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From the editor ..

Welcome to the April 2001 issue of *Learning Technology*.

The IEEE International Conference on Advanced Learning Technologies, Madison, USA (August 6-8, 2001) is turning out to be a very high quality conference. The website of the event is <http://lttf.ieee.org/icalt2001/> . The call for participation is available in this newsletter below.

You are also welcome to complete the FREE MEMBERSHIP FORM for Learning Technology Task Force. Please complete the form at: <http://lttf.ieee.org/join.htm>.

Besides, if you are involved in research and/or implementation of any aspect of advanced learning technologies, I invite you to contribute your own work in progress, project reports, case studies, and events announcements in this newsletter. For more details, please refer author guidelines at

http://lttf.ieee.org/learn_tech/authors.html.

Kinshuk

Editor,

Learning Technology Newsletter

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IEEE International Conference on Advanced Learning Technologies (ICALT 2000) (Call For Participation)

6-8 August 2001

Madison, Wi, USA

<http://lttf.ieee.org/icalt2001/>

Proceedings published by:

IEEE Computer Society Press

Keynote/invited speakers:

1. Tim O'Shea, Master of Birkbeck, University of London, United Kingdom
2. Elliot Soloway, University of Michigan, USA

Early bird registration closes: 6 July 2001

The registration form, accommodation and other details are available on the website.

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A Program Migration: Moving the Local Government Certificate Program On-line

Abstract

Government Studies, Faculty of Extension, University of Alberta, began the "migration" of our Local Government Certificate Program to on-line delivery using WebCT in the spring of 1999. The intent is to provide improved interaction and communication between distance education students and their instructors. A formative evaluation of the program development has been ongoing, and results are guiding the process. Recommendations for a model for the on-line transformation of conventional distance education programs are being developed as the program moves to a national audience.

Background of the Project

[Government Studies](#), Faculty of Extension, University of Alberta is currently migrating our Local Government Certificate Program courses to on-line delivery - to provide a virtual environment for working and learning for local government that can be delivered to a national audience. [Government Studies](#) is implementing the on-line program migration in stages, to allow for new curriculum development, to accommodate the needs of students already enrolled in the program and to refine the model. By January 2001, we will have eleven courses using a mixed delivery approach that combines print and on-line resources.

Student Profile

Our students are scattered across three Canadian provinces and are mainly from small municipalities. Average age is 38 and about 70% are women. Students do their course work on computers in their work place as well as at home. Education levels range from high school graduation to university level education. Students hold a range of positions, from clerk to chief administrative officer and completion of the program is tied to professional certification. We advise prospective on-line students that they must have basic computer skills along with regular access to a computer with a modem, browser software, and Internet connection and provider account.

Program Migration Issues

Taking a long-established program in a very new direction requires patience, planning and persistence! There are issues of student support as well as instructor support and training that must be addressed. Program staff must be trained for the new roles they are providing in support of the on-line program. It is vital to keep all of the stakeholders and key players on-board and involved with the process. Budgetary factors must be considered when identifying new program components.

Government Studies is "transforming" the program using a team approach and a systems perspective. Our course development process is shown in Figure 1. We contract program instructors as "subject matter experts" to work with an instructional designer, a chief editor (whose responsibilities involve overseeing the curriculum development), and the project manager (whose responsibilities include some instructional design) to develop the new WebCT course components. Courses are reviewed by experts in the field to ensure their relevancy and academic rigour.

COURSE DEVELOPMENT PROCESS FLOW CHART May 2000

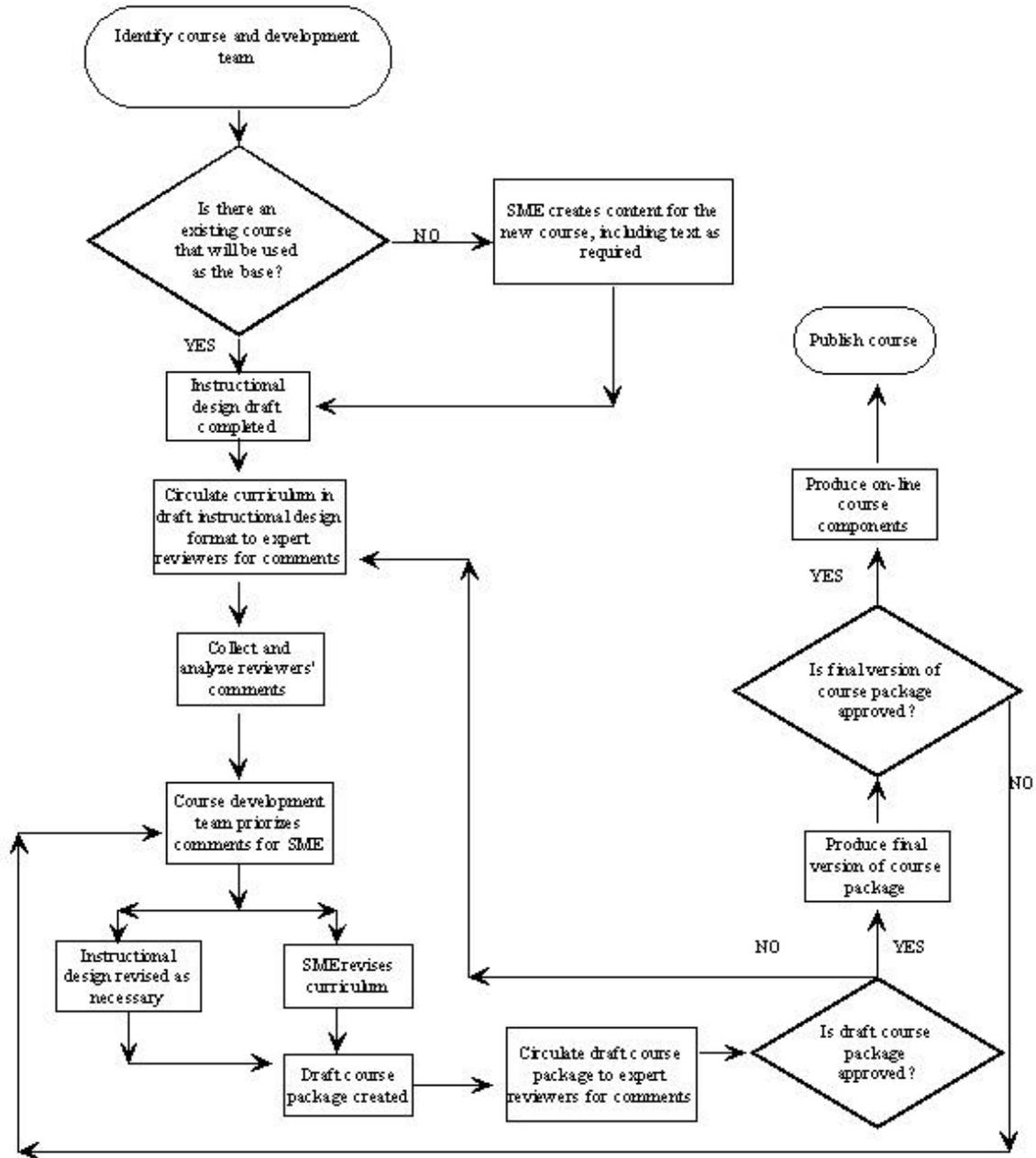


Figure 1.

