JEDI – Open and free education

“No one teaches anyone, no one teaches himself, we teach each other, mediated by the world.[1]”

Abstract:

The Java Users Group of the Federal District – DFJUG (www.dfjug.org) was established eleven years ago to promote technical learning and the popularizing of the Java platform, aiming towards reducing the IT technical professional deficit which is still at 40,000 open jobs and can impact the country's development in what is being called a “Technical Blackout”.

Where to find interested people for this segment if the Brazilian educational system cannot provide for this demand is a question that was answered by our search for these special talents that, historically, have received little or no attention by society, being left in “telecenters” in the slums, flood lands or hidden in the quilombola communities hidden within this continental country.

As a contribution, DFJUG brought to Brazil, and Portuguese speaking countries, the JEDI Initiative, an open and free technical training program that after a year of its start already has over 39,000 students in its classrooms.

Keywords:

Communities of Practice, distance learning, Telecenters, digital inclusion

Context:

Java is a computer programming language that since 1995 has become a great success in the IT world[2], revolutionizing world commerce where it is used in over 68% of today's business applications developed for the Internet. According to Sun Microsystems, there are over 6 million Java developers active today world wide[2], 142 thousand in Brazil alone.

This volume of developers is still not enough to supply the explosive demand for these professionals by large companies such as Submarino, Americanas, Amazon, e-Bay and hundreds of others that dedicate themselves, for example, to electronic commerce. According to Sun Microsystems, there is still a need for over two million new developers each year just to supply the current needs of the the market world wide.

1 Paulo Freire, Pedagogia do Oprimido. 9 ed., Rio de Janeiro. Editora Paz e Terra. 1981, p.79
2 www.tiobe.com/index.php/content/paperinfo/tpci/index.html
3 http://finance.yahoo.com/news/Sun-Opens-2009-JavaOne-bw-15412073.html?.v=1
http://www.theregister.co.uk/2007/05/10/sun_jcp_java_growth/

Brazil is not different and according to information provided by the Brazilian Ministry of Science and Technology, despite all efforts of the educational sector, which includes universities, colleges, technical courses and IT schools, there are over 40,000 job opportunities which have been open for over six months due to the lack of required qualification by the candidates.

Since there is a lack of professionals in the market (quantity is the issue, not quality) companies have started a process of cannibalism. In order to be able to complete large contracts, they offer financial advantages and "fight" for the developers, inflating the job market, increasing costs and making Brazil less competitive in the international market when compared to the other large competitors as Russia, India and China, the so called BRICs[1].

In the 1970's, Professor Dr. Beatriz Alvarenga, from the Physics department of UFMG commented to her students: Statistically there are, she said, two Einsteins in Brazil. Two people with an IQ of 200 or above. Where are they? She asked. And answering her own question, she said: Probably lost in the midst of the Amazon Jungle, living in slums or in the margins of the São Francisco River, leading a miserable life, undernourished, trying to survive with a small fish each day. Usually these citizens are called weird by their families and communities for they have an odd behavior and speak of strange things that nobody understands. How can a country allow itself to waste this potential that could contribute so much for its development ?

The Java Users Group of the Federal District – DFJUG (www.dfjug.org) was established in 1998 to cater for this demand for qualified professionals. Today, with 46,983 members,[2] DFJUG is considered one of the largest among the 151 similar groups in the world. The focus on education is the main factor that has kept this community together and maintained a growth of nearly 60 new professionals each day, for years.

The fact that the formal educational sector (universities, colleges, technical and IT schools) has not been able to provide for the hiring demands of the market, led the founder of DFJUG to search for an answer in an environment that historically has received little or no attention from society. Where to find individuals with the IT developer profile? Where to find those "geniuses" that, without any formal or academical training, are capable of disassembling and reassembling a cell phone or even program all the functionalities provided by these devices? The answer came from the poorest and humblest of places, from the slums, the flood lands, the quilombolas and from the most hidden places of this continental country. People with high abilities, with a natural talent for logical and symbolic analysis represent an average of 3% of the population of any country in the world[3]. This number is largely provided by the base of the social pyramid and is usually the underprivileged strata of society, with no access to full education, health or nourishment. With its talents wasted by disease, undernourishment and illiteracy. How can we afford to waste these 5.4 million Brazilians with high potential for activities like soccer, Formula 1 driving, poetry and programming?

