

# A PROJECTION MODEL FOR DEVELOPING THE DISTANCE COURSE: THE CEFETE-ES EXPERIENCE

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## **ABSTRACT**

*This paper describes the experience of elaborating the “Managing Plan of the Distance Course Project of Technology in Analysis and Development of Systems of the Centro Federal de Educação Tecnológica do Espírito Santo – CEFET-ES, for serving as lessons learned to other institutions that need a projection model for their actions of implementation. It aims to describe how the projection was made, the plans were created and how those were used in this first course introduced to the institution.*

**Key words: EaD; Projection; Projects Managing Plan; key users; communication plan; aim plan; costs plan; timing plan.**

## **1 - Introduction**

The distance education is a growing alternative to the demand presented within the educational environments and within the job market in general. The EaD has been consolidated along its existence and has been showing several advantages since flexibility to the access to learning, the opportunity of graduation adapted to the current demands of the organizations, the possibility of a more personalized learning respecting the pace and considering the autonomy of each individual.

The Ministry of Education – MEC has established policies for universalizing the access to the degree course. Many strategies have been outlined and executed along years, offering EaD courses in the country. One of these policies was the creation of the “Sistema Universidade Aberta do Brasil (**UAB** stands for: Brazilian Open University System), institutionalized by decree in the year of 2006 [1]. This system makes possible the offer of distance style courses, with the participation of (a) MEC, (b) the public institutions of University Teaching and (c) the local authorities, States and Federal District. The last ones are supposed to present proposals for local authority poles of present support [2].

The Centro Federal de Educação Tecnológica do Espírito Santo - CEFET-ES has started a debate about the Distance Education style, in the year of 2004, for studies and the elaboration of a pedagogical Project proposal in distance education. In the year of 2005, CEFET-ES joined the UAB’s public edict n. 1, submitting the degree course of Technology in Analysis and Development of Systems, getting its course project approved in April, 2006. Since then, we started the projection for implementation and execution of the course.

This paper presents the projection model created by CEFET-ES through a managing plan for the degree course of Technology in Analysis and Development of Systems, by the UAB System, in the distance style. UAB has financial resources for implementing the course and CEFET-ES is in charge of managing these resources and the course. So, the projection is essential as a guarantee for the introduction and management of the resources with quality, not only for the financial resources, but also for all the elements involved.

## **2 – Distance Education at CEFET-ES**

CEFET-ES is an institution that is characterized by acting from the initial formation of the labor force to post-graduation, in the presence style. In the distance style, the first course offered was the degree course of Technology in Analysis and Development of Systems.

After its approval in the UAB Selection Edict n. 1/2005 SEED/MEC, it was created the Centro de Educação à Distância – CEAD (stand for: Distance Education Center), aiming to introduce courses in the distance style under all levels of teaching. The UAB was a mark for the introduction of the distance education at CEFET-ES. This introduction has happened on a gradual way, starting with the approval of the course project, moving to the projection of strategic actions and to the execution of these actions.

The projection of strategic actions for implementing the UAB at CEFET-ES has as its guiding directives:

- The organization of its own space, physical and institutional, properly equipped with spatial and technological infra-structure;
- The designation of administrative and supportive staff and support to the activities.

- The organization of a multidisciplinary team and its training on Distance Education proposals and methodologies;
- The incentive to the school community for developing the distance courses in the levels of: extension, specialization and degree course, and introduction of a distance course methodology for degree course disciplines;
- The incitement of researches related to Technologies of information and communication that may contribute with the formation of basic education teacher, guaranteeing improvements on the quality of education in the country;
- The definition of a structure that may guarantee the systematic functioning of the courses in EaD through teams that make the didactic material, mechanisms to deliver such material, tutorial team, a formalized system of assessment and communication services.

In order to guarantee the introduction of the UAB in an efficient way, it was necessary for the multidisciplinary team to become enabled on the managing of a distance course and on the proposals for Distance Education methodologies, in order to be able to get involved in the preparation of the course proposed.

At CEFET-ES, currently, this multidisciplinary team is formed of content/specialist professors, UAB coordinators, course coordinator, material production coordination, pedagogical coordination, learning virtual environment coordinator, infra-structure coordinator, coordinator of projection and administrative supportive staff, according to Figure 1.