We know that administrative and student support is a key element in the success of any program. The project manager is working with program staff to create the new administrative procedures required for supporting WebCT delivery. Adding on-line components to the correspondence model requires significant additions to administrative structures. In some instances, new services are required, while in others a second parallel service delivery option has been put into place. The program and course components are shown in Figure 2. An example of a new service option is our Government Studies web master who maintains our web site as well as provides technical support to staff, instructors and students. We have added parallel on-line components for our calendar, student and instructor handbooks, and are now working on developing on-line registration and interactive on-line forms for our various student support services, to supplement and enhance the existing print formats. In addition, some WebCT components are parallel to the print materials. Providing instructor and student orientation to WebCT and ongoing technical support are also new challenges

for us.

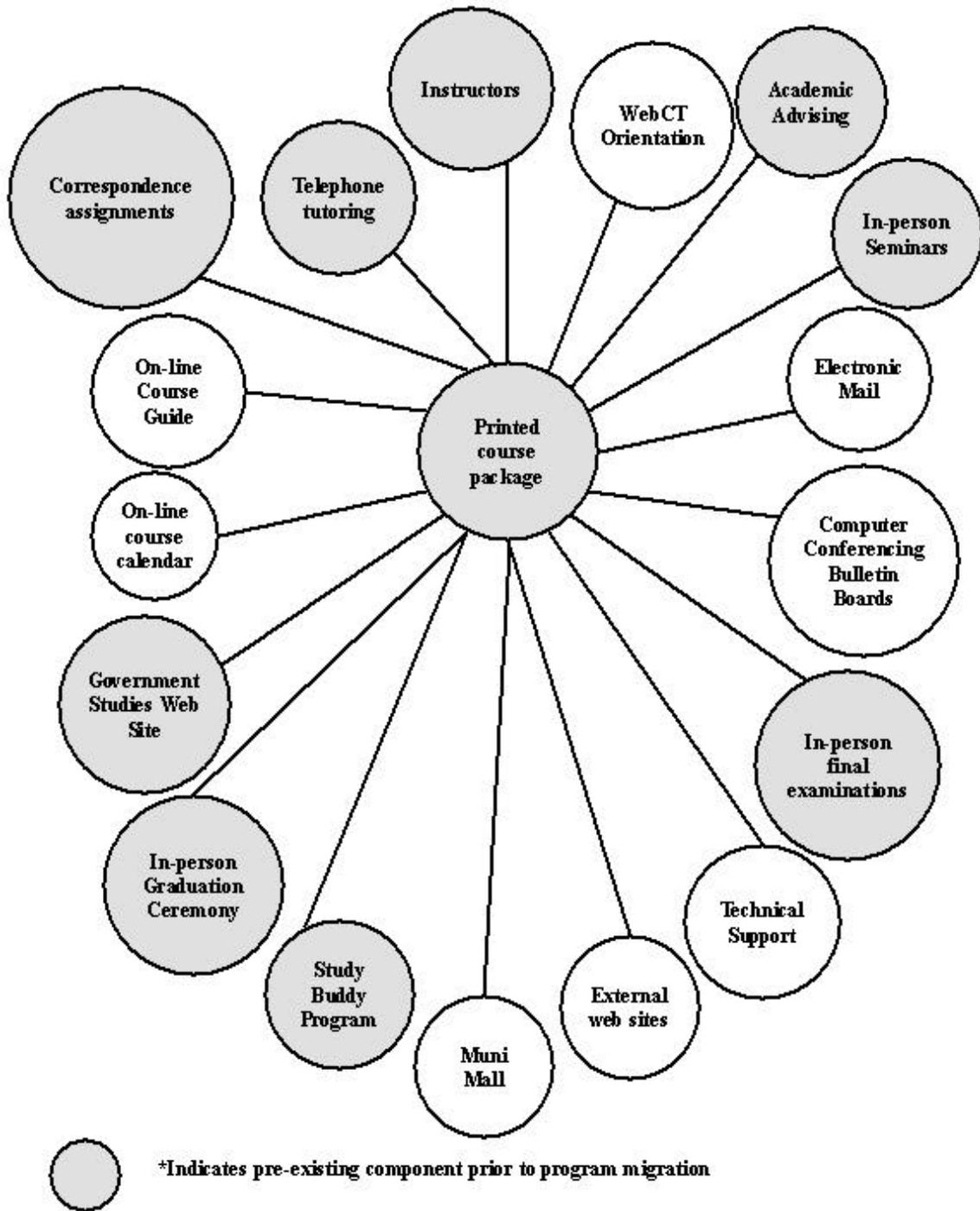


Figure 2. Program Components

Course Model

Our courses currently use a template that combines printed course packages (texts, course guide and course manual, student handbook) with on-line components (WebCT courses and Government Studies web site) and optional in-person seminars. Instructors provide regular 'telephone' office hours when students can call

them for individual tutoring. Instructors are also available by e-mail. The majority of student on-line time is spent participating in asynchronous discussions using the WebCT conferencing bulletin board. Students receive grades for on-line participation. All students write a final examination invigilated at examination centres close to their location. See Figure 3 for an overview of the student path through this model.

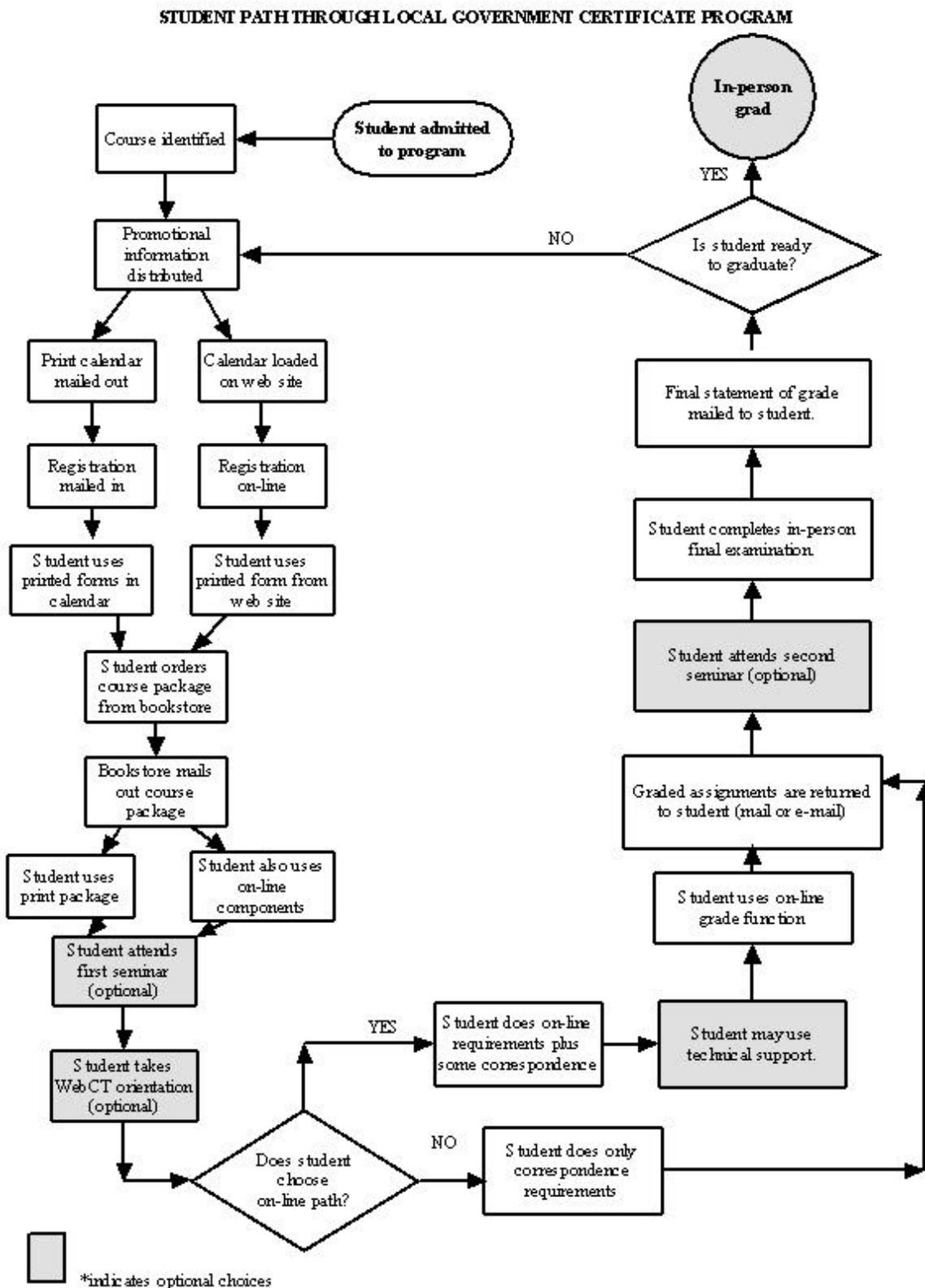


Figure 3.

