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Highlights

An Object-Oriented Design Task

Entrepreneurship of Vocational College

Deaf Sign Language Users in Brazil

Interdisciplinarity in Teacher Training

Discovering Thoughts, Inventing Future

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Factors Related to the Quality of Life in the Context of Deaf Sign Language users in Brazil

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Abstract- *Introduction:* Deaf sign language users population often has been facing linguistic difficulties regarding to interacting with people who are not aware, who have not learnt about using sign language, such difficulties may have been revealing serious consequences to their social, emotional and also cognitive development.

Objective: This study has aimed to analyze the factors which may be associated with the best scoring of Quality of Life (QOL) in a group of deaf Brazilian sign language (Libras) users.

Methods: It is a quantitative study, whose data collection has been assessing using the WHOQOL-BREF scale and a sample profile questionnaire as well. Sixty (60) deaf Libras users, who has been living in Southern region of Brazil have participated. Statistical analysis was used by means of descriptive statistical methods and inference methods, considering the significance level of 0.05 (5%).

Results: Results have evidenced that total mean scoring in the WHOQOL-BREF was 43.3%. The domain with the highest scoring was Social Relationships (64.31%), and the lowest-scoring was Environment (54.77%).

Keywords: *deafness. quality of life. sign language. health promotion.*

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Factors Related to the Quality of Life in the Context of Deaf Sign Language users in Brazil

Israel Bispo Dos Santos [α], Ana Paula Berberian [σ], Giselle Massi [ρ], Rita Tonocchi [ω], Jair Mendes Marques[¥], Everton Morais[§] & Ana Cristina Guarinello [χ]

Abstract- Introduction: Deaf sign language users population often has been facing linguistic difficulties regarding to interacting with people who are not aware, who have not learnt about using sign language, such difficulties may have been revealing serious consequences to their social, emotional and also cognitive development.

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Results: Results have evidenced that total mean scoring in the WHOQOL-BREF was 43.3%. The domain with the highest scoring was Social Relationships (64.31%), and the lowest-scoring was Environment (54.77%). The deaf participants with the highest schooling level were those who have realized themselves as proficient in oral and written Portuguese language and also have the highest salaries, they have had the best scoring in quality of life.

Conclusion: Despite many participants are reasonably satisfied with their quality of life, it could be noticed by their answers, especially in the Environment domain, that some aspects related to jobs, healthcare services, safety and leisure are unfavorable. These factors signal demands should be considered while planning and implementing health promotion actions toward this community.

Keywords: deafness. quality of life. sign language. health promotion.

I. Background

One of the societal challenges in the 21st century is interacting with the diversity and assuring the right to equality to all shares of the population. It certainly must include the interaction with disabled people, including deaf people which are sign language users (Ayantoye & Luckner, 2016).

Brazilian researchers, Chaveiro et al. (2014), state that this population often has been facing linguistic difficulties to interact with people who do not use sign language and those difficulties may have revealed serious consequences to their social, emotional and also cognitive development.

In Brazil, the Brazilian Sign Language (Libras) was recognized by Federal Law number 10.436 in 2002 as a legal mean of communication and expression, it has also been considered a visual-motor linguistic system with its own gramatical structure (Brasil, 2002). That legislation also sets institutionalized ways to support and disseminate Libras in public health service concessionaires and institutions, which must reassure proper care and treatment to deaf individuals, according to current legal regulations.

Chaveiro et al (2013) has explained the non-recognition of deaf individuals' linguistic diversities hinders the access of that share of the population to primary health care services offered by the Unified Health System (SUS). That system was set up in 1988 under the Brazilian Constitution, and states that "Health is a right for all and duty of the State". Although this system has been in effect since late 1980s, Brazilian studies, such as Chaveiro (2011, 2014) and Garcia (2016), has showed that there are very few sign language interpreters in public institutions over the country, in addition, there is no qualification for public servants, as a whole, to render service to deaf sign language users, which weakens their interactions in these settings (Quadros, 1997; Chaveiro et al, 2014).

The National Health Policy for impaired people, which came to effect in Brazil in 2002 (Brasil, 2008), states that quality of life and its promotion are shared social responsibilities and the improvement of information mechanisms to drive health and impairment research must be accessible in Braille and Libras. In this light, our greatest interests are studies that assume that the promotion of the quality of life to this share of the population is essential (Brasil, 2008).

Quality of life should be understood as a multidimensional concept in this context, which reflects people's perception regarding to their social, cultural position, their conditions of education, labor, health, housing, security and personal relations. According to the World Health Organization (WHO), quality of life[1] (QOL) is defined as "an individual's perception of their position in life in the context of the culture and value systems where they live and in relation to their goals, expectations, standards and concerns" (The Who QOL

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Group, 1995, p. 03). The assessment of health-related quality of life has been increasingly used to analyze outcomes of clinical studies and broaden understanding about the impact of certain diseases on an individual's life.

By reviewing literature which relates quality of life (QOL) and deafness, it was possible to verify that studies by Almeida et al (2015), Angelo et al (2016), and Himi & Takano (2016) on this subject, are usually carried out with hard of hearing people users of hearing aids and cochlear implants. On the other hand, studies, such as Chaveiro et al (2014), Fellinger et al (2012), and Garcia (2016) have addressed to the QOL of deaf sign language users are in lower number and have evidenced the difficulties that this share of the population has been facing to access health care services, in addition to a reduced knowledge on their own life and QOL.

International studies show that deaf people who have higher scores in quality of life (QOL) social relations and emotional domains are the ones who participate in deaf communities and use sign language (Fellinger et al, 2005; Fellinger et al, 2007). According to Jaiyeola & Adeyemo (2018), unlike in Europe and North America, the experiences of deaf people and the effects of deafness on their QOL have not been fully studied in developing countries yet. Their study was held in Nigeria, but we can also infer that in Brazil, like many developing countries have had sparse data relating QOL and deaf people sign language users. Such data is required for population who needs assessment, intervention programs design, evaluation and educational placement.

A study by Kushalnagar et al. (2010), from the Department of Health Services at the University of Washington in Seattle, USA ha showed important implications in the quality of life of deaf young individuals. Its data shows that several deaf individuals evidence depressive symptoms, which are related by the authors to either their difficult or almost non-existent communication to their parents. The convenience sample in this study comprised 230 young deaf teenagers (mean age =14.1, 24% users of the Sign Language, 40% used speech, and 36% used both, Sign Language and speech). The authors have researched QoL and communication related issues and have noticed that the deaf people who have had good communication with their parentes have featured lower scores of depressive symptoms.

Similarly, Zöller & Archer (2015) carried out a study at the University of Gothenburg, Sweden, addressing the QOL of deaf sign language users. Results from this research have evidenced that, deaf individuals, who communicate better with their families, have had a better quality of life. Likewise, studies by Vaccari & Marschark (1997), Steinberg et al (1999), Meadow et al. (2004), Marschark (2007), and Kushalnagar et al. (2010) have showed that the access to interactions at home, at school and with their peers is highly important for the development of sign language, and that it is reflected on their QOL.

Analyzing and measuring the QOL among the population of deaf sign language users worldwide has shown to be a challenge. Chaveiro et al (2014), carrying out an integrative review of the scientific production on health-related quality of life of deaf sign language users, published between 2000 and 2012, has found only 14 articles using that criterion. Three of them have investigated the quality of life with instruments translated to sign language, six used instruments without translation or with symultaneous translation into the sign language, and five of them described the translation methodology of the instruments into the sign language.

Considering the discussion above, this paper has aimed to answer the following research question: which factors have influenced the quality of life among the deaf sign language population? Thus, this study aims to analyse some of the factors associated with better QOL scores among a group of deaf users of the Brazilian sign language by means of the proposed domains in the WHOQOL-BREF and in a sample profiling questionnaire.

II. Methods

This is a quantitative study using two instruments: the WHOQOL-BREF (The Who QOL Group, 1995), and a sample profiling questionnaire. This research was carried out in a city located in Southern Brazil, Curitiba, capital city of Paraná State, and in smaller towns around this capital city (Metropolitan Area) - São José dos Pinhais, Campo Largo, Pinhais and Colombo. Those towns were selected due to their proximity to the center where the research was performed and due to the presence of many deaf people, users of the sign language. It is worth elucidating that, according to data by the Instituto Brasileiro de Geografia e Estatística/2015[1] (Brazilian Institute of Geography and Statistics), there are over 2000 deaf-impaired individuals in the studied region.

This study was approved by the Ethics Research Board under number 50438915.5.0000.5529.

a) Participants

Sixty (60) deaf individuals participated in the research and the inclusion criteria were deaf participants, users of Libras, over 18 years old, residents in a city in the Southern Brazil and in towns around it, called Metropolitan Area.

Initially, for the participants' selection, institutions that have been attending deaf individuals, such as schools, universities, associations and religious institutions located in the above-mentioned cities were contacted. Such institutions provided deaf individuals' names and contacts from those ones who matched the

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research inclusion criteria. Then, a researcher e-mailed the participants and explained the study goals and instruments, thus, those deaf individuals, who have already matched the research inclusion criteria, were invited to participate.

The study sample consisted of 60 participants, Libras signers, between the ages of 18 and 58 years.

b) Instruments used

It should be elucidated that the WHOQOL-Bref questionnaire was selected for being an instrument objectifying the assessment of the quality of life, translated into several languages, and that presents satisfactory levels of equivalence, so that results reliably reflect the actual quality of life of a given community in its transcultural use. In addition, this instrument was selected for being the only Brazilian instrument with a validated version in the Brazilian sign language (WHOQOL-Bref, Libras 2016).

That instrument comprises 26 questions about the respondents Qol, health, other segments of their lives and their experiences in the four weeks prior to the study, which entail the original instrument. All the items in WHOQOL-Bref have five options each ranging from the highest to the lowest score (5-1). The questions of the instrument entail diverse aspects of the daily life and approach four domains of the QOL: physical, psychological, environmental and social relationships. Domain scores feature values between zero and one hundred, where the ones closest to zero stand for the worst, and the best ones are the closest to one hundred. The answers follow Likert scale (from 01 to 05), in which the higher the scoring, the better the quality of life. (The WHOQOL Group, 1995).

Using the WHOQOL-Bref Libras, one of the researchers e-mailed Chaveiro initially, who was responsible for the Brazilian validation of this instrument, requesting a "key" of the WHOQOL-Bref Libras software with its videos to use it. Chaveiro *et al.* (2014) developed a proper instrument to assess the QOL of deaf in their own language, justifying that it is easier for the deaf to answer these instruments in Libras.

It´s important to notice that the WHOQOL-Bref Libras is a video instrument, so the questionnaire questions, instead of use the written language as in the original test, are made through Libras. As it was explained in the introduction, this instrument was validated in Brazil in 2011.

This questionnaire was applied to obtain information about each participant and allows crossing and comparing the answers provided at the application of the QOL questionnaire, making the necessary complementations to measure the QOL of Libras, adding other factors that could influence it.

The suitability of these tolls to the study population was pretested in a previous study with a similar population in another Brazilian city.

c) Data collection

Data collection was held between July 2015 and February 2016, with 60 deaf individuals, in previously scheduled places by the researcher, via e-mail or phone contact. The participants, who have accepted to participate in the research, they have met individually with the researcher. Before answering the instruments, each participant has signed the Free Informed Consent Form.

Carrying out the data collection, the responsible researcher, proficient in Brazilian sign language[1], has explained to the participants, through Libras, that they have had the option to either answer the Written Portuguese Language version or to watch the video of the Sign Language version of the WHOQOL-Bref instrument.

Libras version was presented on a video and answers were provided in a printed sheet. Each participant could either choose to watch the videos and answer or only answer the printed version of the questionnaire. After elucidation, each participant has answered the questionnaires individually, with no researchers interference.

In addition to the WHOQOL-Bref instrument, each participant has answered the sample profiling questionnaire. It has contemplated questions on participants' sociocultural aspects, such as: gender, age, type of deafness, salary, current employment or unemployment status, use of Libras at work, occupation, schooling, view of each participant about him/herself regarding to the use of Libras and the Portuguese language and use of Libras by his/her family members.

This questionnaire was applied to obtain information about each participant and has allowed crossing and comparisons of answers provided at the application of the QOL questionnaire, making the necessary complementations to measure the QOL of Libras and also adding other factors that could influence it.

d) Analysis

The collected data were submitted to statistical analysis by means of descriptive statistical methods (tables of frequency, mean, standard deviation, minimum value, maximum value), and inference methods (Friedman's ANOVA and Statistical Tests -Chi-square Test and Fisher's Test), considering significance level of 0.05 (5%).

The sample profiling questionnaire collected data were analyzed in this research by crossing of the WHOQOL Bref results. In the discussion below, it was chosen to cross only some data from the WHOQOL-Bref questionnaire, especially in the domains of Social Relationships (best scoring), and Environment (worst scoring) with data from the sample profiling

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questionnaire to meet this study aims and the research question.

III. Results

Table 1shows the distribution of some variables: gender, age, hearing loss, degree of hearing loss, salary and schooling by absolute and relative frequencies.

Table 1: Sample general profile (n = 60)

Variables	Frequency	%
Gender		
Male	20	33,33%
Female	40	66,67%
Age	Mean age 28 years	
Hearing Loss		
	55	91,67%
	5	8,33%
Degree of hearing loss		
Severe to profound	60	100%
Salary		
1to 2 salaries[1]	20	33.33%
3to 4 salaries	15	25.00%
More than 4 salaries	12	20.00%
Occupation		
Unemployed	13	21,67%
Employed	47	78,33%
Schooling		
MiddleSchool (9 years)	06	10.00%
High School	18	30.00%
Graduated	19	31.67%
Specialization	13	21.67%
Master's degree	04	06.67%

Source: Research Data

The mean age of the 60 participants in the study was 28 years, standard deviation of 9.97 years (minimum age of 18 years and maximum age of 58). Regarding to the type of deafness, 91.67% (n=55) of the participants answered that they had congenital deafness, and only 8.33% (n=05) had acquired deafness. All of them had a severe to profound hearing loss. 10.00% of the participants (n=6) concluded Middle School, 30.00% (n=18) answered that they concluded High School, 31.67% (n=19) graduated from Higher Education, 21.67% (n=13) had post-graduation, and 6.67% (n=4) of the sample concluded a master's degree.