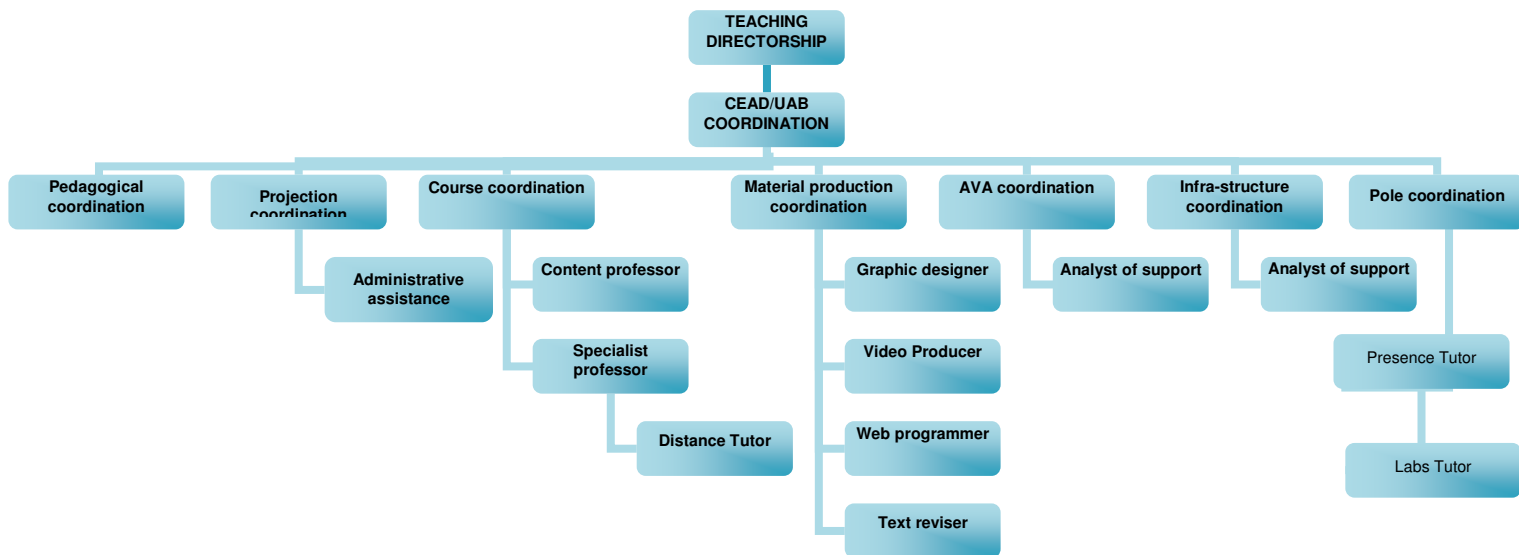


Figure 1: CEAD organization

Considering the execution of the course, this team also has: a presence tutor, a distance tutor and a labs tutor, and a pole coordinator.

The specialist/content professors are in charge of the preparation and management of a discipline.

The distance tutors are in charge of solving doubts and assisting the student's learning process on line. They were selected through public edict and have experience in teaching.

The presence tutors are in charge of mediating the students' learning process within the local poles. They were selected through public edict and have experience in teaching.

The labs tutors are in charge of assisting the practical tasks in the laboratory.

The pole coordinator is a Professional in charge of the organization and management of the presence support pole.

The course coordinator belongs to the CEFET-ES effective group of professionals graduated on the field of the course offered, in charge of the course organization and management.

The pedagogical coordination is in charge of advising and assisting the pedagogical work.

The material production coordinator (instructional designer) is a CEFET-ES public official in charge of the instructional material coordination and production.

The Learning Virtual Environment (AVA) coordinator is a CEFET-ES public official in charge of managing the AVA.

The infra-structure coordinator is in charge of guaranteeing the function of the equipments needed to guarantee the access to the AVA.

The projection coordinator is in charge of attending the course management plan and the managing/ financial actions.

It is important to point out that the EaD at CEFET-ES is under expansion: four new courses were submitted to the Selection Edict n. 01/2006 - SEED/MEC. One of the courses is a degree course - Computer Science Degree Course; three of them are post graduation *latu-sensu* - Computer Science in Education, Professional and Technological Education, Integrated Technical Professional Education to the secondary school for the young persons and adults' style.

### **3 – Technology of Analysis and Development of Systems Degree Course**

The Advice Director's Resolution n. 33/2006 [3] authorizes the implementation of the Information Systems Technology Degree Course in the CEFET-ES distance style. Oriented by MEC, the course had its name altered to Technology of Analysis and Development of Systems Degree Course.

The first selection process was carried out on September, 2007, through the Selection Edict CEFET-ES 11/2007, in 13 local authorities of the countryside of the Espírito Santo State, offering 320 vacancies.