Student and instructor feedback

Students seem mainly to be concerned about the level of interaction in the on-line course activities as well as the workload for participation. They recognize the benefits of improved communication and appreciate the opportunities to discuss issues with their peers, but are concerned that this approach is "more time consuming" than the correspondence model, and requires more attention to scheduled deadlines for activities. However, they are also requesting increased interaction for some courses and making some creative suggestions for improvements. Instructors are also expressing concerns about workloads. Before the project, none had been involved in on-line course delivery or in computer-mediated conferencing. Not only have they had to learn how to use WebCT, they have had to learn how to manage on-line discussions. Grading of on-line assignments is another challenge. We have addressed these issues in the provision of student and instructor support by changes in instructional design, provision of WebCT orientation sessions, and using our web site to provide additional resources.

Final Comments

Program migration is an evolving process that has many challenges. Our migration model includes re-development of administrative, student and instructor support, new course delivery strategies, and a new management model that reflects the costs of on-line delivery. Instructors, students and program staff have been generally enthusiastic about the initiative. Although the process is still ongoing, we feel that our evaluation efforts and responsiveness to student needs have helped us to successfully address the significant challenges in taking Government Studies on-line.

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Kamrat : the Story of a Virtual Multicultural Learning Community in Israel

www.peace-education.org.il/kamrat

Israel is a multicultural country, a country made up of different ethnic groups : many having their own culture, language and even religion. There isn't much contact between some of the groups, especially between the secular Jews and the ultra orthodox Jews and between the Jewish population and the Arab population which comprises about 1/6th of Israel's population. The new technologies and especially the technology of on- line

computer telecommunication endow us with new tools and possibilities for on- going multi- cultural and multi- age communication between different ethnical groups.

The new technologies know no stigma and no prejudice and as such easify and make possible neutral, less biased communication between groups, which are much apart.

This paper is about the creation of an on- going learning community Kamrat, a multicultural on- line learning community, between two schools, in Israel, in 2000: one Israeli Arab school (A) and the other Israeli Jewish school (J). The tools used for the creation of this community were two: a closed network in Hebrew and the internet. Participants were learners in 7-9 grade. The project was conducted between Jan- May 2000 (with one introductory meeting in November 1999). The communities participating in the project, master two different languages: the language of the Jewish Israeli community is Hebrew, where as the language of the Arab community is Arabic. The project was conducted in the Hebrew language, and the Arab learners were encouraged to write some of the material uploaded in Arabic in Hebrew letters.

Though both Arabic and Hebrew are Semitic languages, each has its own set of characters.

The Vision

The Kamrat project is my brainchild, it was carried out by Ithamar Aphek, (my son) from the TelHi Networks in collaboration with Ulpan Akiva, an institute famous for its struggle for coexistence.

When I first out lined the Kamrat project, my vision was to have people from different backgrounds conduct an on-going dialog and to learn that people are people, no matter where they come from, and what language they use or religion they hold. It was as simple as that. I wanted to avoid the political issue, which is very intensive and stormy in Israel, and therefore, I was looking for **neutral** content, to be researched ,collected and uploaded by all the participants in the Kamrat project.

The Kamrat project centered around, “simple”, “little”, ordinary human themes, objects , items, proverbs and sayings passed from parents to children in their families and common in each of the participating community.

A. The Process

Starting the project

The first step was to choose two schools to participate in the project. We didn't have too many to choose from as schools in Israel and I guess in other countries as well, are over burdened with projects. Starting an additional project was met with some reluctance on the part of the teachers. Finally two schools chose to participate in the Kamrat experiment: Mushreife an Arab (A)Israeli village in the east of Israel and Ort Gutman, Jewish (J) Israeli in Natanya, a city in center Israel about 100 km from Mushreife.

A preparatory meeting of headmasters, teachers, supervisors and project directors

Though the Kamrat project is essentially about on-line co-learning, there were several meetings in person as well.; a preparatory meeting in order for coordinators and headmasters to get deeply involved in the program and to get acquainted with its principles, bi- monthly meetings in the schools, each week in another school, run by Ithamar and Salah, and a final meeting for all the participating members in Ulpan Akiva.

The preparatory meeting was the first in this list of meetings in person. It was held in Ulpan Akiva in Nov. 1999.

The following invitation was sent by TelHi Networks and Ulpan Akiva to the schools' supervisors, headmasters and teachers.

Re: Participating in the Kamrat on line learning community

The Kamrat project, a multicultural, bi-lingual on- line learning community is a joint venture of the TelHi Networks and Ulpan Akiva. The project aims at creating a model for an- on going learning dialog between Jewish and Arab schools via a closed network in Hebrew and face to face meetings.

The first stage of the program will include only two participating schools: one Jewish school and one Arab school:

1. *about 25 students from each school will participate in the first stage of the project*
2. *in each school a teacher will be assigned to serve as program coordinator*

The first meeting will take place in Ulpan Akiva on 5/10/99.

Sincerely

Prof. Edna Apehek, Telhi Networks

Ephraim Lapid Ulpan Akiva

A word about the closed network

We decided to use two different communication tools, both computer based. The first for rudimentary gathering of information and for on- going dialog between the participants, and the second, once all the material has been collected – the internet. The first tool, was a closed network in Hebrew, run by TelHi Networks, using the FirstClass software outdated 2.6 version. Unfortunately there are no good intranets in Hebrew and though the SoftArc Firstclass software in Hebrew doesn't contain many much-desired features it still is, quite a good "intranet" in Hebrew. All participants were connected to the aforementioned "intranet" from school and those who had an internet connection at home could also access the Hebrew network from home. All the work done by the participants, including on going interactions, was recorded on the TelHi closed intranet.

Deciding upon forums

As I have already mentioned, my vision was that of getting people to know other people as human beings, having much in common. We shunned away from any political issues, and resorted to what one could term as "community informatics". We, myself and Ithamar, who later on together with Salah from Ulpan Akiva, ran the project, decided on five forums on which the entire Kamrat program was to focus: symbols and

costumes, objects passed from parents to children, folktales, sayings and proverbs, and feasts and quizzes about famous people in the history of the participating groups.

In both participating schools a teacher was assigned to head the project and to work with the multiage, ungraded group on finding and uploading information regarding the aforementioned five areas to the intranet.

It was this intranet, where the two very much apart segments of Israeli society met almost on a daily basis.

In addition to the above forums a designated forum for the coordinators and the group leaders in each school was opened. In this forum the entire process of the creation and formation of Kamrat, was recorded, by Ithamar from the TelHi Networks, and Salah from Ulpan Akiva.