Thus 33.33% of the sample (n=20) work as a production assistant in automotive factories and earn 1 or 2 Brazilian minimum salaries[2], 25,00% (n=15) earn 3 or 4 salaries, work as sign language teachers, only 12 participants (20,00%) earn more than 4 salaries and they work as teachers at the university and 13 of them (21,67%) are unemployed.

Regarding general issues, in the application of the WHOQOL-Bref, it was perceived that more than half of the sample (51.7%) assesses their quality of life as good or very good, and 55% report satisfaction with their health.

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Mean scoring obtained in each domain (physical, psychological, social relationships and environment) of the quality of life is shown in Table 2. Friedman's ANOVA test was applied to organize that table, significance level of 0.05 (5%), it is being possible to verify the existence of outstanding diferences (p=0.0355) between the results of the domains. Identification of the differences evidences significant results between Environment and Physical domains (p=0.0085), Environment and Psychological domains (p=0.0032), Environment and Social Relationships domains (p=0.0069). Friedman's ANOVA was used because it requires the following assumptions: independence, homoscedasticity and normal distribution, not all of which were satisfied. Friedman's ANOVA is then adequate because the data are related and the scale is at least ordinal (not requiring normal distribution) since the method is non-parametric.

Table 2: Scores comparing through ANOVA and Friedman

Domains	N		Average Rank	Sum Of Ranks	Mean	Standard deviation
	R	N/R				
Physical	54	6	2,49	92,00	58.40	11.80
Psychological	57	3	2,66	99,00	61.26	14.13
Social Relationships	46	14	2,82	104,50	64.31	21.06
Environment	57	3	2,01	74,50	54.77	14.49

R = number of subjects who answered; N/R = number of subjects who did not answer.

The internal reliability of the WHOQOL-Bref questionnaire scale was 0.85. Likewise, for each of its four dimensions, Cronbach's scores were: 0.50 for the Physical domain, 0.51 for the Psychological domain, 0.76 for the Social Relations domain and 0.70 for the the Environment domain. By means of these results, it is possible to affirm that the items are homogeneous and that the scale consistently has measured what was proposed, for the Physical and Psychological domains the values were moderate.

It could be observed in the table above that the Environment domain, related to safety in daily life, leisure activities, housing conditions, means of transport and health care service has showed a significantly lower result than other domains. The physical environment, (THE WHOQOL GROUP, 1998).

In table 3, the scores for all the questions of the WHOQOL-Bref questionnaire are shown.

Table 3: Scores of the WHOQOL-BREF instrument

Question	N	MED	MIN	MAX	STD
1. How you rate your quality of life?	60	3.28	1	5	1.28
2. How satisfied are you your health?	60	3.35	1	5	1.10
3. To what extend do you feel that physical pain prevents you from doing what you need to do?	59	2.71	1	5	1.20
4. How much do you need any medical treatment to function in your daily life	60	2.58	1	5	1.05
5. How much do you enjoy life?	60	3.52	1	5	1.10
6. To what extent do you feel your life to be meaningful?	60	3.45	1	5	0.91
7. How well are you able to concéntrate?	59	3.20	1	5	0.80
8. How safe do you feel in your daily life?	59	3.39	2	5	0.77
9. How healthy is your physical environment?	59	2.95	1	5	1.06
10. Do you have enough energy for everyday life?	60	3.23	1	5	0.91
11. Are you able to accept your bolidy appearance?	58	3.57	2	5	0.88
12. Have you enough money to meet your needs?	60	3.08	1	5	0.87
13. How available to you is the information that you need in your day-to-day life?	60	3.27	1	5	0.97

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14. To what extent do you have the opportunity for leisure activities?	60	3.07	1	5	1.09
15. How well are you able to get around?	59	3.69	1	5	1.07
16. How satisfied are you with your sleep?	60	3.23	1	5	0.95
17. How satisfied are you with your ability to perform your daily living activities?	59	3.27	2	5	0.78
18. How satisfied are you with your capacity for work?	57	3.44	1	5	0.93
19. How satisfied are you with your self?	60	3.53	2	5	0.93
20. How satisfied are you with your personal relationships?	60	3.67	2	5	0.86
21. How satisfied are you with your sex life?	46	3.54	1	5	1.15
22. How satisfied are you with the support you get from your friends?	60	3.40	1	5	0.89
23. How satisfied are you with the conditions of your living place?	59	3.34	1	5	1.08
24. How satisfied are you with your Access to health services?	60	3.12	1	5	1.14
25. How satisfied are you with your transport?	60	3.27	1	5	1.04
26. How often do you have negative feelings such as blue mood, despair, anxiety, depression?	60	2.48	1	5	1.13

Source: Research Data
MED=mean; MIN=minimum; MAX=maximum; STD=standard deviation

Additional variances were analysed from the socio demographic variables collected by the sample profiling questionnaire. The results from this instrument, regarding the view about themselves on the use of the Portuguese Language have showed that almost 50% (n=29) of the participants reported that they currently have a good or very good use of the oral language. Also, for written language proficiency, 80% (n=49) of the participants reported to have a reasonable or good writing. When asked if they use Libras to interact with their family, only 25% (n=15) of the sample reported to interact by means of this language. Among those, most of them (n=14) have said that they have been using Libras with their mothers.

Table 4: Scores related to Portuguese language use and interactions (N = 60)

Variable	Frequency	%
Oral language proficiency		
Very good	16	26,67
Good	13	21,67
Reasonable	13	21,67
Bad	18	30,00
Written language proficiency		
Good	19	31,67
Reasonable	30	50,00
Bad	11	18,33
Family use of Libras		
Yes	15	25,00
No	45	75,00

Source: Research Data

By correlating data between salary and the use of oral and written language, it was observed by means of the Fisher's Test, significance level of 0.05, significant correlation between salary rate and orality (p=0.0481) and written language (p=0.0329), with frequencies showing that the best results for orality and writing occur among higher salary rates.

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Table 5: Relation between salary and language – Fisher´s test

Salary	Orality				P
	Bad	Medium	Good	Total	
1 to 2 salaries	9	2	2	13	
3 to 4 salaries	8	7	5	20	
More than 4 salaries	1	8	6	15	*0,0481
Unemployed	1	3	8	12	
TOTAL	19	20	21	60	
WRITING					
1 to 2 salaries	5	5	3	13	
3 to 4 salaries	3	15	2	20	
More than 4 salaries	-	11	4	15	*0,0329
Unemployed	2	4	6	12	
TOTAL	10	35	15	60	
READING					
1 to 2 salaries	3	9	1	13	
3 to 4 salaries	3	14	3	20	
More than 4 salaries	1	9	5	15	0,1266
Unemployed	1	4	7	12	
TOTAL	8	36	16	60	

Source: Research Data

According to the table 6 below, through the chi-square test, at the significance level of 0.05, it is verified that there is a significant correlation between schooling and orality (p = 0.0001), written language (p = 0, 0005) and reading (p = 0.0005), evidencing that the best QOL results occur through the improvement of schooling.

Table 6: Relation between schooling and orality, writing and reading – Test qui-square

Variable	School Training			Total	P
	Elementary School	High School	Higher Education		
Orality					
Bad	-	17	2	19	
Medium	-	11	9	20	*0,0001
Good	1	2	18	21	
Writing					
Bad	-	9	1	10	
Medium	-	20	15	35	*0,0005
Good	1	1	13	15	
Read					
Bad	-	7	1	8	
Medium	-	22	14	36	*0,0005
Good	1	1	14	16	

Source: Research Data

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IV. Discussion

The current study is one of the few Brazilian studies which assess the QOL of Brazilian deaf sign language users. In this section only some of the research results, especially the ones related to the Social Relationship (best scores) and Environment (worst scores) domains of the WHOQOL-Bref will be discussed and compared with the variables found in the sample profiling questionnaire.

The collected data reveal that most individuals of this sample were female, mean age of 28 years, congenital deafness, working and among the working participants, most of them earn between one and two minimum salaries, the percentage of deaf individuals earning more than two minimum salaries gradually decreases.

Crossing those data with question 18 from the physical domain of the WHOQOL-Bref, *How satisfied are you with your job performance?* it is perceived that the participants, in general, are satisfied with their job environment. However, they have reported dissatisfaction, even graduated and post-graduated deaf individuals, with their low salaries.

According to some participants, as they answered in the sample profiling questionnaire, deaf individuals earn less than people with normal levels of hearing. Regarding that comment, it is worth elucidating that, in the literature, it was not found national studies which point out salary discrepancies between people with normal levels of hearing and the deaf population. The fact that many deaf subjects earn between one and two minimum salaries meets national salary average. According to IBGE Census, 2015, over half of Brazilians earn less than a minimum salary per capita (IBGE, 2015). Brazilian minimum salary in 2019 is R$ 998.00, that is $ 260.

In this regard, a research which was held in Australia by Willoughby (2011) has elucidated that some deaf individuals in that study revealed that they have had the same position in their job and earned unequal salaries because they do not have the same level of access to information and communication as people with normal levels of hearing. The study by Perkins-Dock et al. (2015) with 224 deaf participants from a Southern city located in the United States, also has showed that communication disabilities and lack of assistive technologies at workplace preclude the deaf from getting higher job positions and salaries.

It seems that most deaf participants in our study despite their lower salaries are satisfied with their jobs. Most of the employed ones do not have access to information and communication by sign language. Sample participants were asked how they interact with people with normal levels of hearing at workplace. Six, or 10%, answered that they interact orally, as their co-workers did not know sign language. Eight participants, 13.33%, explained that they use writing Portuguese language at their workplace. It should be clarified that those participants who use Portuguese language inside their jobs earned over four salaries, work at universities and had at least Higher Education. That fact seems to show that the use of written Portuguese language may be a differential for better job positions and salaries, thus facilitating accessibility at workplace. It´s important to notice that 39 participants that earn between one and four minimum salaries do not use Portuguese language inside their jobs, they probably must have less access to communication and information in this environment.

This data matches with another Brazilian study from Guarinello et al. (2017), which shows that many Brazilian deaf have difficulties in the use of the written language. The authors also reveal that the use of the Portuguese language by means of more effective social practices may improve deaf individuals' quality of life. Furthermore, Lustosa et al. (2016) point out that the use of reading and writing is essential not only in daily life, but also for the appropriation of not-daily productions in human existence. The authors still observe that, in a literate society, the achievement of full citizenship demands the mastery of reading and writing, once it is the way that individuals may privilegedly get appropriated from the information and knowledge produced by mankind.

Even though 29 participants have reported that they have had good or very good oral language skills and 49 have affirmed that they have a reasonable or good writing skills, most of them do not use this language at work, perhaps because they have low levels of literacy. Willoughby (2011) also points out, in his study, that many Australian deaf individuals have low levels of literacy, which harms them at workplace, especially regarding the use of eletronic communication based on written texts. The author explains that the researched deaf suffered from prejudice at their workplace. It appears that, countries, like Brazil, should invest more heavily on support services to the deaf, by means of specialized teachers, who mediated reading and writing learning, so that deaf people could get better jobs and salaries.

Significant results were found when oral and written language questions where crossed with salaries, so best results for orality and writing skills occur among higher salaries.

Regarding occupation and schooling, it was perceived by participants' answers that most of them were graduated or post-graduated. Among the graduated deaf participants, one attended Computer Science; one, Mathematics; two, Physical Education; one, Psychology; two are graduated from Business; five from Education; and seven from Language-Libras[3]. As for post-graduation, only four deaf participants had such

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an educational level; all the others had specialization in special education. The participants, who told that they had a master degree, took this degree in Education.

It should be clarified that during their education, most participants relied on the presence of an interpreter of sign language. Such participants also answered how they interacted with their teachers at school; 43.33% (n=26) reported the use of writing to interact with their teacher, and 36.67% (n=22) used speech. It should also be observed that 28.33% (n=17) of the deaf were mediated by one sign language interpreter.

Many participants pointed out that they did not have sign language interpreters during elementary and middle school, that probably occurred because, at the time they attended school, the presence of such a professional in the classroom was not mandatory in Brazil. It became mandatory in the country in 2002, due to the Libras Law, which assured the action scope of those professionals in all educational levels. It is agreed that the legal obligation of the presence of that professional enables deaf individuals to interact with the greatest possible number of people in the institutions that they attend (Silva, 2016).

Also, in that regard, studies show that the mediation with the interpreter can improved deaf individuals' QOL, (Schubert, 2012; Silva, 2016), during their educational process.

Apart from the fact that many participants in this study had the help of an interpreter during their school years, it should also be pointed out that over half of this sample has Higher Education, which is a restricted condition to a small share of the Brazilian population. According to data from the National Research of Residences by IBGE (2015), only 16% of Brazilian professionals have Higher Education. Moreover, three out of 10 people from Brazilian labour force do not even conclude middle school (IBGE, 2015).

