El aprendizaje por proyectos y el trabajo colaborativo, como herramientas de aprendizaje, en la construcción del proceso educativo, de la Unidad de aprendizaje TIC´S.

Learning through projects and collaborative work, as learning tools in the construction of the educational process, learning Unit ICT'S

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Resumen

Se trata de una propuesta integradora de los enfoques del aprendizaje por proyectos y el trabajo colaborativo, como herramientas y mecanismos de construcción del proceso educativo, en la Unidad de Aprendizaje de TIC´S, correspondiente a la estructura curricular del primer año de licenciatura, que se imparte en área de Formación Básica e Institucional, en las escuelas superiores del área de Ciencias Sociales y Administrativas, del Instituto Politécnico Nacional.

Se implementa una didáctica innovadora en la ejecución del proceso educativo, que incurre en el desarrollo de competencias inherentes al Modelo Educativo del IPN, donde los alumnos despliegan su capacidad para aprender a aprender, a hacer, a interactuar y a emprender, lo que se logra a través de la aplicación de una metodología para el desarrollo e implementación de planes de negocios, apoyada en las herramientas informáticas y de comunicación, que se instruyen en la Unidad de Aprendizaje de TIC´S.

Las competencias se desarrollan y aplican, en una propuesta de negocios innovadora y viable, que se pretende comercializar en entornos de e-comerce, y que incide en la construcción de su proceso formativo integral, ya que el proyecto los mantiene activos y

entusiastas, en las perspectivas de generar sus propias fuentes de empleo.

Abstract

It is an integrative approach to learning approaches and collaborative projects, such as construction tools and mechanisms of the educational process in the ICT Learning Unit S, corresponding to the curricular structure of first year degree, which area is taught in Basic Training and Institutional colleges in the area of Social and Administrative Sciences, National   Polytechnic   Institute.
It implements an innovative didactic educational process execution that incurs the inherent skills development IPN educational model where students display their ability to learn to learn, to do, to interact and engage, which is achieved through the application of a methodology for the development and implementation of business plans, based on the information and communication tools that are taught in the ICT Learning Unit's. The skills are developed and applied in a business proposal innovative and viable to be marketed in e-commerce environments, which affect the construction of its comprehensive training process, as the project keeps them active and enthusiastic in prospects of generating their own sources of employment.

Introduction

In a world of rapid change, where severe supply sources of energy transformations are living in global economic systems, new ways of relating between nations, and; higher education faces challenges and conflicts that need to address: financing problems resulting from the unequal conditions of access to education, the insufficient or inadequate staff training processes, lack of competency-based training processes inefficient and education

programs, the development and strengthening of research, and in general, the inadequate services provided.

In order to have a significant impact in the solution of these problems, the Mexican higher education institutions shall conform to the requirements of the knowledge society, and the demands of the changing needs of society, since otherwise do run the risk of becoming archaic institutions, and in the worst cases, they tend to disappear.

The solution to this problem can be glimpsed through the transformation of its educational programs and research to address themselves to be primarily to international quality standards, and the introduction of components that include a high degree of social satisfaction that have a significant impact on the reproduction of graduates who formed under the schemes claiming the new technology, and international contexts, which requires the introduction of sweeping reforms in the policies of increased access, to be in a position to cater for groups of increasingly diverse people as well as a transformation of the contents, methods, practices and means of transmitting knowledge, which should be underpinned by new paradigms in relationships and contributing to the community and all sectors of the society.

Under this transformation scheme, the National Polytechnic Institute, directs its efforts towards the transformation and modernization of the plans and programs of study, oriented in the application and implementation of learning-centered approach, under the proper adjustment of systems training, based on the introduction of teaching methods that grant preference to innovation, creativity and painstaking use of information and communication technologies. (a New Educational Model for the IPN, 2003).

In this model, academic units are conceived as "communities of lifelong learning spaces where students display their ability to learn to learn, to do, to interact and engage" students as instituting the "builders of their comprehensive training process , active and enthusiastic, and able to design your own life plan and career. "(A New Educational Model for the IPN, 2003).