Work inside the schools

As mentioned above in each of the participating schools a group of 25 students from 7-9 was chosen to take part in the project. Participating learners were divided into groups of 5. Each group was responsible for one forum. Members of the group worked using the tools of cooperative learning. The students met with their teacher once a week for two hours. Every other week they also met with Ithamar and Salah. The meeting between the two groups, the Arab Israeli group and the Jewish Israeli group, was until May, only a virtual one, via the closed network.

Starting the project: the first meeting in the two participating schools.

In order to make sure that the core principles and methods of the Kamrat project would be fully understood and adhered to, by all the participants, Ithamar and Salah, went to each of the participating schools, and met in each of the schools with the computer coordinator and the participating students, prior to the actual beginning of the project. The following is the summary of the meetings as recorded by Ithamar and Salah.

A meeting in Mushreife (A) (Salah)

The meeting was composed of several parts:

- a. getting to know the 25 participants from grades 7-9*
- b. presenting the project idea to the students: objectives and implementation*
- c. dividing the group into 5 subgroups according to interest :*
 - 1. the story of an object passed in the family from parents to children*
 - 2. feasts and customs*
 - 3. folktales and legends*
 - 4. symbols and costumes*

5. sayings and idioms

d. explanation of on- going assignment-material to be written in Hebrew or in Arabic in Hebrew letters, so as to bring the Jewish Israeli population closer to the Arab _ Israeli one. All material gathered must be related to the Arabic tradition and customs.

e. dividing work among group members.

Learners divided the work among themselves so that each of them would be responsible for another part of the assignment. One should note that each group is made up of 5: The folktale group divided their work in the following manner:

2 learners collect the folktales in Arabic, 2 other learners would translate them into Hebrew, and one student was responsible for finding pictures to match tales.

f. Planning the next meeting

g. preparing the “who am I” feature on the closed Hebrew intranet, for the first virtual meeting

h. in light of communication problems in the school, briefing about how to use the intranet was postponed to the next meeting

i. Ithamar and the teacher coordinating the program, stayed for 2 hours after the meeting was over, and Ithamar fixed the computers

My impressions of the first meeting

- the first meeting went very well and was very successful*
- the learners understood the project objectives and were quite enthusiastic about it*
- the teacher coordinating the project in Mushreife is most cooperative and willing to invest much time and energy, and he should be commended for that.*

First meeting, Ort Gutman, (J)Natanya (Ithamar TelHi Networks)

Today, Monday 6/3/2000 the first meeting at Ort Gutman took place.

Meeting objective was to present the participating students with the projects mode of operation.

All students with the exception of one who was taken ill, took part in the meeting.

I briefed the participants how use the closed intranet .

Participants divided into groups and each group divide the work amongst its members.

On-going work Jan- May 2000

The students in each of the participating schools, met once a week for a few hours with the coordinating

teacher. They conducted research, read books, interviewed their family members, and uploaded the material gathered as well as their reflections, to the closed intranet. Every other week, either Ithamar or Salah met with the learners and their teachers. In addition, frequent meetings were conducted on-line. Immediately after the first meeting in each of the schools the youngsters opened a forum where they told the other participating party about themselves, their village or city and their schools.

Sabri from Mushreife(A) wrote about the Mushreife village:

The village Mushreife is located in the triangle, near Um El Pahem. The village draws its name from the fact that its located between three mountains and observes over the Jezrael valley. The name Mushreife means in Arabic –observing, looking from above, looking over.

The village population is Muslim, and it numbers 3000 people.

The village is part of the local municipality of Maale Iron.

There are 4 mosques in the village , a sports club, an elementary school, a football team, two health cliniques.

Most of the village inhabitants work as building contractors.

Meeting in person, Natanya 3rd May, 2000

Students both in Ort Gutman and at the school in Mushreife were working very hard. They were collecting sayings, translating folktales, writing quizzes and teaching each other VIRTUALLY about objects dear to their families, customs and costumes. They kept meeting on line , synchronously and asynchronously, but they have never met in person. Now that the project was nearing its end, a meeting , a “real one” was scheduled in Ulpan Akiva. The students both the Arab-israelis and the Jewish-Israeli, were very excited.

Preparations for the meeting

An invitation, in Hebrew, to participate in a face to face meeting, in Ulpan Akiva, was sent out (and uploaded to the intranet) to all the participating members of the Kamrat virtual learning community.

a few words about the meeting itself:

The meeting itself was composed of several parts. The official part where speeches were made, and the less formal, though meticulously planned part, where traditional costumes ,foods and music , both Arabic and Jewish were presented.

After the May 3rd meeting

Immediately after the meeting in Ulpan Akiva, the participants accessed the TelHi net and wrote their impressions of the face to face meeting.

Muhamad Ali Mushreife (A) says:

A beautiful, great meeting. I have a new friend, Nadav.

Adi Ort (J) wrote the following:

Shalom, I had a great time at the meeting. I enjoyed greatly talking to you and especially with you, Suzan. I hope we'll have many more meetings like this one, and lets please keep in touch.

Shmuel from Ort (J) had the following to say :

I had a great time. It was KEIF (an Arabic word used in Hebrew too, meaning fun) meeting everybody in person ! The food was very good, especially the baklava (very sweet pastry) and the pita with zaatar (Arab bread with herbs). The music was good and it was fun dressing differently.

These impressions are echoed by Souhair from Mushreife (A)

It was a great meeting. I made new good friends (girls). I hope we'll have more meetings like this one.

Inshalla (Arabic for "if god will...")

Rasha from Mushreife (A) adds her impressions:

I made new friends. The music was great. I was very happy...

LehtiraotTTTTTTTT!!!!!! (see you)

These are but a few of the many comments and impressions the children had after the meeting in person. For a few months, they had been meeting each other on- line. Learning from each other about their city, village, customs and costumes, families and feasts. Now the virtual faces became real and the foods came down from cyberspace to be tasted by hungry youngsters. These teenagers, united by love of music, sports, and curious about meeting new boys and girls, found many things in common. It was a meeting well planned for months, by all the participating youngsters, and as such it was very successful.

B.Sample material of work done on-line by participating members in the Kamrat project (gleaned from the Telhi Hebrew intranet)

Objects passing in the family- handed from grandparents and parents to their children

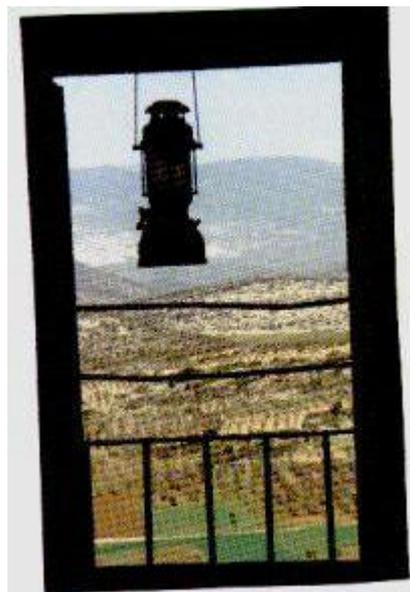
Kiril from Ort (J) uploaded the enclosed picture to the closed intranet, and told us the story of this picture:

This picture is over 40 years old.. In the picture one could see 7 people. The person on my left hand side is my great grandfather the other two are my grandfathers's uncles. The woman standing in front of my great grandfather is my great grandmother, the woman next to her is my grandmother, the man

next to her is my grandfather, and the woman next to him is my other great grandmother on my mothers side. Only 3 people from those in this picture, are still among the living.

Sabri Muhamad , Mushreife (A)told the members of Kamrat about the *kandil* -an oil and *kerosene* lamp, much cherished in his family.