1 www.era.org.in/Convention/Hyderabad/2006/SpeakerProfiles.asp 27/Jul/2009
2 13/Sepl/2009
3 GUENTHER, Zenita. Desenvolvendo capacidades e talentos – Um conceito de inclusão (2000) Editora Vozes, Petrópolis, 2000.

According to the Wikipedia, a “Telecenter is a public space where people can use microcomputers, the Internet and other digital technologies that allow for the collection and creation of information, learning and communicating with other people while developing digital skills essential for the 21st century”. There are over 5,478 telecenters in Brazil[1], 269 of those in the Amazon Forest region, attempting to reduce the digital divide. over half a million people every year go to those centers in order to learn to use a computer, request public documents, search for information, participate in social networks, study or simply for leisure[2].

For the underprivileged with high potential that are born with a natural talent for technical careers, these telecenters act as a magnet, drawing them in to learn that which is innate. These individuals are born with a natural curiosity to work out the logical intricacies of electronic equipments as cell phones, DVD players or even computers. These are the famous “telecenter mice”, individuals that are always present, the first to arrive and usually the last to leave. They are the ones who are the fastest learners and who in turn, help their slower fellow students. They are the misfits of the public schools, the ones with a fair angst against the formal learning system, the pariahs, the problem kids who, in the telecenter environment feel free to research and learn according to their interests, in an unstructured and informal way where pressure is not part of the equation. The only need a hand that can show them the way. A hand that does not teach but taunts, showing alternatives.

It is not only the most skilled that benefit from these digital inclusion environments. Regardless of their cognitive skills, the community is benefited in learning to use computers. Having their lives transformed, as said by educator Paulo Freire[3], and prepared for the technological world in which we live. These citizenship centers provide skills for jobs that require the manipulation of modern devices such as a cash register in a local supermarket, so pervasive even in our smallest towns.

We believe that the telecenters provide a unique opportunity for stabilizing rural populations by supplying the means for a dignifying job near the place of residence. Even in a small village in the interior of the Amazon. This citizen won't suffer the same destiny of millions throughout the world that, in the search for a better living, migrate to large centers where they have their lives torn apart in its personal, family and social aspects. The access to the Internet through the telecenter allows for this freedom, making it possible to receive a fair salary for the time labored. A virtual job in a software factory, for example, independent of where one lives, can provide for a better quality of life that will reflect in the quality of the code provided with benefit to the country increasing its competitiveness in the international market at the same time in which the company's operational costs are decreased, resulting in more competitiveness.

1 http://lista.onid.org.br/ visited in 21/Jul/2009
2 Data from the Sistema de Cadastro do Cidadão show that nearly 90% of the users have a family income of up to two minimum wages (US$ 465) per month and that young are the largest audience: 67% of users are up to 21 years old and 93% attend public schools.
3 FREIRE, Paulo. Pedagogia do oprimido, Editora Paz e Terra, Rio de Janeiro, 1978

The migration from field to city, the rural exodus, and the resulting lack of work opportunities due to lack of formal education or technical skills, turn the most talented in preferred targets for the organized crime. Research shows[1] that 70% to 80% of the individuals arrested for drug traffic are more intelligent that the average population and that 8% of the children in social risk have a higher intellectual capacity than the average population of the same age. This is more that double the world average which is of 3%. It is observed that drug dealers, with no formal identification tool, are able to select the best and seduce them with salaries that they are not able to find in the formal, or even informal, job market. We either attract these people to the telecenters and offer them skills that will guarantee them in the work market or the drug dealers will continue to do what they are already working on.

In several cities in the interior of the poorest of Brazilian regions, the rural exodus has stripped entire cities of their economically active population, leaving behind only the old and the children. Whole populations depend solely on the minimum wage retirement pensions of the elderly in order to provide for the minimal needs of their families. Imagine young, talented individuals, living in their communities, working remotely and receiving market wages? They could become vectors of an economical revolution in their communities!

The Java Education and Development Initiative – JEDI was born of a strategic decision by a country. The Philippines decided to follow the Indian model of software product exports and observed that their professionals lacked in the necessary technical quality required to compete in a global market. A market that requires exporting companies to comply with quality standards such as CMMI and ISO 9002. They also discovered that different colleges taught Java in different ways that not always provided for the minimal requirements for learning this programming language. The JEDI was build upon content provided in English by the Java Research & Development Center (JRDC), from the University of the Philippines in Diliman in a joint effort with Sun Microsystems in 2002. Today (July 2009), there are 382 participating colleges and 3,164 trained instructors benefitting 160,360 students. This initiative has also been established in Vietnam where 28,668 students benefit from it.