The course has a 2,540 hours workload, 200 hours of these for compulsory traineeship. The duration of the course is three years, divided into six periods. Its curricular plan presents theoretical and practical disciplines taken in computer science labs broadly used, with specific software to help the learning process.

The main objective of the course is to contribute for the technological and scientific development in the Computer Science Systems field in order to assist the regional and national necessities in terms of the human sources formation with an entrepreneur and creative attitude. Besides that, it allows the future Professional to contribute for the alignment between the science computer technology and organizational objectives.

The Professional graduated in the course will perform in the following functions: computer science systems designer, systems analyst, business analyst, computer science systems manager, computer science businessman, and computer science systems consultant.

#### **4 – Projection Model for the Technology of Analysis and Development of Systems Degree Course in the distance style**

The most often cause of flaws within projects is the lack of projection, as it is Said, “Who fails in projecting, projects to fail”.

Every effort to project aims to guide actions to promote consistent and realistic orientation about what is supposed to be generated by the Project and, most of all, how it ought to be executed and controlled [4].

Focusing on that, the preoccupation of the CEAD-CEFETES team is to answer to the triad: aim, cost and time, always aiming to the quality of the project. These three components make the core of the Project.

Due to many requisites that the project used to demand, the CEAD-CEFETES team elaborated the Project Managing Plan, named: Implementation and Offer of the *Technology of Analysis and Development of Systems Degree Course*.

We adopted the good practices in managing projects, represented by 8 (eight) fields of fundamental knowledge for managing any project, those which we point out: aim, time, costs, human sources, quality, risks, communication and employment/acquisition [5].

We also observe that the definitions of the projection could be constituted by daily procedures for some CEAD daily activities. Such definitions help us to identify the CEAD team functions.

## 4.1 – The Aim Management Plan

The team's preoccupation was to deliver a good quality product that was in accordance with the strategies defined by CEFET-ES and by UAB. We identified the following aims:

- To offer courses with good quality;
- To afford environment and tools to the professionals involved in the process, to broaden the possibilities for assisting the educational needs;
- To offer the course with 13 presence supporting poles located in the countryside local authorities of the State of ES;
- To apply methodologies of work in the EaD style, supporting the development of the teaching presence process; and
- To facilitate the interaction between professors and students, while recovering the didactic material, monitoring the students, and while assessing the teaching-learning process.

The management through aims is a management philosophy that assumes that an organization must be managed by aims or marks. It is necessary to establish realistic, not ambiguous, aims; to assess periodically whether they are being reached and, IF necessary, take corrective actions [4].

As specific aims of the project, we identified:

- To select lab and presence tutors who will act in the pole;
- To select distance tutors who will on each discipline offered;
- To train the team that will act in the poles (Coordinator, presence tutor. Lab tutor);
- To train the distance tutors who will act along with the specialist professors of the disciplines;
- To assist the execution in the local poles through periodic visits;
- To produce supportive didactic material to de educational tasks;
- To assist and guide the infra-structural and logistic organization of the local authorities, guaranteeing the quality of the educative process;
- To supervise and guide the pole coordinators managing them;

In order to keep the aim limited to the essential tasks for the project execution, as well as not deviating from the aims sketched, the team defined what would not be an aim, that is, what would be excluded from the project aim. It is necessary to emphasize those limits to avoid some part involved demanding rights and generating expectations. Among the limits, we pointed out:

- To afford costs with maintenance of the pole;
- To afford physical infra-structure and technology of the pole;
- To afford support and training for the usage of the software available in the labs of the poles;
- To pay the team that would be present in the pole (pole Coordinator, presence tutor and lab tutor);

- To promote the selective process of students;
- To be in charge of the didactic material the audio-visual deficiency bearer;

For the project to succeed, besides, it is necessary to observe certain premises. Not observing them would compromise the execution, consequently, the success of it as a whole. The premises are those that do not depend directly on the CEAD team, but on the stakeholders of the project. We assume as true the following premises:

- Compulsory presence for the student at the pole to be assisted by the presence tutor;
- Up-to-date payment of the professionals involved in the execution of the course;
- Physical space given by CEFETES for the coordination of CEAD;
- Structuring of the poles by the local authorities;
- Realization of the whole work of the coordination of the project and of the training to the tutors must done at CEFETES – Serra;
- All specialist professors and coordinators of the Project must have a cellular phone to facilitate the communication;
- The activities related to the distance education are considered supplementary, not being allowed to harm the progress of the regular activities fulfilled by the servers involved.