The educational model of the IPN, integrated as fundamental quality, being focused on learning, learning that arouses "a comprehensive training and high scientific, technological

and humanistic quality, where they combine balanced development of knowledge, attitudes, skills and values through a solid training to facilitate independent learning, with the ultimate goal of its graduates are able to combine theory and practice to contribute to sustainable development of the nation. "(a New Educational Model for the IPN, 2003).

In this innovative model IPN, IPN teachers should guide their teaching, to design innovative strategies and mechanisms that allow the implementation of an education, current and cutting-edge process, which will be possible through the transformation of its old role, to that of "facilitator of learning (focused on learning) and as co-learner in the educational process ", where the teacher" distribute their time between planning, designing learning experiences, rather than the transmission of content in teaching classes "(a New Model for Educational IPN, 2003).

Based on the above, it reflects essential innovation in the construction of the educational process TIC'S Learning Unit, which is taught in the Basic Level, Discipline and Comprehensive Training in the School of Business and Management, UST, through the implementation of project-based learning and collaborative learning.

Content

Theoretical and Conceptual Framework

Constructivism

The fundamental assumption of constructivism states that humans construct their own knowledge through experience (as opposed to the idea that simply receive processed information to understand and use immediately) to construct their own knowledge, to achieve this, is necessary to create mental models that can be modified, increased, rebuild and adapt to new situations.

Constructivism as a learning theory is based on the assumption that humans construct their own conception of reality and the world in which they live. The constructivist approach is based on two fundamental ideas: 1 The student is responsible for their own learning process is rather who builds or reconstructs knowledge of their cultural group, when actively manipulate, explore, discover or invent, even when reading or listening to the presentations of other students.

2. constructivist student mental activity used content they already possess a degree level of processing, ie the student does not have to be at all times be performing discovery or inventing new knowledge, since knowledge is taught in schools is the result of a process of building a social level, the students and teachers are largely already developed and defined contents.

Learning projects

Project Based Learning is a learning model in which students plan, implement and evaluate projects that have application in the real world beyond the classroom (Blank, 1997). Under constructivism, project-based learning is seen as an ideal setting, where students take responsibility for their own learning, and that this teaching strategy provides a model of genuine instruction in which students are able to plan, implement and evaluate projects that have application in the real world. (Blank, 1997).

To Harwell (Harwell, 1997) the project-based learning is an instructional model in which students plan, implement and evaluate projects that have application in the real world beyond the classroom. In Project Based Learning activities of interdisciplinary learning, develop long-term and student-centered. (Challenge 2000 Multimedia Project, 1999).

As can be seen, the implementation of projects as part of the curriculum, is not a very new concept, many teachers use it in their teaching plannings, for many years, however the project learning much more confined pedagogical foundations, the simple assignment of tasks to the students, to build a project, and this is used on numerous occasions, for convenient, or simply to facilitate evaluation of the teaching task.

The most significant features of project-based learning, as described by Dickinson et al, are as follows (Dickinson et al, 1998):

- Focus on the student and are directed by the student.
- Are defined clearly (have a beginning, a middle and an end).
- Your content is meaningful to students (clearly observable in their environment). □ Solve real-world problems.
- was made through research firsthand.

- They are sensitive to the local culture and are culturally appropriate.
- The specific objectives are related to both the Institutional Educational Project (PEI) as curriculum standards.
- Conceive a tangible product that can be shared with the target audience.
- Generate connections between academic, life and job skills.
- Present opportunities for feedback and evaluation by experts.
- Present opportunities for reflection and self-evaluation by the student.
- Allow authentic assessment of learning.

One of the most outstanding advantages of this style of teaching, is that it keeps students engaged and motivated in their learning process, allowing the scope of his accomplishments, as it allows them to select topics that interest them and that are important to their lives.

Some of the outstanding advantages of this type of education are:

- Prepare for working life.
- Making connections between prior knowledge and acquired at school and reality.
- Promotion of collaborative work.
- Development of social and communication skills.
- Development of skills for problem solving.
- Liaison with other disciplines.
- Improved self-esteem.
- Motivating students.
- Application of technology in the real world.

Although there is no formula or ideal for teaching and implementing such way, Edwards (Edwards, 2000) suggests some points to consider:

1 Ask objectives or goals for projects. All involved should be clear about the objectives for the project plan and complete positively.