Probably the lack of interpreters during their school's years justifies the fact that many participants have answered that they use either written or oral language with their teachers of schools. Despite that, it is necessary to point out that most Brazilian population features limited levels of literacy, even those who attend Higher Education. Research by Lustosa et al. (2016), in which the authors analyzed the practices of literacy from beginners and graduated at a Higher Education institution, elucidates that many hearing students had difficulties in the use of reading and writing in daily practices, regarding the primary genres. Such genres, according to the research, should be acquired until the 9th grade of Middle School. This study also shows that the entrance in Higher Education of Brazilians from different social classes unveils that the greatest part of this population has literacy difficulties (Lustosa et al., 2016).

Difficulties in reading and writing are not only deaf people´s, it extended to the whole Brazilian population. Moreover, it should be clarified that despite the considerable increase in the number of enrolments in Higher Education in the past years, data from the Indicator of Functional Literacy (INAF, 2016) evidence that the population schooling level does not match the gains in the skill domains of reading and writing (Instituto Abramundo, 2014).

Significant results were found in our study when crossing data between orality, writing and schooling, best results in orality and writing occur by enhancing schooling.

The participants were also questioned on their views about themselves regarding the use of Libras and Portuguese language, and the use of Libras by their family members. In this aspect, the results point out that most participants refer to make a reasonable or good use of the Portuguese language, in the oral and writing modes.

The answers in this study have shown that the deaf individuals that self-reported to have good skills in orality and writing were exactly those who had better schooling and better answers in the QOL scoring. Participants answers also indicate that despite these deaf individuals being users of Libras, most of their family members do not use that language. Some of them point out that their parents have a tendency to use only the oral language to communicate, even banning sign language.

About that, Witkoski (2009) has revealed that it is still common in families with normal hearing levels, the obstination on spoken language and reading training as a normalization measure, disregarding identity formation, cognitive and psychic development of the deaf subject.

Concerning the use of the Sign Language by hearing family of deaf subjects, Guarinello et al. (2013), in their study, has clarified that many parents feel not able of taking care of their deaf children, and they often search for help, but do not get appropriate information. Their study reveals that many parents had a lack of explanation on what deafness is and its consequences; in general, they do not use sign language and opt for orality, often guided by professionals who points out only the importance of the oral language to the deaf children (Guarinello et al., 2013).

It is essencial to highlight the family on language appropriation process and quality of life of their children. Some studies show that if families had early access to sign language, their linguistic interactions with their deaf children would be more effective (Hyde & Punch, 2011; Chaveiro, 2011; Novogrodsky et al, 2014; Garcia, 2016; Hrastinski & Wilbur, 2016). Despite of that, the current research reveals that most parents do not use sign language, so most deaf people only learn this language at school.

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Thinking about changing this hard situation, it is understood that Brazilian public policies shoud prioritize family empowerment in the linguistic development of their children, therefore, Brazilian states should assure families the access to Libras by means of actions prioritizing the use of this language, and its importance as the second oficial language in the country. It is perceived that despite the recognition of the sign language in the Brazilian education policies, there is still the prevalence of monolingual practices in the country, which only prioritize the use of the Portuguese language (Guarinello et al, 2009).

In relation to the Environment domain, the worst scored evaluated by participants in this research, questions *Q8* and *Q9 How safe are you in your daily life? How healthy is your physical environment? (Climate, noise, pollution, attractions)*, were the ones in which most participants had lower scores.

In questions *(Q13) How available is for you the information you need in your daily life?* And *(Q24) How satisfied are you with your access to health care services?* data shows that the deaf participants are not satisfied with their access to information, safety and healthcare services. It can be inferred that this occurs because that share of population, in general, has been facing difficulties to perform daily activities due to the lack of interpreters and, mainly, access to the healthcare area, similar data was reported by other studies (Black & Glickman, 2006; Zöller & Archer, 2015; Gerich & Fellinger, 2012; Garcia, 2016).

Moreover, it is worth pointing out that Brazilian legislation, Law 13.146/15 determined that public services concessionaires should assure institutional ways to support the use and dissemination of Libras as the means of an objective communication (Brasil, 2015). Despite the legislation, there is still a lot to be done regarding deaf accessibility to society, once most of institutions do not provide information to the deaf, either by means of the written language (legends) or Libras (Brasil, 2015).

The lowest scoring evidenced in the questions on the Environment was also found in other studies (Garcia, 2016; Chaveiro, 2011; Hintermair, 2011; Gerich & Fellinger, 2012; Marinho & Vieira, 2015), which show that some factors related to the enviornment affect deaf individuals QOL, such as the lack of sewage system and healthcare services, lack of accessibility to leisure, money and means of transport, among others.

It can also be infered that the negative answers to the question related to leisure activities may have relation to money shortage and low salaries from part of this sample.

Similar results regarding the environment domain were also perceived in other Brazilian studies with other samples, such as, teachers. Penteado & Pereira (2007) have explained that, in this domain, teachers' devaluing job is evidenced, as in Brazil, they generally have scarce salary to their needs, which makes their possibilities of personal, social and professional investment decrease. Like this study, several participants' job in our sample are in the educational field, which has been suffering salary downsizing, professional scarcity and disqualification in Brazil.

In our study, it is perceived that a considerable part of the sample evidences satisfactory levels of literacy and education. Thus, many participants refer to themselves as bilingual, as they consider that they have proficiency in the use of Portuguese language, in the oral and writing modes, and in Libras for their social interaction. That seems to show that the use of the Portuguese language, in addition to the sign language, is one of the factors that may improve the quality of life for this share of the population.

Similar findings were evidenced in a research by Hrastinski & Wilbur (2016), whose results unveil that deaf students, proficient in the sign language and in English, presented better answers than their less fluent colleagues in tests of reading comprehension in English, as well as evaluations on the use of the English language. Those authors have observed that a bilingual environment is essential for the deaf to have a more favorable academic development.

Based on the presented findings, it is possible to consider that higher educational level, best salaries associated with better use of Portuguese language could be considered as factors that can influence a higher QOL.

It is crucial to notice that the WHOQOL-Bref instrument used in this study is a general instrument for quality of life used for all sorts of population, so further studies should be developed QOL instruments especially to deaf sign language users, which can contemplate their culture, educational and social aspects of life.

Despite such limitations, the WHOQOL-Bref does not miss its value as a feasible instrument for the QOL perception, especially when used with other instruments that enable to a deep discussion.

V. Conclusion

By analyzing the key research question, which factors influence the quality of life among the deaf sign language users population, it was noticed that the best scores of QoL in this group are related to the proficiency in the Portuguese language, in addition to earning the best salaries and higher education. It was also observed that low earnings prevail in great part of the sample, even among those with Higher Education. Moreover, it was perceived that the lower the schooling, the worse is QoL perception.

Despite many participants are reasonably satisfied with their quality of life, it can be noticed by

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their answers, especially in the environment domain, that aspects related to jobs, healthcare services, safety and leisure are unfavorable. These factors should be considered while planning and implementing health promotion actions toward the studied community.

It deems to elucidate that, in Brazil, despite the broad formulation of public policies to support deaf individuals accessibility, such as the Libras Law (Brasil, 2012), and the Law of Accessibility (Brasil, 2015), there are still many hurdles that this population have to overtake to access some social and cultural institutions. So, it is vital to invest in public policies and affirmative actions to reduce inequality conditions and also get rid of communication obstacles, which prevent their participation in society.

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Endnotes

[1] In Brazil there are three main Brazilian sign language proficiency certifications: PROLIBRAS – National certification from Education Ministry, CAS – Southern Brazil certification and FENEIS – Deaf Federation´s certificate. The researcher has all of them.

[2] Brazilian minimum salary in 2019 is R$ 998.00, equivalent to about US$260.00.

[3.] Graduation at Higher Education level, offered as Baccalaureate or Teaching Lincensing. Training, focusing on Libras objectifies to qualify professionals for using and teaching the different manifestations of the language, focusing on basic education and interpretation of the Brazilian Sign Language in several segments of the society.

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Learning Styles: A Motivation to Study Habits of Students

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Abstract- Study habit of students is one of the pressing issues a lecturer encounters despite of the many motivational factors given to them. How the issues can be solved to enhance better learning process. Learning styles can enhance students' development and initiative to their study habits.

The study examines the learning styles of students particularly, focuses on their study habits as a motivating factors to the learning process and enhancement of students that provide also an intervening action in the improve study habits.

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Learning Styles: A Motivation to Study Habits of Students

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Abstract- Study habit of students is one of the pressing issues a lecturer encounters despite of the many motivational factors given to them. How the issues can be solved to enhance better learning process. Learning styles can enhance students' development and initiative to their study habits.

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Results shows that respondents have the desire to study because they plan do their learning style and study habit and they are even motivated to study. They are distracted from untoward disturbances and their concentration on their study in which their interest to study though they are being motivated is affected. Breaks or interruptions of study relieve them from stress in mastering their lesson which affected their interest to study also. They have the techniques in studying which is their plan to do using time planning to cope with all the requirements in their study and to adopt a better learning style and study habit. Note taking during the learning process are done by the respondents for better mastery of the lesson and their learning enhancement toward their study habit and learning style as a motivational factor among the students. Advance practice test is emphasized or already do which will help them master the techniques in the examination that can help them to correct their mistake for proper learning.

Keywords: learning style, study habits, motivation to study, learning process, and learning enhancement.

I. Introduction

Study habit of students is one of the pressing issues a lecturer encounters despite of the many motivational factors given to them. How the issues can be solved to enhance better learning process among students. Learning styles can enhance students' development and initiative to their study habits (Tsai, Shen, & Lin, 2015). Hence, study skills need to be developed since students are the center of learning which will push them to motivate properly in their learning enhancement. Most of the students have a difficulty in their learning process especially when they are not motivated properly on their studies. They need to identify how they can enhance and improve their learning styles and skills. Students should have a better understanding why they study? Practice what they learn because it is a reflection of their potential growth and development in their learning process. They should be motivated to think maturity. This can accelerate to improve their learning process (Cottrell, 2019).

Moreover, learning styles can be improved when students are organized in their study habits. They need to focus, manage their itinerary as to time of their studies aside from their extra-curricular activities. They can plan to achieve their study habits, write their projects, homework and assignments on time. They should make a list on the process of their study. List can help them study step by step and accomplish their goals in their study. The transformation of learning from the students provides challenges on the pedagogical strategies and techniques among the educators as they design their learning activities toward students that make their study habits more meaningful. The impact of the motivation given to students can promote new trends and demands in their learning process. It helps them to monitor their improvement inside the classroom setting on their learning style and in their capacity to learn, to motivate their critical thinking and analysis. It is very essential to interrogate on the learning process that can create a better atmosphere and opportunity to explain and to observe the insight of their learning process. The key issues is how to improve the learning study style of the students at present and how they could be influenced to be successful in their study habits, innovations, and practices (Cross, 2019).

Furthermore, students must know their expectations on how they can be evaluated on their performance inside the classroom. It is not only to listen among the lecturers and seat down to attend their classes regularly, however; they can be evaluated base on their performance and output inside the classroom. Guiding students on their expectation can help them improve their study habits since they have targets or goals to accomplish like in the marking scheme system and what is expected for them to be promoted. Students must be comfortable on the expectation though proper

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motivation which give a better impact on their learning style. There are many important differences and consideration on the learning style of the students. There are students who need motivation properly to study despite of the many techniques and strategies of the lecturers inside the classroom. There are also students whose style in learning doesn't need any motivation because they value education that can help them answer their future career in life. There are also students who are lax and they do not care about their studies. This needs to be given emphasis so that learning enhancement and learning style will be addressed and their study habits become a motivation on their learning process. Effective method strategies and techniques in teaching can design a better atmosphere and useful among the learners (Chen, Jones, & Xu, 2018).

Similarly, students need to plan and develop their learning style, and need to know the details of their modules or subject. They need to focus on those modules that are challenging because there is no easy module but all modules in the curriculum are challenging since students are being molded to develop their learning process. Developing plan can provide time and ample situation to prepare and create study atmosphere a conducive to learning which is needed by the students. It is better to prepare than to repair and to rebuild. Avoid last minute review. It is better to prepare in advance than cramming at the end. Calendar activities base on priorities like assignment, research, project and homework. Set goals and objectives in the learning process because in doing so would mean success on the part of the students. It instills efficient and effective management in time among students and provides development on their skills and plans. Personal goal set by the student in their planning toward their studies can improve their learning engagement which focus on goals in their academic and performance inside the classroom. The process of the learning among them provides a harness skill in their thinking effectively and critical skills. It assesses their academic goals and develops self-plan and study skills in their learning experiences and perception to their learning styles and their development setting in their study habits. When students are exposed to academic planning and goal activities to enhance learning academic achievement and performance will be observed on their experiences in learning (Yusuff, 2018).

Nevertheless, students should possess positively in all aspect of learning. They have the potential to develop a learning style. They should focus and have the set of mind that they can make a difference, they can improve and as such they can make the full potential of learning. It is just a motivation on how to do. Students should be encouraged to strive to the best they can by all means. It is just a matter of interest. Learning style can be taught and caught from the facets of life. Plan their study followed by critical thinking that can provide positive results in the learning process. Since learning centered are the students, lecturers need to understand the capacity of the students so their learning style will not be affected on the impact of their well-being. Provide a better framework and optimal learning climate that can boost their morale and enhance their learning process. This can help students to have their academic achievement and performance. Students face different attitude and behavior toward their studies, however; when proper motivation and proper guidance are stressed, they can be influenced with proper learning style in their study habits. Appropriate identification on the development of the learning style and habit prepares them for their learning process that enhances their mind to a better education. Positive thinking among students can be a great influenced in their learning style and a motivation to their study habits as a whole. This can be intervened through their competency learning process as a factor in learning relevant to their academic performance and their study habits (Roman, 2018). On the other hand, the positive result into a change among the study habits of the students will provide gaps on their needs in learning toward their thinking (Gallagher, & Thordarson, 2018).