DFJUG brought JEDI to Brazil and the other six Portuguese language countries (Portugal, Angola, Moçambique, Guiné-Bissau, Cape Verde, East Timor e São Tomé e Príncipe) in April 2007. Today (September 2009) there are 39,625 students enrolled. Different from the originating project, where students attend classes physically, we opted for a model structured for a distance teaching/leaning environment using Moodle. It is a complete open and free Information Systems course based on Java and Free Software under a Creative Commons[2] license and available at http://www.dfjug.org/DFJUG/jedi/index.jsp

Since DFJUG is a non for profit NGO all work is developed by volunteers, be it for partner companies[3] or for individuals. These volunteers provide their free time, nights, holidays and even vacations to help in the translation of the material for the courses brought to the country. There are over 140 individuals who have been working to translate, test and

1 www.dfjug.org/DFJUG/tvdfjug/videos/index.htm click on the video “Entrevista com Dra. Zenita Guenther”
2 http://www.creativecommons.org.br/ visitado em 21/Jul/2009
3 http://www.dfjug.org/DFJUG/jedi/index.jsp, at bottom of page, visited in 21/Jul/2009

localize the material to Portuguese. It was surprising to learn that over 49 formal colleges are now using this material in their own IT undergraduate programs even though the effort was to provide a course material destined to the telecenter population. This community effort is based in a cooperative crowd-sourcing production system where, we believe, there is no need for a permanent or formal leadership. This environment leads to the development of *ad hoc* leaders whenever needed and the whole effort is achieved only through the Internet with physical meetings only when necessary.

In the months of June and July, 2009, DFJUG held the second academic JEDI poll and the questionnaire was answered by 1,173 of the 32,608 students, reaching a statistical reliability of 97%. Paulo Freire[1], the great Brazilian researcher, said that to educate is to transform people. In this research, we attempted to find if the JEDI is transforming the lives of its participants and if so, in which way has JEDI helped you in YOUR life?

The results show that the profile of a typical JEDI student is a young (on average 26 years old, with 75% being under 31), male (91.1%), single (62.7%), childless (61.2%), employed (66.7%) individual that has an undergraduate degree (70.8%), no house of their own (52.3%) and with an average annual income of US$ 15,271.00. The national reach of the initiative must be stressed since there are students in all Brazilian states but who are concentrated in Brasília and São Paulo (with 18.4% and 17.3% of the students each)

The evaluation of the course was favorable: 98% would recommend the course for another person and over 95% of the students indicated that they are willing to enroll in other courses of the initiative. As for their expectations and motivations, the 66.7% of the student look for new work opportunities. This response can characterize JEDI as a skill enhancement initiative. 38% of the students prefer the web module of the course, which reflects the bias of the hiring market. Roughly 90% of the students already had previous IT skills and their major expectation was to become certified Java developers with higher salaries (almost 90% of the students).

The data of this research show that for 33% there was a real transformation in their lives, when they answered affirmatively to the question “Did you receive a better salary through the application of this knowledge in your work?”. On the other hand, this research also showed that JEDI is yet to reach the telecenter population.

Currently, each JEDI course is composed of reading materials, slides, exercises, video-classes, Wiki, FAQ and a discussion forum totaling over 180 class hours of technical skill development.

The currently available courses are:

1 – Introduction to programming I – 12 classes
2 – Introduction to programming II – 13 classes
3 – Data structures – 10 classes

1 Http://www.paulofreire.org/Capa/WebHome 07 August 2009

4 – Software Engineering – 8 classes
5 – Mobile application development – 10 classes
6 – Web development – 11 classes
7 – Data security – 10 classes
8 – Operational Systems – 8 classes
9 – Databases – 8 classes

The following courses are under development:

1 – Enterprise Java Beans
2 – Operating Systems II
3 – Flex
4 – Web Services
5 – Object-Oriented Analysis, Design and Programming
6 – Scripting
7 – Database Design I
8 – Database Design II

The JEDI relies on volunteers that believe in the proposal of the initiative and have taken coordination responsibilities in states such as Rio Grande do Sul, Paraná, São Paulo, Goiás, Ceará e Maranhão and in several countries such as Guiné-Bissau, Portugal, United States and the Philippines[1].

Challenge:

JEDI does not have an “owner”. It is proposed as a network of cooperative, voluntary and generous work for the development of a self-sustaining open and free learning community through the intensive use of technology, making the best use of the understanding of how cognitive processes work.