In the past, he told the virtual community participants , there was no electricity, like today and at nights one would use the kandil. The kandil was made of iron and glass, and in order to lit it, oil and later on, kerosene was used. The Arab person would walk everywhere at night, holding the kandil in his hand.



What a lesson in history! No teacher, no textbook, but children, members of the same virtual community, teaching each other.

Quizzes: testing each other's knowledge

Guy from Ort Gutman (J) quizzed the other members about a city in Israel:

This city is holy for the Jews as well as for other people and religions. The city is made up of 4 quarters. The city survived many wars and it serves a symbol of peace. A wall surrounded the city; part of this wall still exists and serves as a wall for praying. Which city is it?

The answer ofcourse, is Jerusalem.

Yulia , also from Ort Gutman (J) composed this quiz:

The calm sea, relaxing, serene,

No living soul found there,

Cures diseases, calms souls,

One feels like flying

While floating

Muhamed Abbdalla from Mushreife (A) writes :

Replying to Yulia

It's the Dead Sea

Children are children, they are supposed to write only quizzes and questions having to do with their cultural background, but the net is a meeting place, and what is more normal for young adults than quizzing each other about football?

Arin Ahmed from Mushreife (A) asks:

Which country won the world cup in 1986?

And Guy from Ort (J) suggests that it was Brazil.

Arin says : *ah... ah.. Guy- wrong answer it was Argentine who won the world cup in 1986.*

Folktales:

Queen Balkis, Queen of Sheba

Suzan Muhamed, Mushreife (A)wrote the story of Balkis-

Queen Balkis is the most famous woman in ancient history. She is mentioned in the Qu'ran.(the holy book of the Muslims (E.A). Balkis reigned in Yemen, which is also called Hamiar and Hazar Mavet, History tells us that she went to many wars in order to maintain her country's independence. History gave Balkis many names: Maxada,Pharaa,Ibn Haldun A famous Arab historian) tells us that her real name was though Alkama or Balkama, hence Balkis.

The prophet Sliman wrote a letter sent to Yemen in which he asked people to believe in one God. When Balkis heard about Sliman's letter she said: "I believe in G-d and his prophet". History tells us that Balkis and Sliman got married, and they lived together for seven years and some months. When Balkis died Sliman buried her in Tadmor.

Tatyana from Ort (J) write the story of Elijah the prophet and his ascent to heaven.

This is what she wrote:

The day came when Elijah the prophet as all humans flesh and blood, had to leave this world...but Elijah went to the other world in a special unique manner, his soul and body went up in a storm to heaven.

How did it happen?

On his last day on earth, Elijah took his disciple, Elisha with him. Elijah, being modest didn't want Elisha to see his ascent, and therefore wanted to leave him in the middle of the road.

Elisha refused." My Rabbi and my teacher, please let me stay with you," pleaded Elisha.

So the two went together. They kept walking until they reached the Jordan River.

50 prophets to be followed them and waited to see what would happen next.

Elijah took off the robe he was wearing and hit the stormy river Jordan. The river was cut in the middle and Elijah and Elisha went on mainland.

As they were walking, where the river used to be, Elijah asked Elisha:

" what can I do for you before I am gone?"

Elisha wanted to be able to prophesize twice as much as Elijah could.

Elijah said: " if you see me ascending to heaven your wish will be granted."

They kept walking while learning the Torah. So when the angel of death came, he could not take Elijah as the Torah protected him.

What did the angel of death do?

He sent a chariot of fire and firey horses and those separated the teacher from his disciple.

At that very moment the two stopped learning the Torah.

Elijah went in a storm to heaven.

Elisha watched him as he ascended.

As Elijah was seen no more, Elisha tore his clothes.

Proverbs and sayings:

Ten students, five from Mushreife and five from Ort were responsible for the proverbs and sayings section. Here are some of the sayings the students uploaded to the forum. The proverbs and sayings were written by the Mushreife group in Arabic but in Hebrew letters, and were translated into Hebrew. The students also looked for a parallel proverb or saying in Hebrew.

Muhammed , Mushreife (A) volunteered the following saying:

“Man g’ad va’g’ad va’man zara hasad “Hebrew equivalent “ he who works on the eve of Sabbath will eat on Sabbath “ meaning that he who works hard and plans for the future will harvest later on.

Nadav from Ort (J) wrote the following saying in Hebrew:

ma shesanui aleixa al taase lexaverxa and then Nadav translated it into simpler-daily Hebrew:

“ don’t do unto your neighbor what upsets you “

The learners kept dialoging via the closed network:

Nadav asked Nazar from Mushreife(A)-

I read the following proverb and I don’t understand it- could you help?

“ atalbu el alam wlu fi elsin”

and Nazar answered: *“search science and knowledge even in China”*.

Last meeting, Mushreife (Salah , Ulan Akiva)

Unfortunately, I found on the closed intranet only the recording of the last meeting in Mushreife and here it is:

31/5/2000

Present: learners, coordinating teacher, school’s principal, Ithamar (TelHi Networks) Salah (Ulpan Akiva)

The students listed the following advantages of the Kamrat project:

- *making new friends*
- *mastery of computer literacy*
- *using the internet*
- *integrating learning and experience*
- *enrichment and in-depth learning of the two cultures: Jewish- Israeli and Arab –Israeli*
- *strengthening their knowledge of the Hebrew language*

The students suggested that in the future they would like to have more in person meetings and would like to be taught how to build an internet site.

All present at this last meeting noted that the main project objectives i.e. getting to know one’s neighbor and learning about what Jews and Arabs in Israel share in common, were fully achieved, thanks to the thorough work of the students who took part in the project, the work done by the coordinating teachers and that of Ithamar and Salah.

And I fully agree...

Salah, Ulpan Akiva

C.Summary and discussion

The data presented in this paper show that all participants, teachers, directors and students devoted much thorough work to the Kamrat project. All participants, both Arab Israelis and Jews expressed great satisfaction at the project. They all asked for the project to continue. However, the Ministry of Education financed the project, and this year 2000-2001, the ministry did not continue its support. Therefore there is still lack of clarity as to whether other Israeli institutes or municipalities would assist in supporting the project.

Leaving the financial aspect aside there are several comments to be made and conclusions to be drawn and implemented in future multi-cultural projects:

I.The academic aspect of the project. Much learning went on in this project. The participating students learnt a great deal about their own culture, and a great deal about the culture of the other. There were no tests, no ordinary homework, yet learners worked very hard. They conducted research, consulted with their family members and to a lesser degree read written material and searched the internet.. Yet it was very different from traditional class work; the focus was on getting information from living people and getting the entire family involved in the research conducted.

II.The success of the project stems from several causes:

1. the hard work put into the project by all the participants and especially by Ithamar and Salah who drove every week hundred of miles in order to meet with the students and the coordinating teachers and headmasters.
2. The use of a closed Hebrew networks in addition to a final product an internet home page: <http://www.peace-education.org.il/kamrat>
3. The frequent recording of all the stages of the process and reflections of students as well as teachers and project directors.
4. The variety of tasks
5. Working in groups according to the method of cooperative learning
6. The approach, of which I am a great believer, maintaining that a successful project should start on a small scale, learnt from and only then implemented on a larger scale.

III. Getting to know the other can be done in many ways.

The way we chose in this project was to use quizzes, proverbs and folktales, as well as what I would term our highlight- objects passed from parents to children in the family. This method is indirect, varied, gives room for every body and mostly strengthens one's cultural identity. Its this strengthening of one's ethnical, cultural identity that made this project work; participants in the project felt they were accepted as who and what they are and no side in the community had a "better" culture.