Consequently, learning style can motivate study habits of students when they clarify expectations on their learning performance. Information on the understanding of promotion when are successful in their studies. They are aware that support is given on their learning process. They are given an effective teaching technique and development on their learning process. Supports are given step by step and are given proper guidance also. Activities given are based on their knowledge and on their capacity because they are being enhanced properly on their learning process. Necessary techniques and resources are provided to enhance their learning style and learning process to achieve a better study habits as a motivation in their learning process. An important determination on motivation of learning influences the skills of students in their learning process and their creativity toward their study habits. The process of influencing and understanding the skills through motivation will help students in their study habits (Bhakti, Astuti, & Agustina, 2018).

a) Research Objectives

The study examines the learning styles of students particularly focuses on their study habits as a motivating factors to the learning process and enhancement. It will provide also an intervening action in the improve study habits of the students.

b) Research Question

The research is conducted to examine the learning styles and study habits of students and their motivation to learning process. Specifically, it aims to answer the following questions.

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1. What are the learning styles of the students to their learning process?
2. How the learning styles and study habits of the students are observed?
3. How learning styles and study habits have been a motivation to learning enhancement?

c) Theoretical Lens

This study is anchored on the motivation of theories in learning because it focuses on navigation convenience through divert situation on motives and changes of behavior, goal motivation, motivation on interest, motivation on success attribution, motivation on self-belief and self-efficacy and motivation on determination to oneself. Sometimes it is being called as value expectation theory which implies positive ways on the motivation of students on the influence of their learning style and study habits. It also deals on the students' behavior and driving force to learn. It focuses directly on the relative behavior toward their studies. Motivation can be a distinction to improve their learning style and their study habits. The integration of motivation theory achievement outlines the behavior on the part of the students. It distinguishes competency on behavior to demonstrate the development on the strength and weaknesses of students which is focused on involvement of the task, egoistic involvement, and involvement in extrinsic motivation. This can transform to a reward of students in their learning style and study habits (Nicholls, 2017).

d) Research Design

The study employed the qualitative and quantitative research design because it measures the quality and accuracy of answers which focuses on the perception, experiences and analogies of the learning styles of the students and a motivation to their study habits. It describes the different approaches to qualitative and quantitative approach in the research which has been the focused of the research. The context of the integration of qualitative and quantitative provides tactics in the discussion on the study observed and the motivation as a factor in their study habits and learning styles (Bryman, 2017).

e) Sampling Techniques

Random sampling is utilized in the study which is equal opportunity be given to the selected area of the sample population in the different colleges and universities in the Philippines, Libya and Sultanate of Oman. The population is chosen randomly to represent the study under investigated. This is the simple way of collecting data in carrying the objectives of the study in the learning styles on the study habits and motivation of students to learn. It assesses and conducts the required samples as representation of the study. It examines approaches on the learning styles and motivation to a study habits of the students (Gregoire, & Affleck, 2018).

f) Respondents of the Study

The subjects of the study are the selected students from the different colleges and universities in the Philippines, Sultanate of Oman and Libya. The study comprises of 14 respondents. This is conducted from the period 2019-2020.

g) Research Instruments

To gather the information on the study investigated, the research question is formulated based on the learning styles and study habits of the respondents. This is to examine their learning style and their motivation to their study habits on their learning process. A question is given to give ample time to answer and give their views and insights on the question formulated.

h) Data Gathering Procedure

The pertinent data gathering on this research is elaborated below:

- Conducting Interviews. Series of interviews are done among students on their learning styles and study habits on how they are being motivated to their academic performance. This is done on collaboration among the three researchers from the Philippines, Oman, and in Libya.
- Formulation of the research concept. Upon gathering the different series of interviews and series of answers the formulation of the research concept is determined to examine to different learning style and different study habits of the respondents as a motivation to their learning process.
- Formulation of the questionnaire. Formulation of the questionnaire is made based on the result of interviews and answers of the students.
- Floating of questionnaire. After formulation of the questionnaire and validation of the questionnaire, the questionnaire is floated on the target area of the study
- Analysis of the research answers. Questionnaire retrieved is being analyzed thematically.

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II. Results

Table 1: Study styles and study habits of students

Indicators	Already Do	%	Plan to Do	%	Not Interested	%
1. Study every day.	6	43	6	43	2	14
2. Turn off the phone, TV and other distractions.	4	29	4	29	6	43
3. Take short but frequent breaks, like 5 minutes every half hour.	2	14	5	36	7	50
4. Study early (don't wait until last minutes).	5	36	7	50	2	14
5. Take notes as you study using your own words to simplify complex ideas.	10	71	2	14	2	14
6. Take practice test, so you don't panic when it's time for the real test.	7	50	4	29	3	21

Table 1 shows the learning styles and a motivation to students study habits. Most of the respondents say that take notes as you study using your own words to simplify complex ideas is already do with a frequency of 10 or 71% among the respondents, take practice test, so you don't panic when it's time for the real test is already do with a frequency of 7 or 50% among the respondents, study every day is already do with a frequency of 6 or 43% among the respondents, study early (don't wait until last minutes) is already do with a frequency of 5 or 36% among the respondents, turn off the phone, TV and other distractions with a frequency of 4 or 29% among the respondents and take short but frequent breaks, like 5 minutes every half hour with a frequency of 2 or 14% among the respondents.

Likewise, also on plan to do on the learning styles of the respondents in their study habits, study early (don't wait until last minutes) is 7 or 50% among the respondents, study every day is 6 or 43% among the respondents, take short but frequent breaks, like 5 minutes every half hour is 5 or 36% among the respondents, turn off the phone, TV and other distraction and take practice test, so you don't panic when it is time for the real test is 4 or 29% among the respondents and take notes as you study using your own words to simplify complex ideas is 2 or 14% among the respondents.

Lastly, on the learning styles on not interested to study shows that take short but frequent breaks, like 5 minutes every half hour is 7 or 50% among the respondents, turn off the phone, TV and other distractions is 6 or 43% among the respondents, take practice test, so you don't panic when it's time for the real test is 3 or 21% among the respondents while study every day, study early (don't wait until last minutes) and take notes as you study using your own words to simplify complex ideas is 2 or 14% among the respondents.

Table 2: Themes and central ideas on the learning styles and motivation on the study habits of the learning process

Themes	Participants' Responses	Central Ideas
1. Study and learning style	Plan to do	Respondents desire to study
2. Distractions	Not interested	Concentration on studies from any untoward disturbances
3. Interruption and short breaks	Not interested	Breaks to relieve the monopoly of studying
4. Time Planning	Plan to do	Techniques in studying among the respondents
5. Using notes	Already do	Note taking during the learning process
6. Practice test	Already Do	Advance practice test prior to final examination

a) Study and Learning Style

The respondents have the desire to study and they have plan to do, however; that desire has to do something with their motivation to study depends on their interest. They say,

"Study everyday". T1-P6

"Study in a way that suits learning styles". T1-P9

"Study the hardest thing first and then move on to the easier one". T1-P5

Hence, respondents study everyday but they need to be motivated on their learning process because they are studying based on their needs. They have their techniques in studying like simply doing everything to make things easy for them.

b) Distractions

Respondents are motivated to study, however; they need to concentrate on their studies that are free from any untoward disturbances. They say,

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"Turn off the phone, TV and other distractions". T2-P6

"Play quiet background music". T2-P9

"Create a quiet place at home to study". T2-P2

However, respondents want to create a learning atmosphere where they can concentrate on their study. This can help them improve their learning style and as such they can achieve their goals in their studies particularly on their academic performance. There is a better learning atmosphere where the area of studies is free from any noise and free from any disturbances.

c) Interruption and Short Break

Respondents want to balance their mind and want to take break from time to time in studying their lesson because relaxing their minds can contribute to a better learning for them. Sometimes, they want to free themselves in the monopoly of mastering their lesson, they want to

"Take short break but frequent breaks, like 5 minutes every half hour". T3-P7, P5 and P2

"Use planner or agenda to keep track of your progress" T3-P6, P7 and P1

"Reward yourself after a good study session". T3-P12 and P1

Nonetheless, they want to impose a couple of minutes to have a break during the entire studies. This is one way of helping them to improve their learning skills. As in fact, they organize their itinerary on the progress and success of their performance in school which is their target to accomplish. They are even motivated to treat themselves a reward for the success of their studies when they excel since the output reveals their performance. It is a motivating factor in their study habits and their learning style.

d) Time Planning

Despite of the motivation they have in their studies toward their study habit and learning style. Respondents want still to have proper planning on their studies. Accordingly, they said that proper time planning can lead to time management in their studies step by step. They say,

"Study early (don't wait until last minutes)". T4-P5, P7 and P2

"Spend most of the time on things that are hardest". T4-P5 and P4

"Ask for help if you are struggling with something". T4-P7, P5 and P2

Likewise, respondents are motivated to learn and to study beforehand. They do not want to cramp in a last minute to review because they wanted to relax in all aspects of their study. On the other hand, they challenge themselves to study the complicated lesson rather than those lessons that are easy to study. If they have a difficulty in coping with their lesson, they are trying to solve the problem by asking who have the expertise in the matter.

e) Using Notes

One of the most interesting a learners does during their class lesson is to take down notes on the important key issues on their lessons. This is one way of motivating them as a part of their study habits and their learning styles. Using of notes during the discussion will help them remember their lesson especially during examination. They want to,

"Take notes as you study using your own words to simplify complex ideas". T5-P10 and P2

"Keep notes in a notebooks or folder". T5-P10 and P2

"Review your notes on a regular basis". T5-P8 and P3

Accordingly, the respondents taking notes can help them to explore more things especially where words are unfamiliar with them and as such they want to discover those unfamiliar words through searching the meaning that can help them to know the details of their lesson. Also, all their notes are intact from time to time and they are reading for proper mastery of their lesson. This is a challenge on their part to study. They can develop this habit and are useful in their academic performance.

f) Practice Test

Further, respondents have techniques in their study habits and learning styles. This can help them improve themselves and have a mastery of their lesson. Doing this practice can provide a learning atmosphere on their part. They say,

"Take practice test, so you don't panic when it is time for the real test". T6-P7, P4 and P3

"Make correction between what you are studying and what you know". T6-P7

"Quiz yourself about what you just studied". T6-P9, P3 and P2

Indeed, constant practice in their examination will make them perfect. Accordingly, this is one way of helping them relax prior to their final examination. They even have a chance to analyze their mistakes for room of improvement. This study habits and learning styles can have an impact to their academic performance. They are eager to learn through testing themselves as a part of their mastery in their lesson.

III. Discussion

This discussion presents the analysis of the data under investigated. It reveals that most of the respondents answer falls on already do, plan to do and not interested in their learning styles and study habits and as based on their motivation to their academic performance vary depends on their needs. The key indicators on the performance of the students provide concept in a basic manner which is outlined in their

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abilities and thinking critically that can be determined by their module tutors for a better mastery of their lesson (Paul, & Elder, 2019).

a) Study and Learning Styles

Study and learning techniques of students at present must be in accordance to their desire to learn and according to their motivation to their learning process. They have their desire and ability to study. The influence of their study habit and learning style indulges on the intelligence of the individual learners. They are motivated especially when they have the desire for learning output. The focus of the study can be the goal of the students in their learning process on their cognitive mechanism in enhancing their knowledge of learning (Willis, & Schaie, 2018). This has been proven on the theory and practices in learning where it fascinates the prospect of studying in the level of individual students. It is an orientation of the practice key of learning process that integrates the understanding the traditional challenges to handle students in their learning process. However, distinguishing the exploration on the attitude of students in their learning process practice the potentials of the learners, hence; the theory stress on how to overcome dualism in studying which replace process to substantial as compared to the study habits and learning styles of students in their critical thinking and their critical power to develop their study skills. This will help students to force and to think what the possible outcome of their learning process through their learning style (Adler-Nissen, 2016). On the other hand, learning style and study habit must be based on their capacity and ability as individual students. Hence, they are motivated to analyze their studies through prioritizing their challenges to learn to make their studies comfortable.

b) Distraction

There is always opposition in all things. This is a hindrance to the achievement of students in their learning process. It can also hinder them in their learning style and study habit. Distraction can ruin the interest of the students in their study habit and their learning style because they are being disturbed on their concentration to learn. Students must have the concentration and free from disturbance for them to flourish and for them to be developed in their learning process. It is a guide for them to learn practically. This can deal a psychology on the positive aspect of their learning engagement, emotion toward their studies, positive relationship toward their learning process from their classmates, parents, neighbors and their teachers in accomplishing different outcome in their learning process. When students are flourishing on their academic performance, these are based on their focus and are free from any disturbances while studying. This can be controlled toward the adoption of their performance to their academics. This has an implication to their learning style and study habit and as a motivation to their academic performance (Van Zyl, & Stander, 2019).

Similarly, students want that noise should not be observed during their study hours like music, phone, and TV or any distraction gadgets. They want to have a quiet place to study at home or school. The impact to them is distraction on their learning process. Their performance in the master of their lesson will increase when those gadgets disturbance are avoided. Distraction has an effect on the achievement of the students in their performance in school. Adapting to the strategies and techniques suggested by students provide conditioning characteristics of students' performance in their learning process and develop their study habits. This is a motivating factor for them. It increases their self-driven performance in achieving their study habits and learning styles. Distraction in their studies has an effect that is detrimental to their education process (Beland, & Murphy, 2016).

c) Interruption and Short Break

Since students are much pressured in their studies, assignment, projects, researches, examinations and quizzes, they wanted breaks to monopolize their pressured studies. They want to relax and free themselves in pressure. They want to relax their brain in the pressure of their studies since most of the time is spent in studying. No time to relax. Most of their time is spent in analyzing their studies and projects. They are struggling even to the extent of asking somebody for assistance in times of problems in their lesson. Control over studies and relaxation constitute a better energy and recovery engagement in the study habits and learning style of the students. Time spend in their study breaks for even an hour helps them to strive and helps them to relax and free from stress in their studies. Reducing exhaustion can contribute to psychological impact on the part of the students in the control of their study habits. They are motivated to do so but their body is weak. Recovering from their stress through relaxation and breaks would energize their brains to be effective learners. It demonstrates self-efficacy in the improve replenishment of their mind resources (Bosch, Sonnentag, & Pinck, 2018).