2 Situation or problem. Describe the issue or problem the project seeks to address or resolve.

3 Description and purpose of the project. Brief explanation of the purpose of the project and how this solves the issue or problem.

4 Performance Specifications. List the standards that the project must meet.

5 Rules. Standards to develop the project, such as time and short-term goals.

6 List of participants in the project and the roles assigned to them.

7 Evaluation. Establish evaluation criteria (project learning in both the learning process and the final product are assessed).

Collaborative work

The term collaborative learning refers to learning methodologies that arise from working with groups that share spaces for discussion in order to inquire or to consummate teamwork, this type of learning in classrooms emerge from the early 70 however most theoretical studies date back to the early 80's.

The concept of collaborative learning has been and is the subject of research and study in recent years, more so with the emergence and growth of e-learning. Collaborative learning is a theory and a set of methodological strategies that bloom from a new perspective of education, where the cooperative group work is an essential component in the activities of teaching and learning, rather than a technical, collaborative learning reflects interaction as a philosophy and a way of working which involves both the development of individual knowledge and skills and the development of positive interdependence and respect for the contributions.

It is based on the constructivist theory in which knowledge is discovered by students, rebuilt by the concepts that can relate and expanded through new learning experiences. It emphasizes active student participation in the process, because learning arises from transactions between students and between teacher and students. (Panitz, 1998).

When working together need to share experiences and knowledge and have a clear target group where feedback plays an essential role for success of the team. "What must be learned can only be achieved if the group's work is done in collaboration.'s The group that decides how to perform the task, what procedures to take, how to divide the work and the tasks." (Gros, 2000).

The success of collaborative learning is based on a glimpse of different factors, among which is the interaction between group members, a shared, understood goal, mutual respect and trust, multiple forms of representation, creation and manipulation of shared spaces, continuous communication formal and informal settings, and clear lines of responsibility. (Kaye, 1993)

Collaborative learning as a teaching resource, it helps with the principle of socialization of knowledge in the education of students through the implementation of joint activities, in order to develop solidarity and sharing, this learning requires a pre-planning of the class, based on clear educational objectives, where the use of unconventional or nontraditional strategies are involved, and in which active management student and group living, this leads to the teacher to develop its own creativity.

Adaptation Program Learning Unit TIC'S

Currently in virtually all school projects and throughout the workplace, the use and application of ICT's as tools for support in the implementation of projects, school proposals, tasks, and work is integrated.

When working under schemes of project learning and collaborative work, students, experience the breadth of his accomplishments, collectively, as access to form learning communities, where it interacts, collaborates, is respected and growing in a atmosphere of give and take.

This environment involves students to develop skills and abilities that allow them to learn from each other, sharing ideas and resources, and plan cooperatively in what and how to study.

Reflecting on the introduction of such innovative strategies in the implementation of the educational process, and formulating an effective transformation of the role of the teacher, under this proposed plan, the teacher becomes automatically a guide that facilitates the autonomous learning students, where the interdependence of team members is one of the key pieces to ensure that members needed each other and achieve trust in the abilities and achievements of each of his teammates.

Based the synthetic program TIC'S Learning Unit, the area of Basic Training, Disciplinary and Institutional, High School of Commerce and Administration, UST, content is suited, including as learning tools, project learning and collaborative work, where the project was established as an innovative and feasible plan business, which will be marketed through v ecommerce environments.

Following the adjustments made to the synthetic program TIC'S Learning Unit is as follows: In relation to the specific topics from synthetic program is designed and implemented:

UNIT THEME: I NAME: Basic Word Processing Word Specific objective (synthetic Program) Content (synthetic Program) Implementation Collaborative Learning Projects and Working Student applications will use a word processor or text, based on its features and menu options, through teamwork, to develop written documents related to the areas of professional practice through the development of a report

- Introduction to word processors.
- Creating documents.
- Creating and modifying paragraphs
- The format of a document.
- The tables in Word.
- Document Management.
- Working with graphics
- Formation of teams
- Investigate what a business idea and how it arises
- Research on innovative internet business ideas that have positioned large companies.
- Systematic observation of changes in consumption
- Research business opportunities from the observation of social change and consumer

- Communicate information and ideas effectively using variety of computer media and formats to design an initial proposal for "business idea", embodied in a Word document formatted report.

