

# Profile and Perceptions of Teachers on Distance Education in Fishing, Aquaculture and Fishing Resources During the Pandemic (COVID-19)

## *Perfil e Percepções de Docentes sobre Educação a Distância em Pesca, Aquicultura e Recursos Pesqueiros Durante a Pandemia (COVID-19)*

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### Abstract

The objective of the study was to outline the profile of teachers and their perceptions about distance education (EAD) in technical courses in fisheries, aquaculture and fishing resources, during the pandemic (COVID-19). The study was carried out with 30 professors from the Federal Institute of Education Science and Technology of Pará (IFPA). An online semi-structured questionnaire was used, with questions about teacher characterization and aspects related to distance learning. Among the teachers, it was observed the predominance of men, composed by the age range from 31 to 40 years old, bachelors, graduates and technologists with more than 10 years of graduation time completed and 50% of doctors. We identified that they are among 3 to 5 years in teaching and most of them develop teaching activities in the technical course of aquaculture. In addition, they prioritize theoretical and practical methodologies, using technological tools in class. In addition, they teach the disciplines and are satisfied with the exercise of their work. When asked about the interferences of the pandemic on school progress and the possibility of working in distance education, they stated that the school semester was compromised and are not prepared to work in this modality. In addition, they pointed out that the lack of access to the internet and computers, in the homes of students, compromises the possibility of online education for the teaching continuity. The Integrated System for the Management of Academic Activities (SIGAA), was presented as the main tool in distance learning. In conclusion, the training of teachers and students in distance learning as well as checking the tools available to students in their locality and the need to implement public policies that guarantee access to the internet and computers are essential to minimize the impacts caused by the pandemic (COVID-19) on the progress of education respecting the recommendations of the World Health Organization with regard to distance Social.

**Keywords:** Coronavirus. Distance education. Aquatic organisms.



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## ***Perfil e Percepções de Docentes sobre Educação a Distância em Pesca, Aquicultura e Recursos Pesqueiros Durante a Pandemia (COVID-19)***

### *Resumo*

*O objetivo do estudo foi traçar o perfil de docentes e suas percepções sobre educação a distância (EAD) nos cursos técnicos em pesca, aquicultura e recursos pesqueiros, durante a pandemia (COVID-19). O estudo foi realizado com 30 docentes do Instituto Federal de Educação Ciência e Tecnologia do Pará (IFPA). Foi utilizado um questionário semiestruturado on-line, com perguntas sobre a caracterização docente e os aspectos relacionados a EAD. Observamos entre os docentes a predominância de homens, na faixa etária variando entre 31 a 40 anos, bacharéis, licenciados e tecnólogos com mais 10 anos de formados e 50% de doutores. Identificamos que os mesmos estão de 3 a 5 anos na docência e a maioria desenvolve atividades de ensino, no curso técnico em aquicultura. Vale destacar, que os mesmos priorizam o uso de metodologias teóricas, práticas, explicativa, dialogada e utilizam ferramentas tecnológicas nas aulas. Além disso, ministram as disciplinas que dominam e estão satisfeitos no exercício do seu trabalho. Quando questionados sobre as interferências da pandemia no andamento escolar e a possibilidade de atuarem no ensino EAD, os mesmos afirmaram que o semestre letivo ficou comprometido e não estão preparados para atuarem nessa modalidade. Além disso, destacaram que a ausência de acesso à internet e a computadores, nas casas dos educandos, compromete a possibilidade de educação on-line para a continuidade do ensino. O Sistema Integrado de Gestão de Atividades Acadêmicas (SIGAA), foi apresentado como a principal ferramenta na EAD. Em conclusão, as capacitações de docentes e estudantes em EAD, bem como a verificação de ferramentas disponíveis para os educandos em sua localidade, além da necessidade de implantação de políticas públicas que garantam acesso à internet e computadores, são primordiais para minimizar os impactos causados pela pandemia (COVID-19), sobre andamento do ensino, respeitando as recomendações da Organização Mundial da Saúde do que diz respeito ao distanciamento social.*