Consequently, the learning approaches must not force students to provide output when they are tired. The learning process must be given based on the capacity to study. Motivate them properly on their learning habits and styles. The benefits of studying hard can reap a reward on their success to their academic performance ad can be done slowly and step by step. Deep analysis on the learning process of the students will motivate them well to excel in their learning enhancement and process which is simply spending on studying based on their time pace for their study habits (Everaert, Opdecam, & Maussen, 2017). There is a need

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to organize their studies and monitor their academic performance. Most of all is to reward themselves on the progress of their studies and learning process.

d) Time Planning

Planning is important in studies because if you fail to plan, you plan to fail. This is true with the time usage or time spent in studying. There is a time in every season, a time to play and a time to study. Developing a time to study would enhance study habits and learning styles of the students. There are students who can study early others want to study late at night. No specific time is identified for study depends on the availability of the student in their time scheduling to study. Time must be in accordance to the availability of the students to learn. Time management will help them develop their learning styles and study habits. Time planning is necessary for the improve study of the students especially during their learning process as a motivation to their learning style and study habits. Efforts are important and are given consideration and attention on the part of the students. Time is gold in focusing study design on them. This is for the improvement on the learning style and study habits of the students (Fujii, 2019). Adapting and designing time properly can practice and develop study habits and learning styles of the students.

Elsewhere, time planning exists when time management is emphasized. Effectiveness in time planning guarantees students success in their studies development toward learning. It provides systems on the management of their studies as to deadlines of their projects, assignment and researches. Likewise also on their examinations, and other accomplishment they have in school. It provides system and adapt the ability to plan their time as part of their study habits and learning styles as a motivation on their learning process (Fridovich-Keil, et. al., 2018).

e) Using notes

Using of notes is important during the class discussion to have a mastery of the lesson when outside the classroom. This can help the students to clarify unfamiliar words and synthesize lessons which need analysis. There are lessons that are complex where critical thinking works for better learning. It has been said that writing in a piece of paper is important rather than memory because there is a tendency of forgetting the process while the written text will not fade. Using notes even help the student to go over the lesson in time of examination and to reflect the lesson inside the classroom. Engagement of using notes among students can improve the information they learn inside the classroom. The effects and benefits of using notes provide process and deeper information in note taking. It manipulates the lecture notes during their examination. Likewise, using notes provide framework in the process of their learning. It distinguishes their cognitive knowledge of their learning and development process (Jansen, Lakens, & IJsselsteijn, 2017).

In addition, using notes can assist them to have an indication of what they study and to help them familiarize the information adequate to their learning process. It assists them to remember the content of their lesson. They can even identify text, images and define the concept of the lesson inside the classroom. Once this is done, then learning styles and the study habits of the student can be significant and can motivate them properly to enhance their learning (Yu, Rajamani, Krishna, & Vaidyanathan, 2018).

f) Practice Test

Students have the desire to have a practice prior to their final examination. This can help them to have a mastery of their lesson. They need to have practice for them to be confident in their examination because practice makes them perfect. They have still a chance to review on the mistake they committed during the practice test. There is a need to practice and to measure their knowledge of learning on their output inside the classroom.

Practice test inside the classroom provides activities to students that enhance their learning ability and process. It develops their retentiveness and memory regarding their lesson. Varieties of test provide a better practice before their final examination. It can help to improve their learning through constant practice. It focuses on the techniques during the final examination. It prepares them emotionally during the examination. Practice test can be done through a form of quizzes, games, group discussion, insights, and observations. It reflects on their cognitive engagement on the influence of the learning process among them that resulted to their learning styles and study habits. It provides measure on the performance of the students in their academic performance (DeLozier, & Rhodes, 2017).

Similarly, there are students who have the basic knowledge and information inside the classroom, however; they need to practice all over again for mastery. This concept has the analysis on the development of the students in their learning style and study habit for the application of the mastery and application complexity of the learning process. Student sometime struggle in the identification of terms, facts and principles of the lesson but motivation for them to study will help them master through constant practice (Murray, 2018).

IV. Conclusions

In the light of the findings of the study, the conclusion is drawn.

1. Respondents have the desire to study because they plan do their learning style and study habit and they are even motivated to study.

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2. Respondents are distracted from untoward disturbances and their concentration on their study is affected, though they are motivated to learn.
3. Breaks or interruptions of study relieve them from stress in mastering their lesson which affected their interest to study also.
4. Respondents have the techniques in studying which is their plan to do using time planning to cope with all the requirements in their study and to adopt a better learning style and study habit.
5. Note taking during the learning process are done by the respondents for better mastery of the lesson and their learning enhancement toward their study habit and learning style as a motivational factor among the students.
6. Advance practice test is emphasized or already do which will help them master the techniques in the examination and can help them to correct their mistake for proper learning.

V. Recommendations

Based on the results of the findings and conclusions, the recommendations are given below.

1. Students must be motivated enough to develop their learning style and study habits to achieve the objectives of the students in their learning output. This can help them improve their academic performance and enhance their knowledge in the domain of learning.
2. Students must concentrate on their studies by avoiding distractions during the review of their lesson. Quiet place can help them master their lesson. Usage of gadgets, music, and sound must be avoided. This can distract them in their learning process.
3. Respondents must have to set time for their breaks during study because this can help them relax from the stress and relax their brains from their study. Breaking the monopoly of their studies can give energy on their brains and better mastery of the lesson.
4. Proper time planning must be given emphasis to have proper management in their study habit and learning style. There is a time in every season and a time to relax and a time to play and time to study. Focus on time management will help materialize the study habit and learning style of the respondents.
5. Pen and notes must be ready from time to time. This can help the learning style and study habit of the students improve. Using notes can motivate students to excel in their academic performance. A motivation process must be also given emphasis to them.
6. There is a need to practice test from time to time this can be done through quiz, group discussion, or games. Practice test will make them perfect and prepares them to be equipped with full knowledge of learning.

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Between the Possible and the Not Possible: Interdisciplinarity in Teacher Training

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Keywords: interdisciplinarity. higher education. teacher training[1].

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Between the Possible and the Not Possible: Interdisciplinarity in Teacher Training

Luiza Olivia Lacerda Ramos [α] & Patricia Figueredo of Jesus Maia [σ]

Abstract- This article presents the obstacles and possibilities for the realization of interdisciplinarity from the perspective of a group of teachers from Teacher Training degree course. Data collection was carried out by a form that could be filled on Google Form (2018, 2019) and on links sent via email and Whats App. Based on the content analysis proposed in Bardin (1997), the data were analyzed based on the context and significance units identified by the authors from the bibliographic study that accompanied the research highlighted in Fazenda, (1994), (2002), (2008); (2011), Morin (2000), (2003) (2006) and Ramos (2004), (2016). The results revealed the major obstacles to be of epistemological, instructional, psychosociological and cultural nature.

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I. Introduction

Interdisciplinarity is a topic that has been widely discussed and also used in the educational context as a proposal whose main purpose is oppose to the fragmentation of knowledge and, consequently, of teaching. The concepts that defend interdisciplinarity as a possibility to enhance the teaching and learning processes as a way to avoid the fragmentation and compartmentalization of knowledge have been the object of study of several researchers such as: Fazenda (1994, 2002, 2008, 2011); Morin (2000, 2003); Santomé (1998); Frigotto (2008); Pombo (2008) and Ramos (2004; 2016), among others.

In the last decade, Teacher Training undergraduate courses have been called upon to review their Pedagogical Course Projects (PPCs). Among the legal bases for these guidelines, the necessary adaptation of the National Education Guidelines and Bases Law (LDBEN) n. 9.394/96, the National Curriculum Guidelines (DCNs) of November 6th , 2001 and the CNE /CP Resolutions of February 1st and 2nd , 2002.

More recently, the Common National Curriculum Base (BNCC) also calls on the higher education community to rethink their curricula to ensure, among others, the change in the curriculum organization proposed by the base.

In teacher education, interdisciplinarity is included in the main debates agenda since it considers a formation based on creativity, dialogue, relationships and process complementarity as a way to develop learning beyond reason, which is, through intuition, sensations, emotions and feelings, finally, also based on sensitivity.

Given this context, this study aims to discuss from the perspective of higher education professors, what obstacles and possibilities for the realization of interdisciplinarity are presented at this level of education.

II. Overcoming Obstacles: What Are They?

The development of interdisciplinary practices requires a break from the historically established models in teaching, including conventional classes, traditional teaching, and compartmentalized curriculum. For this overcoming, it is essential to invest in an institutional change that privileges integrative processes, curriculum organization that prioritizes dialogue and the interconnection of knowledge (KLEIN, 2001). Naturally, the disciplines must still compose the organizational framework, since interdisciplinarity does not eliminate disciplinarity; on the contrary, it is a condition of effectiveness.

Overcoming obstacles that make interdisciplinary work difficult requires first its acknowledgement. We understand here, an obstacle as an action or situation that causes an impediment, forms a barrier, creates a difficulty, a nuisance or a disorder to achieve concrete goals. Some obstacles to be overcome by teachers were categorized according to Japiassu and were socialized in the literature by scholars interested in the subject (FAZENDA, 2011; POMBO; GUIMARÃES; LEVY; 2006). (i) epistemological and instructional obstacle, refers to the elimination of barriers between disciplines; (ii) psychosociological and cultural obstacle, it is linked to a more specific formation, the accommodation to an already installed situation and the fear of losing personal recognition in more dialogical and open teams in a workplace devoid of hierarchies. (iii) methodological obstacle that refers to

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the difficulty in reviewing teaching methodologies that promote greater interaction between curriculum components; (iv) formation addresses the need to overcome the individuality characteristic of an unilateral formation; (v) material obstacles refer to the lack of planning, spaces and times that allow interdisciplinary work.

In order to better systematize the ideas posed by the obstacles of interdisciplinarity, Table 01 summarizes our interpretation.

Table 1: Obstacles that interfere in the development of interdisciplinary activities in teaching

Type	Main Aspect
Epistemological and Instructional	It evidences the organization of the curriculum in disciplines, which respects the hierarchy.
Psychosociological and Cultural	Barrier between people and resistance from the team that develops the curriculum. It can generate prejudice or aversion.
Methodological	Different methodological propositions applied by the curriculum development team
Training	Team consisting of expert professionals - fostering hyperspecialization.
Material	Lack of economic and financial resources for both teacher and material resources.

Source: Elaborated by the author, 2018

Other obstacles to overcome for the realization of interdisciplinary identified in the literature: The fragmented evaluation often without proper planning; the implementation of educational innovations that are not reflection inductive; repetition of methods learned in the formation process and repeated throughout the professional lives.

And from this study, some concerns arise: When they enter the higher education teaching career, are specialists aware of the difficulties and challenges to face in the daily life of academic life? Do their trainings prepare them to work together to promote the exercise of integration and interaction between areas of knowledge? And paraphrasing Fazenda (2011, p.150) How is interdisciplinarity defined when the intention is to train teachers?

The same author tells us that "it would be necessary, above all, to eliminate barriers between disciplines, in order to facilitate disciplinary interrelationship and prevent any science from seeking to impose its sovereignty over others" (IDEM, 2011. p. 140). This would perhaps be one of the obstacles that resisted to the present day and prevented the realization of interdisciplinarity, since "the disciplinary developments of the sciences not only brought the advantages of the labor division, but also the disadvantages of over-specialization, confinement and the shattering knowledge "(MORIN 2003, p.11). The segregation of disciplines and knowledge applied by educational and research institutions even today, can prove an institutional and epistemological obstacle. And the maintenance of this obstacle can in turn create a wave of compartmentalized movements, making room for conflicts and barriers between specialists, thus impeding scientific progress and knowledge. That is why in order for "to really take effect, it would be necessary to eliminate barriers between people" (Fazenda, 2011. p. 140). These are the psychosociological and cultural obstacles.

What would be the biggest obstacles? Transforming educational institutions or transforming mental and social structures? Would it be clear to say that this transformation would be a necessary condition for the demolition of the other barriers that hinder interdisciplinarity? According to Fazenda (2011) "more difficult than transforming institutional structures is to transform mental structures, and obviously this transformation would be a necessary condition for the transformation of the former" (p. 91). And this leads us to reflect on what is taught and what is learned within universities. What makes teachers repeat the same methods in their classes? The same form of assessment? Lacking motivation? Lack of time? Aversion to areas other than theirs? Or lack of attitude for a change that transforms the environment in which this expert works? According to Ramos (2016).

> It is clear that the desire to change is a motivation for the teacher, enabling him to overcome obstacles such as the departmentalization of the institution, the indifference of colleagues and the lack of time to build a more globalized knowledge. (p. 198).

So "What is intended, therefore, is not to propose the overcoming of education organized by disciplines, but the creation of conditions to teach in function of the dynamic relations between the different disciplines, allied to the problems of society" (FAZENDA 2011. p. 89). That is why a critical analysis of the system and organization of the disciplines is important, and not only that, it is also necessary to create necessary means that lead the specialists to reflect on their methods used in practice and theory.

Fragmented teaching can have consequences for learning, given that such a proposition isolates the subjects in a distinct and compartmentalized way as if

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knowledge had no connection, which hinders the understanding of knowledge in an integrated way.