The way JEDI was initially implanted, intentionally planned to allow for the fastest release of contents and for the fast collection of results such as the quick offer of over ten free courses for the community and a large support of interested developers. On the other hand, this disorganized growth presents problems that can make the whole project unmanageable in the long run. In order to respond to this some initiatives must be made such as:

1 – Make a content update system available for existing content due to regular technological updates

One of the main characteristics of the current distribution model for IT products is their fast obsolescence. Software versions are released to a dynamic process determined by the consumer market many times without the necessary concern with quality. As a result, more products reach the consumer with problems (bugs) that require constant corrections.

1 http://www.dfjug.org/DFJUG/jedi/index.jsp Click the world map

Likewise, new functionalities are aggregated to products that require the restructuring of existing software, making the knowledge to the developers' community technically outdated resulting in a nearly constant retraining.

The JEDI contents currently available are requiring a revision process to adequate them to new technologies that have been recently created and that were developed after the time when the curriculum was made available to the community.

It is necessary to create an environment and procedures that involve the community, similar to the Wikipedia model, that will allow for volunteers to revise and publish the necessary content changes in an agile and automatic way.

2 – Rewrite all the JEDI content using the latest available distance learning technologies.

When JEDI was launched in the Philippines, in February 2005, the model adopted was an enablement program for the instructors in the local colleges who would, in turn, relay the acquired knowledge to their students in their classes. Since JEDI in Brazil won't count with any formal financial support, mainly due to the size of the country (the fifth largest in the world[1]), the initiative had to choose a different model. It was decided that a distance learning environment based on a Web model should be chosen and, after many internal discussions, the Open Software Moodle[2] was adopted due to its use by several large universities and corporations for training through the Internet. As for the tutoring model, based on Vigotsky's Social Interactionism, a Peer-to-Peer (P2P) model was adopted, being moderated by a coordinator within the structure of a discussion list.[3].

The pedagogical approach of the course is fragile since it merely represents a simple transfer of the material originally developed for a physical course. It has, therefore, to be completely re-engineered in order to obtain the best results from the selected media. With a classic tutoring system, such a large free project cannot be implemented, requiring that a new pedagogical approach must be established in order to stimulate, in the sense of a Pavlovian reward, a cooperative tutoring environment to be developed by the students themselves, through a discussion list mediated by a moderator.

3 – Develop a tutorship apparatus containing a structure for the development of new courses in emerging themes in a cooperative, voluntary, self-sustaining and autonomous way;

In the dynamics of the IT world new technologies are developed continuously and must be publicized for companies to adopt this new knowledge rapidly as a form of competitive advantage. This results in the need for professionals in the market to continuously update their skills in order to maintain their employability.

The aim is to create a structure that allows for new contents to be added to the JEDI structure in an automatic way where authors may find an environment with a complete

1 http://www.osdezmais.com/geografia/os-10-maiores-paises-do-mundo-em-extensao-de-terra/ 05 August 2009
2 http://moodle.org/ 05 August 2009
3 http://www.grupos.com.br/grupos/dfjug 05 August 2009

infrastructure that allows for the complete functionality of the development of new tests and materials without the need for administrators.

4 – Offer a technical evaluation system for students;

The international JEDI coordinators meet annually in San Francisco, USA, during the JavaOne, the largest international meeting of Java developers where thousands gather to exchange their professional experiences

In the May 2007 meeting, the coordinator responsible for the Brazilian initiative reported the recent launch of the initiative in the country and the distribution of tasks that followed.It was determined that the team of the Philippines team would continue to develop and revise the offered content while the Brazilian team would be responsible for developing a certification program within global standards that would cater to students from all involved countries.

A professional certification has great value for hiring companies world wide since it represents a seal of quality for its bearer, given by an entity with credibility in the market. Many times, large market players such as IBM, Cisco, Microsoft, Oracle or Sun Microsystems issue these certifications for those approved in their difficult technical exams. It must be said that these exams are made in English which, on its own, is a mechanism of social exclusion for in emerging countries only the wealthier classes have access to English classes. On the other hand, this also means a 150% higher salary for the certified professional when compared to the average professional that does not bear this prestigious title.

This important task is currently assigned to Heródoto F. Bento-DeMello, JEDI coordinator and professor at the Center-Western Paraná State University. He is currently developing, within the scope of the post-doctorate program at the Santa Catarina Federal University, the certification framework that will be adopted worldwide with students being applied exams in their own national languages, characterizing the model of social and digital inclusion. This effort has gained recently an important help from Turadg Aleahmed, a doctorate student at Carnegie Mellon University who accepted to extend its question bank project in order to include our requirements.