**Palavras-chave:** *Coronavirus. Ensino profissional. Organismo aquáticos.*

## 1. Introduction

Distance Education (EAD) is one of the most used educational tools in the world (MUBAYRIK, 2020). Such a tool is already part of the teaching-learning process at different levels of education, such as kinder karten (HARRIS et al., 2020), elementary and high school (TILHOU et al., 2020), technical (COSTA; LIBÂNEO, 2018), under graduate (KILINC et al., 2020) and graduate (HARRISON et al., 2018). Thus, this teaching model has been reaching more and more space in society, due to its practicality, flexibility and costs (JOWSEY et al., 2020). However, it has a number of limitations mainly for low-income people who live in regions with difficult access to the internet (KARA et al., 2019).

In professional education, distance learning is already a part of the routine of some courses and subjects (MOURA et al., 2018). However, face-to-face education is still prevalent in several institutions, especially

those that offer courses where practical experience is essential in the training of students (EDWARDS-GROVES, 2017) as used in the cases of technical courses in Fisheries, Aquaculture and Fishery Resources. Fish production is an activity divided between fishing and aquaculture. Fishing is based on the extraction of aquatic organisms (commercial or professional, sporting, amateur and subsistence) from the natural environment (FUJIMOTO et al., 2020). On the other hand, aquaculture is the breeding of aquatic organisms (fish farming, shrimp farming, malacoculture, cheloniculture, raniculture and algiculture), usually occurring in a confined and controlled space (AKTER et al., 2020). For this reason, discussions about such activities are necessary in technical courses at an educational institution (SILVA; OLIVEIRA, 2020).

The teaching, research and extension actions of academic communities, in the first semester of 2020, are going through a series of necessary adaptations due to the occurrence of the global pandemic (RUNDLE et al., 2020). COVID-19 is an infectious and contagious disease causing the Acute Respiratory Discomfort Syndrome, with great possibilities of death for infected individuals (WHO, 2020). Official data from the World Health Organization has shown that until April 17, 2020, more than 2,074,529 infected people were registered in the world, with 139,378 deaths, with 33,682 cases in Brazil and 2,141 deaths (WHO, 2020). In the state of Pará, in the northern region of the country, more than 641 cases have already been confirmed, with 33 deaths (SESPA, 2020).

Therefore, several studies have been developed to report the interference caused by COVID-19 in different segments of society such as health (MENG et al., 2020), economy (ATKESON, 2020), population welfare (SHAH et al., 2020) and education (ZHOU et al., 2020). In the educational sector, research on the perception of teachers and other aspects is necessary for future decision-making in educational institutions.

Given the above, the objective of the present study was to outline the profile and perceptions of teachers about distance education in technical courses in fishing, aquaculture and fishing resources, during the Covid-19 pandemic, in the state of Pará, Brazil.

## 2. Methodology

The research was carried out in the state of Pará, Brazil. Pará is the second largest state in the federative unit of Brazil in territorial extension with an area of 1,248,042 km<sup>2</sup>. It is located in the North of the country, comprising a total of 144 municipalities divided into six mesoregions: Metropolitan, Northeast, Marajó, Southeast, Southwest and Lower Amazonas. In some of these regions, the Federal Institute of Education, Science and Technology of Pará (IFPA) is present, offering courses for the population, such as Initial and Continuing Education, Technical, Under Graduate and Graduate courses. The methodological path consisted of quantitative research, through a semi-structured online questionnaire via Google Docs (Google ©), according to Chatterjee and Correia (2019). The questionnaire consisted of a total of eighteen questions, with two main items: teacher profile and their perceptions (Table 1). Research is essential to obtain information on a given subject (GRIFFIOEN, 2020). The study was carried out with 30 teachers, corresponding to 60% who work on Technical courses in Fisheries, Aquaculture and Fishery Resources, offered at IFPA. The survey was developed in April 2020. The identities of the participants were kept confidential, guaranteeing their anonymity and confidentiality of the information. The collected data were analyzed using descriptive statistics.

**Table 1:** Questionnaires applied to professors working in technical courses in Fisheries, Aquaculture and Fishery Resources in the state of Pará, Brazil.