Cultures weren't measured, no evaluation, no value judgement was going on; it was learning to know each other as human beings, with many stories, cherished objects and customs. Intentionally, we didn't start the multicultural learning community with a face to face, in person meeting.It started somewhere out there, in the cyberspace where no prejudice and hostility reign .It went on in the Meta-land of Israel without strife, where Jews and Arabs can meet as equals and find a common language.

When the two groups finally met, they already had that common language enhancing a reality of equality.

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Success drivers in an electronic performance support project

Abstract

Electronic Performance Support Systems (EPSS) were born in the United States in 1991 to address the problems that raising software complexity was creating to employees. It is now a well-established software niche in the US, with many case histories and success stories and a very active research community working on it. In Europe there have been only a few implementations of EPSS in the last years, and still the acronym EPSS and the approach, methodologies and technologies it implies are almost unknown. Nevertheless the European approach to performance support deserves some insights, as it is not only a late copy of American experiences, but also a new innovative way to develop highly flexible software tools to introduce, support and manage best practices inside corporations. The Back Office Performance Support (BOPS) European project is one of the most recent initiatives to investigate this field and develop methodologies and products. Carried out by a consortium of eight European firms and partially funded by the European Commission, the BOPS project goes beyond the traditional EPSS boundaries and combines net coaching with knowledge management, training management and decision support. BOPS has developed a fully integrated web-based solution for performance support in medium and large companies. The final product of the project, an intranet system, has been installed and extensively tested in 4 pilot organizations. The Centre for Advanced Learning Technologies (CALT) of the INSEAD Business School has monitored these four pilot tests, collecting data through questionnaires, interviews and analysis of the log files. These data have been used to assess the impact of the adoption of an IT system like BOPS in the target organizations. This impact analysis focuses on the following points:

- Benefits (improvements in efficiency, training and quality of work);
- Barriers to the adoption, both external (social and legislative) and internal (company culture);
- Potential organizational changes due to new processes and practices introduced by BOPS;
- Resistances to change and effectiveness of change management plans.

What is an EPSS?

"The Genie appeared when the monitor was rubbed. 'I'll grant you three wishes, Ms. Manager. What will they be?' The manager thought hard and decided, 'Why not go for broke and ask for my real software fantasies: WISH #1: I wish I could just bring people onto the job, sit them down and have them start being productive on day one. WISH #2: I wish I didn't have to staff with one person to support three people answering questions about the work itself or helping people use related software. WISH #3: I wish anyone could perform as an expert so best practice is a way of life here, rather than the occasional star performance"

This is how Gloria Gery [1], the industry guru who first spoke of "EPSS" in 1991, introduces the concepts of Electronic Performance Support System (EPSS) and Performance-Centred Design (PCD). EPSSs are

defined as any computer software program or component that improves employee performance:

- reducing the complexity or number of steps required to perform a task;
- providing the performance information an employee needs to perform a task;
- providing a decision support system that enables an employee to identify the action that is appropriate for a particular set of conditions.

The objective is to deliver on-the-job, on-demand training and coaching so to reduce training costs and improve employees' performance. Performance Centred Design (PCD) is an innovative approach to user interface design and usually goes together with EPSS. It aims at making user interfaces as intuitive as possible.

Evolution of concepts

With the emergence of the so-called "Knowledge Economy", the late concepts of EPSS have evolved to support the knowledge workers and encourage their shared learning. New definitions of EPSS are given:

"An EPSS is the electronic infrastructure that captures, stores, and distributes individual and corporate knowledge assets throughout an organization, to enable individuals to achieve required levels of performance in the fastest possible time and a minimum of support from other people." [2]

"Dynamic support systems are characterized by the ability to change with experience, the ability to be updated and adjusted by the performer, and by augmenting other supports found in the performer's community". [3]

By using these new concepts, EPSS gets closer to the Knowledge Management and learning tools. To develop an EPSS, cognitive principles are now becoming useful. How do people learn? The focus moves from individual performance to knowledge management and organizational learning: EPSSs now aim at the creation of a stimulating learning environment in order to achieve performance at the level of the organisation.

From USA to Europe

The concept of EPSS has been spreading first throughout North America and then, to a much smaller extent, in Europe. The number of researchers and consultants working on it witnesses the success of EPSSs in the US. Leading American research centres have carried out projects to investigate the potentialities of performance support tools, from software wizards to wearable computers. Several companies have been working side-to-side with them, specializing in the development of such systems and producing a rich variety of case histories often very well documented. In Europe these applications have raised much less interest. There have been a few very interesting experiences, for instance the projects developed at the University of Helsinki [4] and at the Knowledge Media Institute, but there has never been a real market for performance support software. This is due mainly to different industry requirements, but also to the differences in the cultural and social environment. In Europe there is a cultural (and often legal) aversion to measuring or tracking individual performance. EPSSs started raising interest only when their focus moved towards knowledge management and global performance of teams and organizations.

What is BOPS?

BOPS is an European Project started in September 1998 by a consortium of eight companies distributed in France, Italy, Germany, Greece and Luxembourg, which has developed an innovative type of EPSS. BOPS has taken the late definitions approach of EPSS and has enlarged and enriched it, through both a wider coverage of processes and a careful adaptation to the European context. Within BOPS the objective of the performance support has shifted even more towards the management of learning and knowledge at the corporate level, so that it is probably not correct to define BOPS as an EPSS. A more meaningful definition would be "performance centred corporate information portal".

Approach and objectives

BOPS starts from the "learning organization" model mentioned by Raybould and Laffey: reliability, efficiency, or performance speed in the back office can be achieved only through a continual improvement of the operating practices, based on employees training and performance support.

BOPS main objective is to offer an environment that allows workers to:

- get trained on demand on the new best practices;
- be assisted and monitored by a training staff that may recommend additional training courses;
- contribute to the development of new best practices.

As an instance let's take the case of a salesman who needs to prepare the commercial presentation of a product. First, he looks for the existing documents in the corporate knowledge base through the company's intranet. The only presentations he finds are too technical for him. Then he enters the appropriate intranet discussion forum and posts a message asking for help. The technical staff helps him to understand the existing documents. His message is also forwarded to the training manager, who uses the intranet to check the salesman's personal profile: he verifies that the salesman didn't get the necessary basic technical training and finds the right course for him in the on-line training catalogue. As a result, the salesman could make a good presentation, what he produced is stored in the base as re-usable knowledge, and he got some necessary training.

It sounds like the three wishes of Gloria Gery. But to make it real, what do we need?

BOPS gives the following answer:

1. A workflow management system to trigger and support the information flows;
2. A corporate knowledge catalogue to store, index and retrieve documents;
3. A personnel management system, to manage the data about employees skills, training needs and performance;
4. A decision support system to provide the necessary aggregated information to training and division managers.

Figures 1 and 2 illustrate the technical architecture of the system.