THEMATIC UNIT: II NAME: Advanced Word Processing Word Specific objective (synthetic Program) Content (synthetic Program) Implementation Collaborative Learning Projects and Work The student will use the advanced features of a word processor based on the options menu program, through teamwork, to the development of specialized documents by preparing a document.

- Customizing paragraphs
- formats Stylish
- Customizing tables
- Creating and modifying charts
- Customizing the Word Environment
- Working with a task force
- Merge
- Design objectives or goals for projects.
- Establishment of the situation or problem the project.
- Description and purpose of the project.
- Performance Specifications. (list of the standards that the project must meet.
- Establishment of Rules. (Standards to develop the project, time and short-term goals).
- Assign tasks and responsibilities (Application Tool Project).
- Research that is quick market analysis.
- Development of the steps in the quick market analysis
- Preparation of a technical report on its proposed fast market analysis, applying the concepts and techniques in Word.

THEMATIC UNIT: III NAME: Multimedia Power Point Specific objective (synthetic Program) Content (synthetic Program) Implementation Project Learning and Collaborative Work Students apply the functions of the PowerPoint program based menu options,

considering the selection of designs including effects permitting the creation audiovisual presentations, through teamwork, by developing a presentation.

- Introduction to multimedia
- Preparation of presentations
- Insert and edit text
- Insert and modify visual elements
- Changing the display format
- Presentation Printing
- Managing and delivering presentations
- Collaborate with a working group
- Design and development of an instrument to measure customer preferences to determine whether the product or service is viable marketing
- Sample   design   and   description   of   the   population   who   apply Implementation of the instrument (dynamics design application)
- Data Encoding
- Data Analysis
- Data Interpretation
- Power Point presentation about the product or service to market (including commercial video)
- Design and development of prototype (product or service)

THEMATIC UNIT: IV NAME: Information Technology and Communication Specific objective (synthetic Program) Content (synthetic Program) Implementation Collaborative Learning Projects and Working Student applications handle various search tools for information and communication, based on their local and global characteristics, through collaboration, to establish interactive networks, as manifest in the exchange of opinions through communication, through the use of electronic mail and discussion forums.

- Communication Networks
- The internet
- Internet and its services

- Design business description

- Design of corporate image of the company.

- Design of corporate stationery of your company (Publisher)

- Development and production of the good or service

- Management and business organization

- Finance

- Development (writing) the executive summary

- Design, development and registration of a business page on the internet to market their products / services.

Conclusions

In groups in which learning through projects and collaborative work was implemented, students achieved:

- Conduct research firsthand, through the reproduction of a product and / or service innovative and tangible.

- Build connections between academic, life and job skills.

- Working collaboratively, developing pro-social interaction behaviors, and improved their socio affective relationships.

- Develop communication skills and problem solving.

- Making links with other disciplines (interdisciplinary work).

- Improving your self-esteem, to be appropriate for attaining its challenges, and thus remained motivated.

- Achieving formed such a comprehensive way, combining in a balanced manner the development of knowledge, attitudes, skills and values, so take responsibility for their own learning were made.

- They increased significantly, their average school performance so were markedly decreased failure rates and absenteeism.

- In some cases, students were able to institute companies, which were created through the design and implementation of business plans, same that will market

through e-commerce (they designed and developed their website that climbed the spaces on the Internet).

Bibliography

Blank, W. (1997). Authentic instruction. Tampa, FL,: University of South Florida.

Dickinson, K.P., Soukamneuth, S., Yu, H.C., Kimball, M., D'Amico, R., Perry, R., et al. (1998). Providing educational services in the Summer Youth Employment and Training Program (Technical assistance guide). Washington, DC: Department of Labor, Office of Policy & Research.

Edwards, K.M. (2000). Everyone's guide to successful project planning: Tools for youth. Portland, OR: Northwest Regional Educational Laboratory.

Gros, B. (2000). The Invisible Computer. Barcelona: Gedisa.

Harwell,S. (1997). Project-based learning, promising practices for connecting high school to the real world. Tampa, FL: University of South Florida.

Kaye, (1991). Collaborative learning with new communication channels. Madrid: Síntesis.

Panitz, T., et. al. (1998). Encouraging the Use of Collaborative Learning in Higher Education. New York: Garland Publishing.