Professor's profile	Professor's perception
1) Campus; genre; age; city of residence and graduation;	10) Teacher training and tutoring in distance education
2) Time of training and professional practice;	11) Teaching performance in distance education;
3) Admission to graduate school; course and discipline ministered;	12) Experience with distance education;
4) Methodology and didactics used;	13) Commitment to education during the pandemic;
5) Teaching performance;	14) Level of preparation for distance learning;
6) Teaching techniques used;	15) Consideration of students' access to the internet for the discipline;
7) Technologies in theoretical classes;	16) Important equipment for teaching and learning;
8) Discipline with greater affinity;	17) Important means of communication for teaching and learning;
9) Professional satisfaction;	18) Challenges in distance teaching and learning.

Source: the authors

### 3. Result and Discussion

In this study, teachers from several campuses of the Federal Institute of Education, Science and Technology of Pará (IFPA) participated (Table 2). We found that the majority of teachers (53.3%) are men. Similar to those observed by Incerti et al. (2016) studying the Federal Institute of Education, Science and Technology of Paraná (IFPR), where they observed that there is a predominance of men acting as teachers. A total of 66.7% of the participants are aged between 31 and 40 years old. It is worth mentioning that the teachers live in the state of Pará, in the municipalities of: Abaetetuba, Ananindeua, Barcarena, Belém, Bragança, Breves, Cametá, Castanhal, Igarapé-Açu, Marituba and Santarém. We emphasize that many of the teachers studied, live in municipalities other than their places of work. This displacement during the pandemic can increase the risk of contagion by COVID-19 (BAKER, 2020).

The study revealed that teachers have degrees in: agronomy, biology, engineering (aquaculture, civil, fishing, sanitary and environmental), history, oceanography, oceanology, letters (Portuguese/English), mathematics, veterinary, pedagogy and technologies (food and aquaculture). The multidisciplinary, interdisciplinary or transdisciplinary practice is extremely important for teaching-learning in professional education (BARBOZA et al., 2020; BESSA et al., 2020). It is worth mentioning that 63.3% of the teachers interviewed are bachelors, 26.7% have degrees and 10% are technologists. In addition, 36.7% have graduated from 10 to 15 years. A total of 53.3% work in teaching for 3 to 5 years at IFPA and 50% of respondents have entered graduate school and are doctors. Federal Institutes are concerned with critical and contextualized training, also based on the principles of professional and technological education (BRANCHER et al., 2020). In addition, 40% and 13.3% of teachers teach classes only in technical courses in aquaculture and Fisheries resources respectively. We did not identify teachers working only in the technical course in fishing.

**Table 2:** Profile of professors working in technical courses in Fisheries, Aquaculture and Fishery Resources in the state of Pará, Brazil.

Category	Total sampled	
	Absolute Frequency (N)	Relative Frequency (%)
<b>Campus</b>		
Abaetetuba	03	10,0
Belém	03	10,0
Bragança	04	13,0
Breves	08	27,0
Cametá	04	13,0
Santarém	01	3,0
Vigia	07	23,0
<b>Gender</b>		
Masculino	16	53,3
Feminino	14	46,7
<b>Age group</b>		
21 a 30 anos	03	10,0
31 a 40 anos	20	66,7
41 a 50 anos	06	20,0
Acima de 51 anos	01	3,3
<b>Degree</b>		
Bachelor	19	63,3
Graduation	08	26,7
Technologist	03	10,0
<b>Time of Formation</b>		
1 to 5 years	04	13,3
5 to 10 years	10	33,3
10 to 15 years	11	36,7
over 15 years	05	16,7
<b>Professional practice time</b>		
0 to 2 years	04	13,3
3 to 5 years	16	53,3
6 to 8 years	04	13,3
9 years or more	06	20,0
<b>Joined graduate school</b>		
No	01	3,3
Especialization	01	3,3
Master degree	13	43,3
Doctor degree	15	50,0