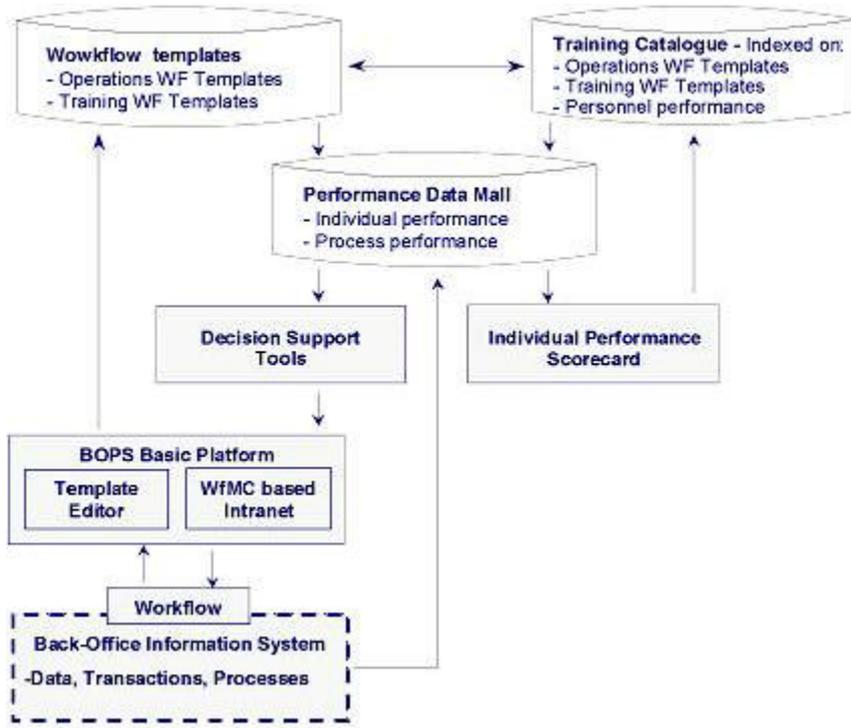


Figure 1.

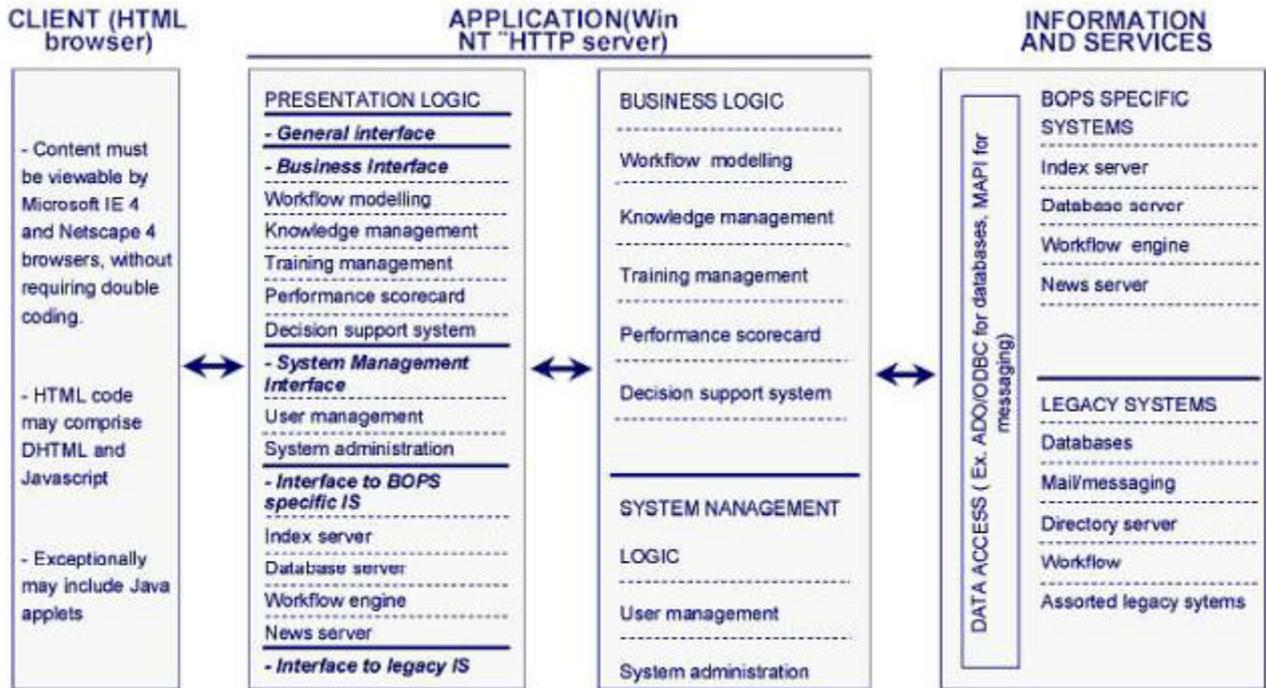


Figure 2.

BOPS had to face two key challenges: flexibility of the system and motivation of the users.

Challenge1: Flexibility vs. Effectiveness

The first dilemma developers had to solve was identifying the business processes to support within BOPS so that they were generic enough to represent the processes of different business environments, but at the same time specific enough to allow a detailed design of the system functionalities. The risk was either to develop a very effective application, but limited to very specific contexts (as most American EPSSs look like), or to end up with a very generic solution which didn't really implement any essential functionality. This is really the core problem of EPSS development, similar to the one designers face since more than 20 years when developing Decision Support or Expert Systems [20, 21]: "ad hoc" solutions work great, but their cost is barely justifiable, as they can be used just in the context they have been built for. Research shows that attempts to transport very customized solutions into other contexts fail 80% of the times. On the contrary those who tried to build standard commercial EPSS packages ended up with generic and flexible but meaningless functionalities [4].

BOPS mediates these two approaches, providing a framework which can be adapted relatively quickly and cheaply to a given business environment. BOPS is not a standard package ready to be installed, but a set of software modules, methodologies, best practices and templates which are at the end a "recipe" to build a good customized EPSS without reinventing the wheel.

Challenge 2: Motivation

In the last 10 years a decisive percentage (estimated between 50 and 70%) of large IT projects failed. In most cases these failures are not due to technical or development mistakes, but to a lack of users motivation or to a real active resistance to innovation. Assuming that people will use a software application just because it is good and improves performances is quite ingenuous. That's why the BOPS project has addressed also what has been called the "change management dimension": convincing users to use the new system. Tools and methodologies like the "EIS Simulation" business game [20], have been used to train "change agents", to identify organizational resistances to change and to implement change management plans. Resistances may have several causes: people may think that they might lose power, influence or opportunities, or may not understand the implications of the proposed changes, or also may lack trust in the "Change Agents". These attitudes must be taken into consideration and, wherever possible, changed. In general most people don't have any preconceived aversion to innovation, as shown in Picture 3, but nevertheless it ought to actively lead and control the change process so that they get involved and motivated.

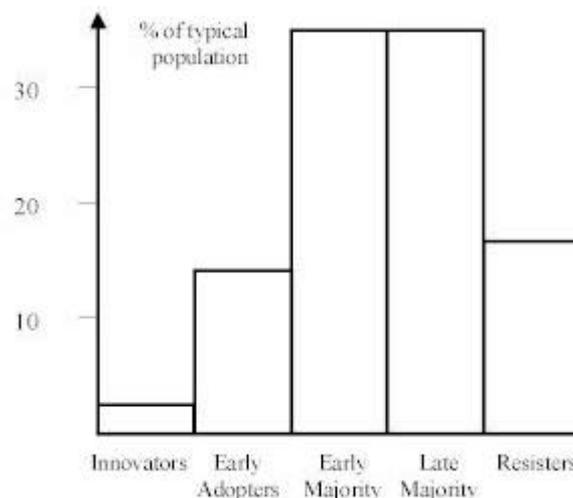


Figure 3. Distribution of attitudes

Supporting performance: the good, the bad and the ugly

" [...] companies that manage to extract significant business value from their IT investments are rare exceptions to the rule." [10]

" Many redesign efforts do not deliver the step-function improvements in performance that, by rights, they should." [11]

"Major Information Technology projects incur significant risks" [12]

Assertions of this kind are quite common and as a matter of fact there is a vast literature about IT project failures. When moving from prototyping to the final deployment of a complex IT system in several sites, a failure rate above 50% shouldn't be a surprise [4]. Is this what happened in BOPS? The Back Office Performance Support (See the first part of this article "Beyond Performance Support") (BOPS) European project has developed an advanced type of electronic performance support system (EPSS), which had to be installed and tested in four pilot sites. The initial idea and design have been fine-tuned and validated; the platform has been successfully developed using the latest technology and is very good from a technical perspective. But what happened when it has been installed in the pilot sites?