What is proposed here is not the construction of a simple question bank, but a social network environment able to congregate and allow strong interaction among a community of volunteered teachers engaged to contribute in the construction of a complete, consistent and qualified set questions ready to be used for an automatic certification exam generator tool. To do so, this environment will include a question bank and quiz authoring tool. The quality of the questions in this tool will be guaranteed by a peer-reviewing and polling mechanism. This social network as a living environment will support specialized communities of practice in any country, in any language to build assessment tools co-operatively, in order to educate professionals capable of leveraging its social development and richness, as a way for “teaching to fish”, instead of one for “giving the fish”. Beyond translating the information to their national languages, it can also receive contributions of new questions. This is a model of open inclusion, where the

capacity of the community and of each individual in constructing their own questions reflects their own needs and visions.

H. Maturana (a Chilean neurobiologist), who developed the Biology of Loving, says that loving is the domain of behaviors through which another arises as a legitimate other in coexistence with oneself. This project has this commitment for in it we offer a specialized and professional social network environment able to support learning communities as a starting point and as a sign of search and disposition to cooperate. In offering something open, we leave the door open so that others may, in equal conditions, also contribute and recognize the another as a legitimate other in familiarity. This we call Open and Free Education, based on the paradigms developed in the Free Software Movement, as a universal movement in search of a world without controllers. Open in the sense that all may participate in its construction and free in the sense that it is not linked to any center of power.

What we propose, in a most ample sense, is the creation of a learning objects development platform, in this case with the objective of catering for the evaluation area. This framework, as more volunteers are gathered from the teachers in the community, can be expanded to provide for a authoring space and the development of learning objects in general.

This collaborative model will allow for the research and development of these objects in order to make Distance Learning more effective, so that the teaching-learning process is no longer concentrated in physical classrooms but in the life communities, wherever they are, that cooperatively co-produce and co-utilize a common apparatus. This platform is fruit of the research space that JEDI has been stimulating as it gathers support of the academia in this process.

5 – Democratize the access of the JEDI courses for users of Telecenters, the primary social goal of this initiative.

IT is an area that calls for high levels of dedication as well as a solid base of prerequisites by its practitioners. The telecenter user population is a reflex of the substandard educational structure of emerging countries who, in their majority, lack the necessary formalizing of these contents. This makes it difficult for this population to fully comprehend the available materials which refer, primarily, to the latest technology.

In order to supply the necessary knowledge, so that the telecenter user can learn adequately the Introduction to Programming I module (the introductory module to the JEDI courses), more basic content must be created in the previously established standards, that will complement the necessary prerequisites and allow the students the full comprehension of the course.

The complementary content to be developed is:

a – Technical Portuguese
b – Instrumental English
c – Math concepts applied to IT

d – Pedagogical games – Project GreenFoot[1]
e – Electronic spreadsheets
f – Programming logic

6 – Implant an IT talent identification program

Why is Brazil the largest provider of good soccer players in the world? The only country to win the FIFA World Cup for five times since 1930? Why is it that the most talented players are born here? It is because children here are born with a ball at their feet? No. It is because of the capillarity capable of locating the most talented players. In each street, in every city, Brazil becomes a soccer field for children that return from school. Each district has a soccer field where grown-ups play ball on evenings or at weekends. Each day, millions play soccer dreaming with the day they could be playing for large teams, earning larger salaries than the ones we see in press. This privilege, however, is reserved to those that have been identified by the ever present “olheiro”, the talent hunter. The talent hunter is there seeking to identify the 3% of the population that present exceptional characteristics for the sport. Since he scouts in every district and in every game, the probability of identifying a talent is increased by the capillarity of this service. Under this analysis, soccer is a learning environment, and according to Etienne Wenger, a Community of Practice.

In using this metaphor, we propose to transform the manager of the telecenter, the community leader, the monitor, the person who lives day in, day out, in the telecenter in an “olheiro” in order to identify, within these thousands of IT qualification centers, those who present the rare identifying signs, the visible manifestation of the Informatics (computer) talent.

The identification of the Informatics Talent (2007) is the development of the methodology created by Professor Dr. Zenita Guenther[2], and applied successfully since 1993. Each year, there are over 200 talented students identified in the public and private school systems of Lavras, MG, through the Association of Parents and Friends in support of Talent – ASPAT.