<b>Acting Course</b>		
Aquaculture Technician	12	40,0
Fisheries Resources Technician	04	13,3
Aquaculture Technician and Fishery Resources Technician	05	16,7
Aquaculture Technician and Fishery Technician	08	26,7
Fisheries Technician and Fisheries Resources Technician	01	3,3
<b>Methodology and didactics applied in teaching</b>		
Under graduate	07	23,3
Graduate	07	23,3
Practice experience	14	46,7
Pedagogical week / day	02	6,7
<b>Acting as a teacher</b>		
Theoretical class	02	6,7
Theoretical and practical classes	28	93,3
<b>Teaching techniques used</b>		
Explanatory and dialogued	24	80,0
Brainstorming	02	6,7
Group search	05	16,7
Others	04	13,3
<b>Technologies in theoretical classes</b>		
Once a week	20	66,7
2 times a month	06	20,0
1 time per month	04	13,3
<b>Minister discipline that dominates most</b>		
Yes	21	70,0
No	01	3,3
Sometimes	08	26,7
<b>Professional satisfaction</b>		
Work with satisfaction	30	100

Source: data collection

When asked about the methodology and didactics, practical experience was the main factor with 46.7% pointed out by teachers in the preparation of more dynamic and efficient classes. Research conducted by Garcia and Bizzo (2011) found that age and teaching experience are considered important factors for producing more attractive, motivating and better-used classes by students. In the present study, we identified that 93.3% of the teachers develop theoretical and practical classes with the students and that 80% work in an explanatory and dialogical way. Silva et al. (2017) point out that practical classes are important for improving students' self-critical knowledge.

Most of the participants (66.7%), still stated that they use technological tools in teaching once a week. The use of digital instruments can facilitate and stimulate the teaching and learning process of students. Most teachers said (70%) that they teach the discipline they most dominate. The lack of empathy and affinity in the teaching of certain subjects on the part of the teacher, can harm the teaching and learning process of students

(SANTOS, 2016). In our survey, 100% of the teachers interviewed are satisfied with their profession. Unlike the findings by Nascimento et al. (2019), where women were more satisfied with working conditions than men.

When asked about the current moment of the pandemic, most teachers (96.7%) stated that with the Coronavirus pandemic (COVID-19), there was a compromise in teaching in the first half of 2020. Similar to the situation that is happening in several countries (BAYHAM; FENICHE, 2020; VINER et al., 2020). This can be justified because classroom teaching, as in the present study, is still widely practiced in the world.

Table 3 shows that the majority of 80% of the teachers interviewed never took even one type of course for a teacher or tutor at EAD. Changes in pedagogical practices in teacher training are essential for deeper and more lasting teaching learning, encouraging innovative practice (JUNGES; BEHRENS, 2015). Aquino et al. (2019) studying the profile and approval of teachers in a training course for distance tutor, found a high dropout of teachers. This can probably be verified by the lack of interest of the teacher as it is considered a key element for this teaching modality to be successful.

**Table 3:** Aspects of distance education in the view of teachers working in technical courses in Fisheries, Aquaculture and Fishery Resources in the state of Pará, Brazil.

Category	Total sampled	
	Absolute Frequency (N)	Relative Frequency (%)
<b>Training in teaching or distance tutor</b>		
No	24	80,0
Yes	06	20,0
<b>Performance in distance education</b>		
No	23	76,7
In-person teacher / tutor	02	6,7
Distance Learning Teacher / Tutor	02	6,7
Professor of discipline	02	6,7
Pole coordinator	01	3,3
<b>Considers that education was compromised during the pandemic</b>		
No	01	3,3
Yes	29	96,7
<b>Level of preparation for distance learning</b>		
No	25	83,3
Yes	05	16,7
<b>Consideration of students' internet access to the discipline</b>		
No	30	100
<b>Important equipment for teaching and learning</b>		
Cellphone	07	23,3
Computer	21	70,0
Tablet	02	6,7
<b>Important means of communication for teaching-learning</b>		
Email	02	6,7
SIGAA	16	53,3
Whatsapp	12	40,0

Source: data collection

We observed that 20% of the teachers have already participated in courses in this area. They reported taking courses in trainers, moodle, teaching techniques and a workshop on creating short distance learning courses. In addition, they reported that these training courses were provided by several institutions such as: the Federal Institute of Education, Science and Technology of Pará (IFPA), the Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP), the Federal University of Rio Grande (FURG) and the Brazilian Legislative Institute (ILB). Barboza and Castro (2017) affirm that EAD multiplies and expands the role of the teacher, who plays an important role in this teaching modality, since it adds other competences and skills of methodological, technical and theoretical aspects, imperative for the quality of the distance course.