Concerning the prevailing hyperspecialization in the higher education teacher's training "these systems cause the disjunction between the humanities and the sciences, as well as the separation of sciences into hyperspecialized, self-contained disciplines" (MORIN, 2000. p .40). And complements.

> In fact, hyperspecialization precludes seeing the global (which it fragments into portions) as well as the essential (which it dilutes). Now the essential problems are never breakable, and the global problems are increasingly essential. Moreover, all particular problems can only be correctly posed and thought out in their contexts; and the very context of these problems must be increasingly positioned in the planetary context. (2003. p.13).

The new education methodologies must make the connection between what is learned and what is experienced in daily life, in addition to overcoming prejudice for the new that arises. The methodological obstacle

> This seems to be the most important, since the elaboration and adoption of an interdisciplinary work methodology implies the previous overcoming of the institutional, epistemological, psychosociological, cultural obstacles, of qualified personnel formation and also the overcoming of the material obstacles (FAZENDA, 2011, p. 92)

So rethinking this formation in an interdisciplinary perspective invites us to confront different knowledge to enable change regarding other areas of scientific knowledge. Thus Morin (2003. p. 13) emphasizes the need for a reform of thought, as "there is an ever widening, profound and grave inadequacy between separate, fragmented, compartmentalized knowledge between disciplines" and that all fragmented knowledge leads us to hyperspecialization. Although specialization cannot characterize a problem in itself, as we agree with Ramos (2016) when he tells us that "specialization surpasses mythology by trying to cope with hitherto unexplained phenomena" (p. 29), according to the same author. "specialization becomes insufficient, because its relation to life is remarkably instrumental and the mechanistic principle puts the usefulness of the useless among its walls; the art of science; the man of nature" (2016 p. 29) also" hyperspecialization prevents the perception of both the global [...] and the essential. (MORIN, 2000 p. 41).

Although the hyperspecialized teacher trainers may hold the knowledge for themselves, the knowledge may not reach the teacher still in formation. Thus the process of teacher training requires discussions about the challenges related to the teaching genesis that must be not only theoretical but also epistemological and methodological, which is the relationship between the disciplines, where each one must respect the limit of the other and yet there is a consonance between them so that constitution of learning is not fragmented and compartmentalized.

Morin (2003) brings us some "Challenges", which must be overcome and shows the inadequacy between knowledge that is separated into disciplines and so there is a fragmentation of knowledge that can create problems for humanity, and these challenges are complex, multidisciplinary, global, planetary.

Specialization is a problem when the specialists close in on themselves, avoiding working with people from areas other than their own, but when they opens themselves to dialogue, specialization can guarantee a more integrated teaching leaving a legacy for the teacher in training.

It is considerable to understand that the obstacles described and categorized here become interrelated as material obstacles usually result from inadequate planning that disregards economic and financial aspects and even of space and time, which are a priority in motivating project participants. It is possible to highlight, in this same way, that the obstacles related to vocational training are the source of the previous ones, since in the initial and continuing education programs, habits and routines are taking shape and establishing themselves as unquestionable principles.

Thus, the discussion of obstacles is as important as the discussion of the possibilities of interdisciplinarity. We believe, agreeing with Augusto & Caldeira (2007) that these obstacles are overcome by collective effort and relevant dialogue.

Given what is posed to us, would it be controversial to state that it is indispensable to establish a critical awareness of the value and meaning of interdisciplinary work? To then assume a stance that indicates the paths that help in their understanding and applicability? And in the face of all these obstacles, is it possible to practice interdisciplinary teaching? What are they?

III. Methodology

The research analyzed the perceptions of 15 professors of an Education Bachelor degree from a public university divided into three areas of knowledge, namely: Biological Sciences (03), Biodiversity (04) and Education (08). This sample population corresponded to 57.6% of the total teachers that make up the teaching staff of this course.

Data collection was based on the application of a questionnaire on Google forms (2018, 2019) that ensured security and better organization of the data since the answers were automatically sent to a spreadsheet as the questionnaire was answered. The categories of obstacles announced by Fazenda (2011) were considered in his most relevant studies on the

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topic, namely: (1) epistemological and instructional; (2) psychosociological and cultural; (3) methodological and (4) training related. At the time, we asked teachers to choose how much impact these obstacles have on an interdisciplinary practice.

Initially, the data was organized by the Google form program. Closed questions were automatically organized into charts and tables (GOOGLE 2018, 2019) which eliminated the process of entering answers if the questionnaires were answered manually. For the analysis, we used the procedures: Likert scale and discourse analysis (based on content analysis).

Table 1: Obstacles that impact interdisciplinary practice in the teacher's view

Obstacles	Totally agree	Agree partially	Indifferent	Partially agree	Totally disagree
Epistemological and instructional	66,7%	33,3%	------	----	----
Psychosociological and cultural	60%	40%	-----	----	----
Methodological	33,3%	66,7%	----	----	----
Training related	40%	53,3%	6,7%	----	----

Source: Prepared by the authors (2019)

The Likert scale is a type of psychometric response scale and has been employed in opinion polls. According to Silva Junior; Costa (2014) "Likert's verification scale consists of taking a construct and developing a set of statements related to its definition, to which respondents will give their degree of agreement" (SILVA JUNIOR; COSTA 2014, p. 4). The principle of this scale is to categorize the responses and also to introduce them ranging from "strongly approve" to "strongly disapprove". Likert (1932) is a neutral point in the "undecided" center.

IV. Results and Discussions

We used the categories of obstacles announced by Fazenda (2011) in her most relevant studies, namely: (1) epistemological and instructional; (2) psychosociological and cultural; (3) methodological and (4) training related. At the time, we asked teachers to choose how much impact these obstacles have on an interdisciplinary practice. The options were: totally agree, partially agree and indifferent.

We can highlight that the epistemological and instructional obstacles and the psychosociological and cultural obstacles gain more relevance in the understanding of the researched subjects, 66.7% and 60% respectively, followed by Training with 40% and Methodological 33.3%. This primarily means evidence in the installed culture of the challenge of breaking down barriers between disciplines and classifying knowledge according to a hierarchy that we still perceive today in university curricula.

When the passage from knowledge to action occurs a set of social and natural phenomena usually rooted in the teaching practice prevents overcoming this obstacle as an example, we have the accommodation and defense of the value of their discipline (FAZENDA, 2011). It seems to us that the act of developing their classes just considering their subject is not only a condition of curriculum completion, but also a necessity for practical exercise in higher education. Regarding the prerequisites, Japiassu asserts: It is not a question of denying certain "recurrences" in scientific disciplines, but of showing that it is no longer possible to conceive science as a monument that would be built stage by stage, cumulatively and continuously, on fundamental, solid and guaranteed foundations. (1976, p. 63).

For Gusdorf (apud Fazenda, 2011), the elimination of disciplinary barriers runs into laziness since it is more easier to develop lessons in a fragmented way than to discuss ideas and share one's own. These habits, for the author, result in rigid institutional structures:

> Each new discipline puts itself in an attitude of consecrating itself before others to secure its place, cutting off communication with the rest of the mental space. This attitude is almost always reinforced by the institution, which encourages the "theorization and maintenance of an epistemological capitalism" (GUSDORF, apud FAZENDA, 2011, p. 90).

Preserving disciplinary status to some extent promotes the isolation of disciplines and lack of communication.

As a result of this first and greatest obstacle, we show that such difficulty is based on the change in mentality of the people who refer to the categories placed on the psychosociological and cultural obstacles that also assume great relevance in this research. One of the causes announced by Fazenda (2011) for this situation is the "ignorance of the real meaning of the interdisciplinary project", which evidences in significant part in the answers of the questioned teachers the focus on the conceptual perspective of interdisciplinarity or the distanced answers of the epistemological debate.

Referring also to the obstacles that interfere with the full exercise of interdisciplinarity in higher education, we ask: In addition to these related obstacles, which one (s) would you mention in view of facing your pedagogical practice in higher education? The following

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responses are verified when relating to the categories of obstacles proposed by Fazenda (2011), Japiassu (1976).

Table 1: Obstacles on Teacher Training courses in more or less relevant categories from the teachers' perspective

Professor	Obstacles	Category
P02	Teacher's lack of knowledge on planning interdisciplinary activities.	Training related
P09	Difficulties in deepening the epistemological debate on a broad perspective.	Training related
P12	Not having adequate formation or seeing debates on the matter at UFRB.	Training related
P04	The fragmentation of curricular components is cultural. Our education models are fragmented and under this perspective we are unconsciously induced to think our components separately ...]	Epistemological and instructional
P10	Obstacles related to institutional policies.	Epistemological and instructional
P11	Conception incompatibility of the subjects that operate the curriculum aiming at forming future professionals, with the formative proposal recommended in the PPC of the course of any and all formative modality (undergraduate, bachelor and technologist). After all, when this perspective occurs, the conceptions in dispute and, eventually, the expressions of vanity and hyperspecialization of agents make it difficult to align the proposals (of the subjects and the PPC) with the profile of the egress.	Epistemological and instructional Psychosociological and cultural

Source: Elaborated by the authors (2019)

We highlight that from the 15 participants, 13 (86.6%) answered, and 5 (38.4%) do not fit in the obstacles described. We present 6 (46.2%) categorized obstacles according to the teacher's view.

In this context, the obstacles cited by P02, P09 and P12 were classified in the category of training related obstacle, as they refer to the weakness of the teachers' preparation and their formation. The other obstacles presented (P04, P10 and P11) are epistemological and instructional, because in order to be overcome they demand the elimination of disciplinary barriers. Still, we could see a psychosociological obstacle (P11) that is revealed when the expressions of vanity and hyperspecialization of agents hinder interdisciplinarity (MORIN 2000, FARM 2011) as we see.

In this evidence, we corroborate the idea that there are many challenges to be overcome in order to enable interdisciplinary practices. However, the formation of an interdisciplinary team requires the personal and collective confrontation of these obstacles, that is, it requires, first of all, people who have the disposition to overcome themselves, with an intentionally prepared planning based on a curriculum thinking in a perspective in which dialogue and the connection are present as a continuum.

a) The possibilities

And while the challenges are many, they must be tackled, as the advantages of interdisciplinarity in school, with emphasis on more meaningful teaching, are numerous. To analyze the possibilities of the interdisciplinary movement from the teacher's perspective we used a vast literature highlighting the indications of Fazenda (2011) and Santomé (1998), which tells us that there are possibilities of integrating interdisciplinarity in teaching, such choice was made because we had greater contact with this literature and it was somewhat more didactic in its proposition.

We do not intend to exhaust the list of possibilities of interdisciplinary practices within the list below and on the other hand this is not the central object of this monograph. We even understand that this point deserves an exclusive dedication of studies and possibilities in view of the variety and versatility of experiences present in thesis records, dissertations and published scientific articles.

However, in summary, we can conclude that from the literature we could access, we highlight: (1) Modification of curriculum structure, (2) Elimination of barriers between subjects, (3) Elimination of barriers between people (4) Elaboration of Interdisciplinary Project, among other possibilities described by teachers in the construction of an interdisciplinary work are also pointed by some scholars on the subject (JAPIASSU, 1976; FAZENDA, 2011; SANTOMÉ, 1998;) i.e. debates in the institution to evaluate, reflect and implement innovations and interdisciplinary practice; teacher training on the subject; curriculum organization.

To the teachers of this research, we presented these four possibilities and ask them to check on a scale of 1 to 5.

The degree of viability they represent in an interdisciplinary practice in higher education. For data analysis, we leaned on the Likert method and

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elaborated the following proposition so that they would point out: (1) totally agree; (2) partially agree; (3) Indifferent; (4) partially disagree; (5) strongly disagree. We can see in table 02.

Table 2: Possibilities of interdisciplinarity in teaching in the teacher's view

Possibilities	1	2	3	4	5
Elaboration of Interdisciplinary Projects.	66%	33%	0%	0%	0%
Elimination of barriers between people.	46,7%	40%	13,3%	0%	0%
Modification of curricular structure.	40%	33,3%	26,7%	0%	0%
Elimination of barriers between disciplines	33,3%	26,7%	33,3%	6,7%	0%

Source: Elaborated by the authors, 2019.

According to Fazenda (1999, p. 16) it is necessary to abdicate the insecurity that hinders interdisciplinary teaching. According to the author, this insecurity of interdisciplinary practice can only be overcome from the desire and attitude towards knowledge for an interdisciplinary practice. The effectiveness of interdisciplinarity with its obstacles and possibilities is necessary as a theoretical reflection on interdisciplinarity could not fail to address the aspects related to obstacles and possibilities of its implementation. (FARM 2011, p 47).

Therefore, it is essential that educational institutions require and encourage adherence to interdisciplinary practice, because this proposal when practiced can improve teaching and learning avoiding the fragmentation and compartmentalization of science. Regarding collective projects, Fazenda (2011) gives more emphasizes to the elaboration process, while teachers highlight the experience of their development. Thinking interdisciplinary practices regarding teachers' analysis, we evaluate that it is focused on interpersonal aspects, emphasizing the integration between people through pedagogical relations.

Still on this topic of possibilities, we ask that, in an open question, teachers report others in order to develop their pedagogical practice in higher education. From the 15 participants, 9 (60%) answered. We present the data on Table 02.