If the premises are not fulfilled, they will represent a risk for the project, which is supposed to be treated in the Risks Management Plan.

A preoccupation is to identify what could limit the team's option. Most of the restrictions deals with the usage of the allowance provided to the project by UAB, whose following restrictions are identified:

- The allowance could not be available for food within events;
- The allowance could not be available for the acquisition of permanent material a;
- The allowance was pre-defined for the execution of the project;
- The interruption of Access to the Internet available in the poles;
- Making GESAC (Governo Eletrônico – Serviço de Atendimento ao Cidadão. Stands for: *Electronic Government – Citizen Service*) available in the poles;
- Maximum number of visits to the pole limited to 3 (three) people for the modules.

From the definition identified within the aim of the Project, the CEAD-CEFETES team prepared the Project's Analytic Structure (EAP).

The EAP is a group oriented to products of the project's elements that organize and define the total aim of the work [6]. We define EAP's second level as being the main deliveries of the work, that is: the Project's Management Plan,

Selection, Materials Production, Academic Procedures, Assessment and Attendance, Disciplines, Employment, Training, Software and Close.

After we define the big deliveries, we continue the projection's good practices of the projects recommended by the *Project Management Institute* (PMI), through the Guide PMBOK [5] , Figure 2 presents the summary of the processes realized by the CEAD-CEFETES team to continue the project's projection.

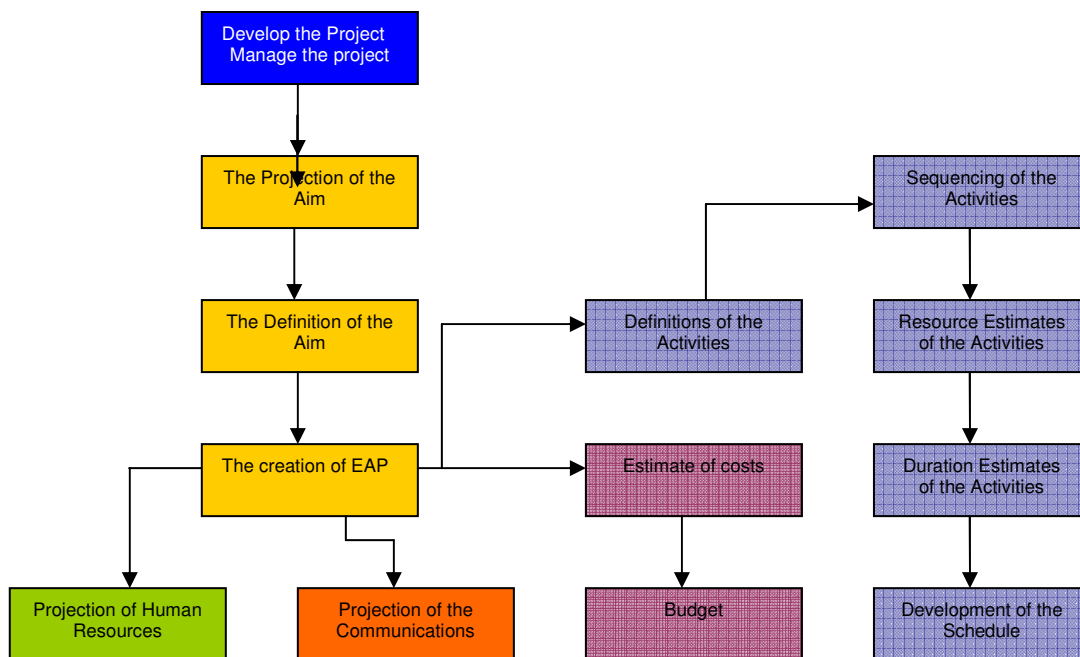


Figure 2: Project's Projection Processes

## 4.2 – Time Management Plan

The processes used by the CEAD-CEFETES team for elaborating the Time Management Plan helped to establish a trustful Schedule and within the time of the project's execution. The processes are the same ones found in the PMBOK [5]: *definition of the activities, sequencing of the activities, resource estimates of the activities, duration estimates of the activities, and, at last, development of the schedule.*

The sequencing process of the activities defined which activities were supposed to be the predecessor ones, or the successor ones of which activities. }This work generated some changes in the aim's projection, for by the time we were identifying a new activity, new restrictions, premises, and limits were appearing, making the changes inevitable, with simultaneous change of the costs..

The greatest difficulty , however, was to conceal the team's schedules with the everyday teaching activities. It was necessary to establish a particular calendar for each component of the group.