When asked about their work in distance education, 76.7% of the teachers stated that they had never worked in this type of teaching. The others have already participated as: teacher mediator/face-to-face tutor, teacher mediator/distance tutor, professor of discipline and course coordination. Some reported positive points (ease, agility and flexibility) and negative points (dependence on internet and technological equipment) about distance education. Results similar to the present study were also cited by Abraeu et al. (2020) working on the challenges in training teachers to work in distance education.

The survey revealed that 83.3% of teachers reported that they are not prepared to work in distance education at this time of pandemic. Given this current scenario, the pedagogical proposals and skills used by teachers must be adapted with a view to cooperative learning in distance education, through multimedia content, use of collaborative space, flexibility and accessibility in times of pandemic by COVID-19 (CAMACHO et al., 2020).

In the present study, all teachers (100%) reported that most students would probably not be able to participate in classes, due to the difficult access to the internet. Therefore, it is up to the competent public agencies to implement strategies that guarantee this essential service for the public school. The possession of technological equipment and use of the internet are increasingly common in the globalized society for teaching (TONDO; SILVA, 2016). In this logic, EAD using the internet has been standing out as a facilitating methodology, bringing students and teachers together (MATEO; SANGRÀ, 2007). Most teachers (70%) also stated that the availability of a computer would be essential to guarantee teaching and learning during the pandemic. For He (2020), computers have a huge role in distance education, because such instrument fixes more student attention than the use of tablets, cell phones and others.

The results of the present research showed that 53.3% of the professors highlight the Integrated System for the Management of Academic Activities (SIGAA) as the main tool for conducting classes. The use of SIGAA as a teaching-learning tool has become increasingly present in educational institutions (COSTA et al., 2019). Therefore, there is a need for adjustments in the pedagogical part, training tutors and students in the proper handling of the system (SOUZA; MONTEIRO, 2015; ALMEIDA, 2016; SILVA et al., 2017), so that teaching and learning can be successful.

The teachers highlighted (difficulty in accessing the internet and technological equipment, lack of practical classes, lack of face-to-face and self-discipline, compromised psychological and emotional situation) as the main reasons for not achieving success in the teaching-learning process of students through teaching distance education, during a pandemic (COVID-19). Neroni et al. (2019) state that time and effort management, as well as the complex use of cognitive strategies, are positive predictors in the performance of distance education. For Wang et al. (2020) the current pandemic has been causing psychological impact, anxiety, depression and stress in the population. Finally, Huang et al. (2020) highlight several tools to continue learning without interruption in education.



## 4. Conclusion

The teaching profile of the Technical courses in Fisheries, Aquaculture and Fishery Resources at the Federal Institute of Education Science and Technology of Pará is made up predominantly of men, the vast majority of whom have bachelor's degrees, who have graduated from more than a decade, have a doctorate and develop teaching in aquaculture. Among the methodologies adopted, the theoretical, practical, explanatory, dialogued classes and the use of technological tools are widely used by teachers. In addition, teachers are satisfied with the development of their teaching activities at the institution.

Teachers' perceptions about face-to-face education in the time of COVID-19, was compromised in the first half of 2020. Distance education is shown as a way to continue teaching. SIGAA is a tool available by the institutions, which can be used for this purpose. However, until now, most of the IFPA professors consider that they are not prepared to work in distance education for the duration of the pandemic. The difficulty of accessing the internet and computers in the students' homes, were the main limitations pointed out by the teachers, to continue with the progress of the curricular components of the technical courses.

Therefore, we suggest EAD training for the academic community; diagnosis of the tools available to students in their locality and implementation of public policies that guarantee access to the internet and computers, so that students can continue their student activities at home, respecting the recommendations of the World Health Organization on social distance of the pandemic (COVID-19).

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