Table 2: Methodological possibilities in the teaching and learning process from the teacher's perspective

Teacher	Possibilities	Category
P02	Support from the teaching center and PROGRAD for the promotion of actions aimed at understanding interdisciplinary practices, making them more accessible to teachers who wish to integrate themselves with this way of thinking and acting in the context of the classroom.	Elaboration of Interdisciplinary Projects
P13	I believe that, immediately, a simple practice of interaction between teachers, with proposals for common activities across disciplines, would be an efficient tool for breaking the compartmentalized division of the approaches addressed.	Elaboration of Interdisciplinary Projects
P06	Define specific time for this exercise (including planning and execution steps).	Elaboration of Interdisciplinary Projects
P03	None, but I believe that the barrier between people is not only related to ego or interpersonal conflicts, but to one's formation and convenience.	Formation
P15	None, but I believe that the barrier between people is not only related to ego or interpersonal conflicts, but to one's formation and convenience.	Formation
P05	Strategies for teacher training on interdisciplinarity, since a considerable number of these professionals have never tried or experienced this teaching model.	Formation
P07	Extension Curriculum	Elimination of barriers between disciplines
P10	Curriculum of Interdisciplinarity in Courses (PPC).	Modification in curricular structure
P11	Construction of a culture of planning pedagogical action and compatibility of actors' agendas, regarding the variable time that often makes it difficult to approach and contact people, even those interested. In addition, sharing subjects of interest in work / study for teachers and the institutional conditions (support), when the pedagogical practice demands.	Elimination of barriers between people. Elaboration of Interdisciplinary Projects.

Source: Elaborated by the authors, 2019

Teachers (P15) (P03) (P05) indicated that teacher education would be a possibility for interdisciplinary realization, while P02 and P13 indicated that the elaboration of Interdisciplinary Projects would be a possibility for interdisciplinary practice.

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According to Fazenda (2011) thinking of teacher education in an interdisciplinary way goes beyond sustaining various subjects; it sooner calls for a change of attitude towards the knowledge area.

The interdisciplinary teachers, in the author's view (1994, p.31), are beings who seek to research, and are committed their peers. They identify themselves as dissatisfied with what they do, "in this understanding, interdisciplinarity can occur through numerous possibilities of theoretical and methodological practices (RAMOS, 2016. P. 94). Therefore, the formation must enable other perceptions about knowledge, facing this "globalized world" (SANTOMÉ 1998) that is in constant transformations.

V. Abreviated Considerations

To recognize the obstacles and possibilities of the interdisciplinary movement from the teacher's perspective we employ the categories of obstacles announced by Fazenda (2011) and Japiassu (1976) in their most relevant studies on the topic, namely: (1) epistemological and instructional; (2) psycho-sociological and cultural; (3) methodological and (4) training related in the analysis. We can highlight that the epistemological and instructional obstacles and the psychosociological and cultural ones gain more relevance in the understanding of the research subjects, 66.7% and 60% respectively. Regarding the possibilities, 15 (100%) subjects answered 66.7% totally agree that the elaboration of teachers' interdisciplinary projects would be a possibility for the realization of interdisciplinarity. So the constitution of a team that intends to act from an interdisciplinary perspective would be relevant. Thus, these data reveal the importance of a team of teachers committed to the formation of future teachers and therefore must meet the new demands of a "globalized world" (SANTOMÉ, 1998) to act pedagogically with a more interdisciplinary spectrum, despite the obstacles. Thus interdisciplinarity is not just a single knowledge; it is a broad movement of interaction and integration between different possibilities offered by the sciences in which the disciplines are able to unfold when the barriers between them are overcome. Assuming interdisciplinary assumptions requires changes in teaching practices, since we are talking about teacher trainers. And for interdisciplinary practice it is necessary to go a long way to enable teaching and research (FRIGOTTO 2008; FAZENDA 2011, 2014) as well as its extension since it starts from a change of teachers' attitude their willingness to further this theme.

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Students' Understanding of an Object-Oriented Design Task - A Case Study

By Andreas Febrian & Oenardi Lawanto

Abstract- Students must understand a problem accurately to solve it correctly. Unfortunately, numerous studies reported that students only have a partial understanding of the information presented in the problem description, including in computer science. This study assesses students' task and revised-task interpretations when working on an object-oriented design problem. Multiple qualitative case study research was used in this study. Two male[1] and two female senior computer science students at Utah State University, USA, volunteered as participants. They were asked to solve five programming problems while thinking aloud, complete surveys, and answer several interview questions. The study found that the participants were able to identify most of the essential information after the initial reading of the problem description. They strategically ignore detailed information that may affect their design decisions and update it throughout their problem-solving enterprise.

Keywords: cognition, problem-solving, programming, self-regulation, self-regulated learning, task interpretation, task revision.

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Students' Understanding of an Object-Oriented Design Task - A Case Study

Andreas Febrian [α] & Oenardi Lawanto [σ]

Abstract- **Students must understand a problem accurately to solve it correctly. Unfortunately, numerous studies reported that students only have a partial understanding of the information presented in the problem description, including in computer science. This study assesses students' task and revised-task interpretations when working on an object-oriented design problem. Multiple qualitative case study research was used in this study. Two male[1] and two female senior computer science students at Utah State University, USA, volunteered as participants. They were asked to solve five programming problems while thinking aloud, complete surveys, and answer several interview questions. The study found that the participants were able to identify most of the essential information after the initial reading of the problem description. They strategically ignore detailed information that may affect their design decisions and update it throughout their problem-solving enterprise.**

Index terms: cognition, problem-solving, programming, self-regulation, self-regulated learning, task interpretation, task revision.

I. Introduction

It was a typical day in a programming lab session; students were working on their task under the observation of several teaching assistants. Several students concentrated on solving the lab problem, some were discussing the best approach to solve it, and some others were waiting for the answer from their peers. Interestingly, some students did not even bother to open and read the lab instruction, regardless of suggestion and encouragement from the assistants. While the motivation for their persistence may vary, reading and rereading a problem is a crucial step to understand and solve it [1]–[5].

To accurately understanding a problem is not an easy task. Several studies reported that students are rarely able to interpret a problem correctly [2], [3], [6]–[8].Some studies also reported that students' submitted solutions reveal their incomplete understanding of the given tasks [2], [8], [9].Although limited in number, similar phenomena also have been reported in the discipline of computer science (CS).Some CS students were reported incapable of accurately inferring the expected program's behaviors based on a given design brief [10]. Other study reported that CS students tend to ignore some assessment criteria while working on their tasks, which then negatively impact their grades[11].

In this study, we aim to describe the approaches used by senior CS students in understanding an object-oriented (OO) design problem; i.e., their initial task interpretation and the changes. Self-regulated learning (SRL) framework is used to distinguish their cognitive and metacognitive activities during the problem-solving endeavor. The description and analysis results may help instructors to understand better, and encourage students to enhance their strategies in comprehending a design problem. The description may also help students to be more aware of their self-regulation so that they can improve it.

II. Research Questions

As mentioned earlier, this study aims to describe senior CS students' approaches to understanding an OO design problem. In more specific, this study intends to assess (1) students' initial explicit and implicit task understanding, (2) how their initial understanding changes during the problem-solving activity, and (3) identify factors that influence those changes.

III. Relevant Literature

Since this study uses SRL as a framework in analyzing the data, the literature will discuss task understanding (or task interpretation) within the SRL. Additionally, this section also discusses known literature on self-regulation in CS to help readers familiar with existing research in that area.

a) Task Interpretation in Self-Regulated Learning

Students deliberately self-regulate when working on a task [12], [13]. Such activity involves the interplay of interpreting a given task, developing a plan, and executing, monitoring, and adjusting the plan to complete the task [4], [5], [13]–[16]. Fig. 1 and Table I presents the relationship and definition of each SRL activity, respectively. It is clear from Fig. 1 that task interpretation, which refers to understanding the task

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[1]This paragraph of the first footnote will contain the date on which you submitted your paper for review. It will also contain support information, including sponsor and financial support acknowledgment. For exam ple, "This work was supported in part by the U.S. Depart-ment of Commerce under Grant BS123456."
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and associated process to complete it [17], is the starting point of any SRL activities. Thus, misinterpreting a task may negatively affect follow-up planning, enacting, monitoring, and adjusting activities [18].

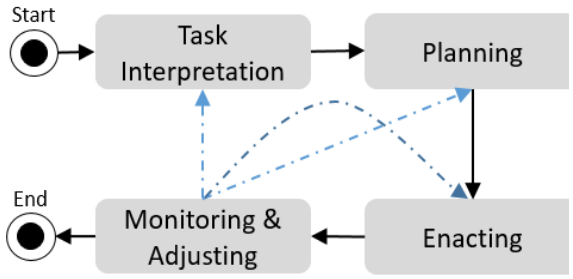

Fig.1: Categories of various self-regulation activities.

When interpreting a task, one must consider the explicit and implicit aspects of it. Explicit task interpretation refers to students' understanding of the information presented in the problem description [8], such as written goals, requirements, and constraints. Implicit task interpretation refers to extrapolated information base on the given description [8], for example, relevant concepts and experience to solve the problem. These definitions imply that explicit and implicit task interpretation is distinguishable based on the manner of that specific understanding being acquired (i.e., by identifying or extrapolating).

Unfortunately, interpreting a task is not easy. Two studies reported that students could only correctly identify 63% - 77% of valuable information presented in Thermodynamics course problems [3], [7]. The accuracy of implicit task understanding is even more unsatisfactory, such that they could only extrapolate 37% - 49% of the essential information [3], [7]. Similar findings have been reported in engineering design [8] and electronics lab [2]. Consequently, this misinterpretation impedes their problem-solving performance [19]–[21].

Fortunately, several studies [2], [3], [8], [19], [21], [22] suggested that students enhance their task understanding throughout their problem-solving enterprise. Theoretically, these refinements occur due to continuous monitoring and adjusting activities [23]. Thus, insufficient and inefficient monitoring and adjustment activities may lead to a meager solution. Since SRL is contextual, having sufficient relevant domain knowledge is necessary for efficient monitoring and adjustment activities [4], [8], [19], [24]. Moreover, one has to be willing to adopt new interpretations or strategies when it is necessary to do so.

b) Self-Regulation in Computer Programming

Although still limited in number, SRL research in CS is not new. Some scholars believe that it may ease the curve of learning programming and increase student's retention rate [25]. In this section, the reported cognitive and meta cognitive characteristics of CS students found in the literature are discussed.

Most CS students prefer to learn new materials sequentially through visual representation, and then reflect on their progress [26]. Most of them are comfortable and competent in dealing with detailed information[26],which strengthens their ability to solve complex problems (e.g., developing software systems). Their reflective nature allows them to be appreciative of each task, which, in turn, influences them to be more self-regulated and deliver better outputs [27].

A study reported that students use numerous SRL strategies instinctively when trying to understand a task, design a solution, and debug a program[28]. Engaging in self-regulation activities may improve their performance [27], [29].One study reported that students are sometimes unable to accurately address all the requirements and constraints of a problem [11], which suggested that instinctive self-regulation may not be sufficient in the long run. Students need to be more conscious of using it. Two studies suggested that deepening students' familiarity with various programming concepts and principles (i.e., contexts or knowledge) may increase their SRL quality[11], [19].

Table I: The Definition of Each Self-Regulation Activity

Strategic Action	Definition
Task Interpretation	Students' understanding of the task and associated process to complete it [17]
Planning Strategies	Selecting strategies to complete the task [5]
Enacting Strategies	Students' cognitive activities employed while completing the task [54]

Related to object-oriented (OO) design, a study reported that students are using typically suggested strategies in interpreting an OO design problem, which is by identifying the nouns and verbs found in the task description [9]. Although this report seems expected, this finding is important because it describes students ' approaches in design, not just a belief. Based on their understanding, students then decompose the problem and design the solution. Interestingly, students consider problem decomposition as a skill that hard to master [11]. Students tend to have incomplete and incorrect knowledge about OO design [9], which, plausibly, impair their decomposition skills. While some students may be aware of their weaknesses and strive to address it, others chose to ignore it. The last group of students tends to feel discouraged when facing a challenge[9] and, thus, have a negative learning experience.

IV. Research Design

In this section, the research design and its justification were explicated, which include data

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collection and analysis methods, and the design problem.

a) Data Collection Method

Multiple, in-depth qualitative data were collected from the participants, which aligned with best practices of qualitative study[30] and conducting SRL research [5], [31], [32]. Multiple data points allowed the researchers to appraise the perception and activities of the participants accurately.

Five programming problems, five problem-space maps, initial task interpretation survey, and interview question templates, were developed, pilot tested, and used. The programming problems consisted of two practice, one OO, one break, and one algorithm tasks. All except one were related to imperative programming paradigms. The problem-space maps described all correct and possible explicit and implicit task interpretation of each problem. This technique was adopted from expert-novice research about trouble shooting [33]. The initial task interpretation survey was used to assess the participants' initial understanding of the task. Table II presents the survey questions and the associated aspect of task interpretation. The interview question templates were used to formulating confirmatory questions based on the researchers' observation.

Table II: Initial Task Interpretation Survey

Layer	Question
Explicit	What is the primary goal of this problem?
Explicit & Implicit	In relation to the program that you will design, what are the requirements and constraints that you need to consider?
Implicit	What are the programming concepts related to this problem?
Implicit	What are your previous experiences related to this problem?
Implicit	In relation to the program that you will design, what are the steps (e.g., tasks) that you need to take?

During the data collection, the participants followed a specific protocol when solving each programming problem, and were audio- and video-recorded. The participants observed the following protocol in sequence: (a) reading the problem description aloud, (b) completing initial task interpretation survey while thinking aloud, (c) continue solving the problem while thinking aloud, and (d) answering the interview questions. The programming problems were given in the order written in the previous paragraph. No time limit was set for each problem. The practice problems were used to help the participants familiar with the data collection protocol and address any thinking aloud issues, if any.