Only human resources were managed by the Project, since the material of the work could not be afforded by the Project. Those were given by CEFET-ES itself.



The activities' duration estimate were based on team's expectation and Professional experience of those who had already joined projects like this.

The reports relevant to the project were:

- Report of the project's marks;
- List of activities;
- Gantt's graphs;

### **4.3 – Costs Management Plan**

The Costs Management Plan helped us to control the main expenses of the allowance available by the UAB, focusing to facilitate the control made by the CEAD-CEFETES team, and make the direction given to the allowance the most transparent as possible.

Among many expenses, we identified:

- Visits to the poles;
- Administrative payment;
- Diagramming;
- Improvements to the Web standard;
- Improvement services for infra-structure;
- Organization of events;
- Training and selection of tutors;
- Bibliographic material acquisition;
- Office material;
- Training in Moodle environment;
- Social Charges, and;
- Operational expenses.

### **4.4 – Communication Management Plan**

Communication is one of the elements that, if badly elaborated, or worse, if not elaborated, come to be one of the main factors to contribute to the flaws in projects. The communication projection was elaborated thinking of the project's main involved ones, presenting as its attributes: the communicators, the ones involved, messages, channels of communication feedback mechanisms and message Schedule, making, this way, a mapping between them, elements represented by Figure 3.

The structure was supposed to ensure that the project had consistent, relevant and accurate information at any time. The plan is constituted by the following components:

- The ones involved in the Project;
- Communication events;
- Communication Schedule;

- Communication format;
- Communication elements.

COMMUNICATION PLAN						
INTERNAL PARTS INVOLVED						
Part Involved	Information	Necessity	In Charge for Elaboration	Communication Channel	Periodicity	Feedback
Sponsor	- Performance report	The project evolution attendance	Project manager	E-mail	Monthly	E-mail to the CEAD coordination
	- Poles visits report			Printed report	Of each visit	
Teaching Director	- Synthetic report of the academic performance	- Attendance of the academic evolution of the participants	Pedagogue	Printed report	At the end of each semester	Receiving receipt
Unit Serra director	- Synthetic report of the academic performance	- Attendance of the academic evolution of the participants	Pedagogue	Printed report	At the end of each semester	Receiving receipt
CEAD coordinator	- Performance report	- The project's evolution attendance	The project's manager	E-mail and printed report	Monthly	Approval, with signed initial, of the attendance report
	- Project's control and monitoring meeting	- maintaining information about the project attendance	The project's manager	Presence meeting	Fortnightly	
The course's coordinator	- Analytic report of the academic performance	- Attendance of the academic evolution of the participants	Pedagogue	Printed report	At the end of each semester	Receiving receipt

Figure 3: Communication plan for the ones involved.

## 5 - Conclusion

Since it is a Project never done before at CEFET-ES, despite we have almost half a century of existence dedicated to education, the distance education model was presented as a challenge to the team.

There were no projects before in which we could realize comparative evaluations; due to it, there were also no historical registers and lessons learned not to incur in trivial mistakes. Consulting other institutions somehow helped us, however we observed that few of them had made an accurate projection.

Since there was no project alike, changes in the plan due to costs not predicted has become something constant. These changes are also necessary due to the fact that we are organizing the EaD structure (of staff and technological) at the institution. Expenses with selection and training, software acquisition, specific computer science material, among others that were predicted in the beginning lead us to Constant changes to the Project. These changes generate the filling in of forms for solicitation of changes to the Project, which have to be approved by several *stakeholders*.

The participation of everyone involved in the EaD projection is essential. It is not possible to realize an *ad-hoc* projection; it is necessary to apply projection methodologies proved and continually assist the progress of the activities. The register of those is also fundamental to serve as subsidy to future projects.

The usage of software for controlling the activities is essential, even for the attendance of the responsible ones and as a means of registering the actions realized.

Another relevant factor is to maintain motivated the ones involved in the Project. Financial awards, such as scholarship, are not enough for maintaining a motivated team; other actions have to be gathered.

As our next actions, we intend to elaborate the risk and quality management plans, which Will allow us to evaluate the risks and realize qualitative measurements during the several steps of the Project. Besides, We will have the possibility for elaborating the mitigating and contingency plans, which will diminish the impacts of the negative risks and will maximize the opportunities, through the contingency, knowing which actions to take.

It is important to point out that this project model is supposed to be adapted to other distance courses projection, and also, to the execution of the next period of the current course, being somewhat changed, as a result of its own evolution and the knowledge acquired by the team.

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