample.



Source: private communication (2023)

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