She defines the individuals with informatics talent as “those who demonstrate skills and dexterity in front of a computer, especially if it is a machine different from their own; appearing to develop an affective relationship, a kind of passion, in making the machine respond to their commands; skill to feel more than remember in the search for the appropriate direction to deal with common use situations or with the unexpected surprises of IT”[3].

Zenita states that “the idea of the telecenters is to create opportunities for the population to grow, live and experiment with the computer, opening the interior of the country so that the above stated characteristics can be expressed and cultivated, allowing the development of the informatics talent … not to speak of external stimulus

1 www.greenfoot.org/ visited in 27/Jul/2009
2 http://www.aspat.ufla.br/ 07 Agosto 2009
3 O talento informático: Reconhecer, localizar e desenvolver, página 53 Author's manuscripts, 2007

such as jobs, well payed work, prestige and the opportunity of knowing places and people of the area".

French researcher Françoys Gagné[1] alerted Zenita in a personal message that "in dealing with informatics talent one has to be careful not to be trapped in giving attention to the young who already have some experience and training in the use of the computer. Our goal is to locate natural capacities even when not yet visible but that express themselves as this channel is made available as well as new opportunities for learning".

The process of defining, elaborating and concluding this text make us reflect on the learning processes that happen in the Communities of Practice such as DFJUG/JEDI. In this sense it is possible to foresee the continuation of this work in order to obtain a "Free and Open Education" for the major conclusion of this work is that learning is what motivates the Brazilian Java developers to congregate in our community. The interaction of peers, the permanent exchange of information and the resulting sharing of information between colleagues in a voluntary and collaborative way, be it through technical presentations, blogs, e-mails or newsletters to spread best practices and discussion forums, lead to the belief that there is within a strong pedagogical relationship to be explored. In this sense, a structure can be seen that is supported by three axis that reflect the processes of transference of knowledge that occur within our community of practice, which are:

1 – Community governance seems to process itself in Autopoietic and Caordic forms, according to the models defined by Maturana (2002) and Hock (1999). The Java learning community seems to function as a living organism of auto production (autopoietic) that self-feeds in a chaotic direction that is, at the same time, organized and defined by the needs of the community which they serve. "We human beings, live in cognitive communities, each defined by the criteria of acceptance of that which constitutes the actions or behaviors appropriate to its members. In this way, the cognitive dominion is the consensus of life praxis of its observers. In the same way, the affiliation of any human community is operational: whoever wishes to meet the requirements of acceptability of the members of a particular community, is a member of that community[2]".

2 – Vygotsky's learning theory[3] suggests important references for the understanding of the pedagogical practices that occur in the users groups, mainly in the aspects related to the social and cultural aspects that occur within the individuals and their environment. The social interaction is converted in the driver for the development of these processes. In this environment, community members function as mediators in the interactions, stimulating individuals to surpass their current development and reach for their maximum potential. The most important contribution of this author is translated in the fact that learning develops easier in collective situations. This could explain the pedagogical dynamics that happen within user groups and communities of practice in general.

1 http://www3.telus.net/giftedcanada/page4.html
2 Maturana, 2002, P. 295
3 VEER & VALSINER, 1991

3 – According to Wenger (2002), the structure of Communities of Practice is based on what he called their basic structural elements (domain, community and practice). We understand that these elements are fundamental for the understanding of the pedagogical relationships that occur within our community for, as seen throughout this text, communities of practice favor the exchange of knowledge among peers or, as the author states[1]: “Learning is a process that occurs in a participative, not individual, way. It is the community, or at least those who participate in the learning context, where learning happens. Learning is shared among co-participants, and not an individual achievement.”

Objectives:

- General Objective: Develop a cooperative management model for the courses of the JEDI initiative in order to allow it to develop into a self-sustaining and self-organized teaching-learning process that makes effective use of the resources available in today's distance learning.
- Specific Objectives:
  a) Adequate the tutoring environment (Moodle) to the needs of the project;
  b) Develop a dynamic self-sustaining and autonomous dynamic environment aiming towards the generation and revision of the published contents;
  c) Redevelop the JEDI initiative courses to better use the pedagogical resources presented by today's distance learning environments;
  d) Develop a free Web-based certification system in Portuguese;
  e) Develop strategies to democratize the access to the JEDI courses in such a way that they are accessible to telecenter users;
  f) Build a graphical tool for efficacy forecasting in the dynamic of the discussion lists through the view of brownian movements and fractals.

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1 Lave & Wenger, 1991, p. 15