To accurately capture the initial task interpretation, the participants were prohibited from rereading the problem description when completing the survey (i.e., step (a)). The problem-space maps were used to track the participants' thought processes when solving the problem (i.e., step (c)). The interview was semi-structured to ensure its alignment with the research goal yet still providing flexibility in pursuing particular points of interest that emerged during the problem-solving process.

b) Object-Oriented Design Problem

The OO problem is about designing a digital version of a classic board game, which commonly known as the Monopoly. Unlike the original, this game would be set in Middle-Ages. Given a set of requirements and constraints (see Table III), the participants should design a game base so that the rest of the team members could move forward smoothly. They are expected to deliver a class diagram. Also, they are allowed to ignore animation and play-testing parts and add their creativity beyond the given requirements and constraints.

The participants are expected to declare and manage at least one function, five issues, and 4 to 41 variables when solving this problem. It also contains some missing or unspecified information (i.e., implicit task interpretation) and has multiple solutions; all are typical characteristics of a design problem [34]–[36]. Consequently, the participants are not expected to comprehend the problem in one read. Based on the revised Bloom's Taxonomy [37], this problem belonged to the creation category, where the participants were expected to make a product for a specific purpose.

c) Data Analysis Method

Recorded video/audio files, initial task interpretation survey responses, design solutions, design notes (if any), observed thought processes (i.e., problem-space maps), and interview responses were collected from each participant. All recorded video/audio files were transcribed using the verbatim technique, such that the transcriptions recorded all articulated words and shutters [38]. Three additional notations were introduced in the transcriptions to clarify relevant contexts, including square bracket ("[]"), dash ("-"), and capitalizing the first letter for describing the participants' actions, correcting statements, and clarifying programming concepts, respectively. For example, "Since not having a particular idea on [how to describe] two to four players [in the class diagram], [I am] drawing that in here [design note]."

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Table III: Object-Oriented Problem Requirements and Constraints

No.	Requirements and Constraints
1	The game is meant to be played by either two, three, or four players.
2	Each player chooses to play as any one of the following characters: King, Warrior, Merchant, or Thief. Each character has unique special abilities and starts with different items and different amounts of money.
3	The game board will consist of 30 spaces where players can land, arranged in a circle. On some spaces, there are buildings that can be bought and sold. On other spaces, there are shops where players can buy items. In addition, some spaces have specific instructions that players must follow when they land there.
4	In the original board game, movement is determined by rolling dice, so you must develop an equivalent virtual method of determining the number of spaces each player moves on his or her turn.
5	On their turn, each player must move, and they can choose to do any of the following: buy the building on the space they are on, sell any building they own, spend money to improve buildings they own, or use one of their character's special abilities.
6	Items give special benefits to the player. Items include the following: Sword, Potion, Horse, or others. The effects of the item will be different for each character type.
7	There are three different kinds of buildings: Castle,

After the transcribing process completed, the OO-related transcriptions were qualitatively coded by two experts, which were an information technologist and one of the researchers. All experts had experience in developing OO applications. The expert-researcher also had a bachelor's and master's degrees in CS.

The qualitative coding process consisted of two phases. In the first phase, both experts individually coded the transcriptions based on the definition provided in Table I. After they finished, the coding results were then combined. Some disagreements were expected since the experts worked independently. In the second phase, the experts met face-to-face to discuss and resolve all coding disagreements. All collected data were used to ensure correct interpretations of the participants' statements. Through this process, the experts were able to reach a perfect agreement, with a Kappa score of 1.00 for each transcription, and produced 875 codes.

To answer the first research question, the initial task interpretation survey responses and the associated recorded video/audio files were used. These data sources were also triangulated against recorded problem-solving approaches and interview responses. This step was necessary since the participants might forget reporting all relevant thought processes when answering the survey.

To answer the second research question, the answer to the first research question and the coded-transcriptions were used. All problem-solving activities that could not be associated with the initial task interpretation were categorized as adjustment of participants' task understanding. These adjusted interpretations were then triangulated against recorded interview responses.

To answer the third research question, the list of task interpretation adjustments, coded-transcriptions, and interview responses were used. All statements in the coded-transcription that were associated with the changes were marked. The factors that influence the marked changes were then identified and triangulated against the interview responses.

V. The Participants

Four CS students from Utah State University (USU), USA, were recruited and consented as participants. All were in their senior year, familiar with imperative and OO programming paradigms, and had the necessary skills to solve the design problems. In the

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fourth year, USU CS students have typically completed the introduction to programming, algorithm and data structure, software engineering, event-driven programming, and internship courses. At the end of the research, each participant received a personalized report of his or her task interpretation strategies and suggestions for improvement and a $40 gift card. Participants responded positively towards the reports and suggestions.

All participants were Caucasians with GPAs of 3.10 to 3.96 on a 4-point scale. Sorted based on their GPAs, they were Jake, Anne, LStew, and Rusty. The male participants also familiar with logic programming and had spent approximately 4980 hours developing their programming skills.

The female participants had spent about 2050 hours of programming. Similar to most female CS students [39]–[44], they had struggled with CS stereotypes, where CS students are viewed as overtly "focused on CS, asocial, competitive, and male" (p.30) [40]. They also suffered from comparing themselves against their peers. L Stew said, "I have to ignore my colleagues and classmates programming 'successes' as that comparison game tends to reduce my self-esteem a lot and negatively impact my problem-solving and programming capabilities." She also said, "I nearly failed a class because I did not believe I was capable of succeeding in it." Fortunately, both participants were able to overcome that challenge and were almost finished with the degree requirements.

VI. Findings

All participants started with incomplete task understanding, which was expected, as explained earlier. Fortunately, all participants were also aware of it and tried to update their task understanding. Unfortunately, although their final task interpretation was better compared to the initial, it was still incomplete. There are two possible reasons for this result. First, the participants were overwhelmed with the detail of their design. Second, the participants were drawing knowledge from irrelevant experience. Rusty, for example, was using the entity-relationship instead of the class diagram.

In this section, participants' initial and revised-task interpretation, and factors that influenced the changes were discussed.

a) Initial Explicit and Implicit Task Interpretation

Five questions were asked to assess the initial understanding of the participants (see Table II). All participants were able to determine the problem goal correctly. Anne, for example, defined the goal as "develop[ing a] class diagram from given constraints." L Stew and Rusty also included design best practices and their interest in the problem goal. Rusty, for example, said the problem goal was "create[ing] a logic layer inside of our program that can function completely without interaction from the graphical user interface or user."Rusty knew that the decoupling of logic and user interface is part of software design best practices, and would like to observe it during the design process.

No participants had a complete initial understanding of the requirements and constraints, which required explicit and implicit task interpretation. This result was expected, considering the number of requirements and constraints. However, all participants understood that they needed to complete each item listed in Table III. They also understood that the problem implicitly required them to organize potential classes "in a logical way" since the classes will "interact in a specific way." Anne, LStew, and Rusty also added that exercising creativity, as directed in the problem, would affect their class design.

In designing the classes, LStew further added that she needed to "avoid common object-oriented programming pitfalls by reducing coupling, reducing interdependencies, and avoiding the diamond of death."Plausibly, this implicit understanding was informed by her interests and experience in OO-design best practices.

All participants considered OO design principles and UML diagram notations as relevant concepts. Rusty and LStew also added that design practices in writing a class diagram and software usability as essential knowledge and skills. Thus, all participants were able to identify relevant concepts to complete the problem correctly.

In order to solve the problem, all participants determined that they need to (1) reread the problem description; (2) identify potential classes; (3) draw the class; (4) establish the classes' relationship; and (5) refine the class diagram as necessary. Interestingly, while the male participants concentrated on rereading the problem description on their first step, the females also concerned with identifying and rewriting the requirements and constraints in their own words. Additionally, Rusty and LStew added that they needed to monitor their progress and address creativity issues throughout their problem-solving enterprise.

b) Revising the Initial Task Understanding

The participants executed their problem-solving steps carefully. LStew, for example, started by rereading the problem description and developed a list of requirements. She continued by solving the identified requirements that were related to items, characters, special abilities, player actions, spaces, buildings, players, games, and turn. Sometimes, after completing one of the requirements, she adjusted her design. For example, after designing the action-related classes, she revised the item and character classes. LStew also enhanced her design by making it as logical and as

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clear as possible so people could easily understand how the classes work together.

When rereading the problem description, the participants were frequently observed as if interpreting it for the first time. These activities were coded as monitoring of task interpretation. Some of these activities triggered them to adjust their task interpretation. Jake, Anne, Rusty, and LStew were observed investing 37.50%, 50.38%, 31.12%, and 36.47% of their engagement for interpreting the task, respectively, including for monitoring and adjustment. Rusty said during the interview, "The general understanding did not really change because I knew that I was going to be creating this class diagram, but as far as the design decisions, it changed a lot."

c) *Factors that Influence the Task Interpretation Revisions*

As mentioned by Rusty, most of the revised-task interpretations were somehow related to design decisions, such as classes and their behaviors. When addressing each requirement and constraint, the participants need to consider the best mechanism to incorporate it into their existing design. Such need encourages them to reread the problem description as if they encountered it for the first time. This finding aligned with various reports that argued students were required to employ vast cognitive skills and work with different abstraction levels during a programming design activity[45], [46].

All participants except Anne were observed updating their task understanding when addressing creativity requirements. For example, after rereading the third requirement (see Table III), LStew said, "What kind of special instructions could you have if it was a castle versus an inn? I suppose-or a castle versus a fortress? Oh, nothing comes up. Well, a castle can have a king in it, right? … Okay, so if you are a king and you land on a castle owned by someone else, you get a discount on your rent." The above illustration showed how LStew's interpretation of "specific instruction" evolved as she infused her creativity into the design.

Unlike the other participants, Anne did not attempt to put creativity into her design. Using the third requirement as an example, Anne addressed it by just creating a class called Instructions that would be used by the Space class. At the beginning of solving the problem, Anne commented, "No one will hire me for my creativity," suggesting she was not confident of that particular skill.

VII. Discussion, Conclusion, and Implication

The analysis results suggested that the participants were competent in identifying the problem goal, requirements, constraints, relevant concepts, relevant experience, and steps to solve an OO design problem. It is important to note that they were able to identify most of it after the initial reading of the problem. However, due to the problem's extensiveness, they were unable to determine all detailed requirements and constraints.

During the design, they displayed some attributes of expert problem-solvers (see [47], [48]), such as considering possible concerns from various stakeholders. Their awareness of the problem complexity and prior experience in solving OO design problems also inspire a positive behavior; in such, it drove them to be cautious in interpreting the requirements. Thus, it might be beneficial to train students to identify problem characteristics and its complexity as early as possible. Two educational theory may help in this issue, which are Jonassen's problem types [34]–[36] and Bloom's Taxonomy to define the problem characteristics.

The analysis results suggested that the participants had a relatively similar approach in solving an OO design problem with extensive requirements and constraints. This approach included rereading the problem description, identifying requirements, identifying classes, determining the classes' relationships, and refining the class diagram. This finding aligned with various arguments that students developed metacognitive knowledge about the tasks based on their problem-solving experience[1], [49], [50]. Since these metacognitive knowledge influence students' problem-solving approach[1],it might be beneficial for the instructors to check and ensure that students could acquire that knowledge correctly.

There was self-regulation different between male and female, in such that both female participants listed the requirements and constraints using their own words. However, since all participants unable to identify the requirements and constraints completely, it is impossible to comments more on this difference.

The findings suggested that the participants' interest and experience influenced their initial and revised-task interpretations. Similarly, when addressing creativity requirements, they also exploited their interest and experience. One study argues that creativity is primarily related to the design process[51]. Thus, Anne's discomfort about her creative side might be induced by a lack of exposure to a variety of products, and chances to express her creativity. These issues could be fixed by exposing students to various creative software products and encouraging them to tap into their creative side in several programming assignments.

The analysis suggested that task interpretation skills might be deteriorated due to being overwhelmed and drawing from irrelevant experience. This findings also suggested that the participants' incorrect assumption of educational tasks might affect their self-regulation. Students need to be aware of this potential danger in their education.

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VIII. Conclusion

This study shows that the participants, senior CS students, are capable of drawing explicit and implicit information from an OO-design problem. Most of this information is identified during their initial task interpretation. It is important to note that various contexts influence their task interpretation skills; this is coherent with SRL theory [4], [5], [8], [13], [52] and other existing research [19], [21]. This study shows how participants' perception of the problem (e.g., domain and complexity) and their experience, interest, and self-efficacy influences their task interpretation (and self-regulation in general). Thus, it is also essential to help students more aware of such contextual information when solving a problem.

This study also shows that participants' task understanding evolves during their problem-solving endeavor. In terms of solving an OO-design problem, revised-task interpretations are mostly related to design decisions, such as considering the interplay among classes. These senior students also display expert like behaviors where they try to interpolate possible concerns from various stakeholders. All participants also have developed a similar problem-solving approach to OO-design problems. A slight difference exists between males' and females' approach, where the females prefer to develop a list of known requirements and constraints.

IX. Limitations

This qualitative multiple case study was not designed to produce generalizable results but rather to capture as much variety of students' task interpretation while solving OO-design problems as much as possible. With such a goal, having four participants was adequate for a qualitative case study research [30]. When interpreting the findings, remember that the participants' diversity in this study was limited to their sex. There was a limitation regarding the problem types, such that the research tasks were limited to OO and imperative paradigms. Finally, one study argues that although thinking aloud is commonly used in educational studies, it might also affect students' self-regulation [53] and then influence the research results. Unfortunately, there is no known approach to overcome it.

This paper only focuses on the participants' SR while working on OO design problem. The other unit of analysis is discussed in [21].

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h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

Tips for writing a good quality Social Science Research Paper

Techniques for writing a good quality homan social science research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of homan social science then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.
Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

19. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

20. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

21. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

22. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.



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Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



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Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."



Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

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Criterion for Grading a Research Paper (Compilation) by Global Journals

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals

Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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