This article presents the experience of three of these four pilot sites, describing the scenario, the objectives and the outcome of each one. The three pilots are:

1. Caritas Luxembourg, member-organization of Caritas International, the largest Catholic charitable organization in the world;
2. Siemens Information and Communication Networks SpA. Formerly Italtel Sistemi and part of the Italtel group Siemens ICN is one of the largest European manufacturers of telecommunication equipment;
3. The Chamber of Commerce and Industry of Paris (CCIP), and in particular its department called "Direction des Formalités Internationales et des Services aux Entreprises" (DFISE).

Caritas Luxembourg

Scenario

Caritas Luxembourg includes 13 member-organizations employing about 850 people and working with 500 volunteers. The tasks of Foundation Caritas are: liaison/emergency relief, financial control, fund raising, technical know-how and training of operation units, systems support, counselling of the member organizations. BOPS has been installed during spring 2000 and 30 user profiles have been created for testing and validation purposes: 10 profiles with administration, secretariat skill, 10 experts in the social domain, 5 users with computer skill and 5 managers and decision-makers.

Targeted processes

The business processes implemented within BOPS are:

- the **request of training** by an employee and the possible authorization/denial by her responsible. Communication between the employee and the responsible relies upon the BOPS workflow module. The responsible uses the BOPS catalogue server to check the employee's profile, the qualification of the requested training and its suitability. The system also supports the subscription and the final evaluation of the course by the employee;
- the **validation of the data** stored in the catalogue server, which holds the records with the personal and professional data of the employees and of the member-organizations;
- **clients arrival at Caritas premises**. After the initial contact by phone, email or meeting, the employee has to direct the clients to the organization, which might help them. The BOPS catalogue is used to understand client's needs and to identify the right service or organization to recommend.

Documents to be stored and key performance indicators

BOPS is used to manage a "Guide of resources and skills", a database of personal and professional profiles of the employees. In the system are also stored the data about the organizations and associations collaborating with Caritas.

Caritas is not interested in measuring employees' performance; therefore the BOPS Performance Scorecard module has not been implemented. An estimate of the performance of the whole organization will be made by monitoring the system usage and on the basis of the users feedback.

Outcome

The installation of BOPS at Caritas was severely delayed by the data population of the catalogue and consequently there has not been time for any serious observation of the system usage before the end of the project. Anyway it is interesting to analyse the reasons of this delay. It must be pointed out that the management of Caritas was very committed to make the installation successful, and the new system was definitely perceived as necessary and useful. The users and the management have been well informed and motivated by the project responsible with a series of meetings and interviews. Nevertheless Caritas had a very basic IT culture: with the exception of a few Access databases all the data were not in electronic format and had to be entered manually; no central information system was used. Consequently the data population of the catalogue server, which is the key activity in the installation of information portals like BOPS, took much more than expected. The delay is relevant but it is not going to compromise the final result, as the system will be in use in a few weeks.

Siemens ICN

Scenario

Siemens ICN is a large Italian manufacturer of telecommunication equipment, employing more than 3000 people. To test BOPS the Sales Department has been chosen, and 12 pilot users have been identified as follows: 7 salespersons, 4 business product managers and 1 business development responsible. The commitment of the management and staff of Siemens to the project has been very high, as witnessed by a careful change management and by the fact that Siemens has sponsored BOPS.

Targeted processes

The business processes implemented are related to the activity of the Sales Dept.:

- **first presentation to a new customer.** The salesperson uses the system to gather data about the customer, to select the right content for the presentation and to store the information acquired during the presentation itself together with its own comments;
- **follow-up meeting.** The salesperson and a business product manager use the system document catalogue to prepare a more detailed presentation for the new customer. After the meeting customer requirements and comments, evaluation of the meetings, further requirements and lacks in the documentation are entered in the system;
- **proposal to customer and finalisation of the proposal.** The system supports this process by providing existing documents and data and samples of past proposals. The new proposal is eventually stored in the system and possibly updated.

Documents to be stored and key performance indicators

The BOPS catalogue is the main module used at Siemens and it stores marketing studies, price schemes, product presentations and brochures, case histories, technical documents and procedures, meeting outcomes, evaluations and comments. The format of these documents might vary from MS Office to Acrobat PDF and HTML. Most documents were already digitized and additional data were available in Access databases.

Siemens is also going to use BOPS to track two types of performance indicators. The department performance is measured by ratios between the number of contacted customers and the number of successes (in approaching the customer, in making the proposal and in getting the contract signed). The quality of the catalogue content is measured by the lacks in the documentation notified by the employees and by the number of meetings/presentations not fulfilling the expectations.

Status and outcome

At Siemens BOPS installation has been completed on time and after the first 2 months of testing a questionnaire [13] has been distributed to evaluate the impact on the organisation and on the employees work. The questionnaire, composed by 16 questions, addressed four different dimensions:

- **Level of motivation and awareness.** The first group of questions aimed at determining if the change management activities carried out at Siemens had been effective and if there was enough commitment to make the test valid. It emerged that the users had a good knowledge of the project and its objective, were moderately optimistic about its usefulness and sufficiently committed to try it out.
- **Level and frequency of usage.** The second part of the questionnaire showed that the 12 pilot users have been using BOPS on average once every 2 days for 5-10 minutes each time. When questioned about the overall experience of using BOPS some users have rated it "a little boring", some others "quite pleasant".
- **Job enrichment.** This dimension refers to the improvement in the quality and speed of the usual employees work. Already after the first 2 months most users noticed that they were able to perform certain tasks slightly faster and that in some cases the quality of their output had improved. Users have recognized in BOPS a tool to obtain training or, in the worst case, just some useful hints. These

improvements have not been judged quantitatively relevant yet, but they show a positive trend and a diffuse appreciation of BOPS job support capabilities. On the other side BOPS didn't seem to boost the information flows and the communication among employees nor to have perceivable ergonomic benefits.

- **Job enlargement.** The last part of the questionnaire investigated the effect of BOPS on the knowledge that employees have of their company business processes and of the tasks related to their job. This is the most interesting result of the questionnaire. Also in this dimension answers show a positive trend. Most users recognized that using BOPS they acquired a slightly better knowledge and visibility of the corporate business processes, learning about tasks which are not strictly part of their job but anyway helpful.

Chamber of Commerce and Industry of Paris (CCIP)

Scenario

CCIP has a public service mission: providing assistance and advice to firms, local traders and craftsmen in the Paris region. The CCIP department called "Direction des Formalités Internationales et des Service aux Entreprises" (DFISE) has been chosen as BOPS test site. DFISE is in charge of the ATA carnet, the document necessary for temporary exportation of goods. Handling the ATA carnet requires a specific training course of one day. After the course the employees have a 100 pages guide and a free access to an on-line support service. The objective of BOPS at CCIP is to give on-the-job assistance to employees, which have to manage the ATA carnet.

Targeted processes

CCIP has decided to use the workflow module and the catalogue server of BOPS. The supported workflows are:

- **ATA carnet drawing up.** This is a simulation which helps the users to understand how to fill the carnet in a risk-free environment;
- **Answering questions about the ATA carnet.** The catalogue server provides documents and information to help users answering questions;
- **Verification of an ATA carnet.** This activity is supported by the documents stored in the BOPS catalogue server.

Documents to be stored and key performance indicators

All the documents stored in the catalogue server are related to the drawing up and the verification of the ATA carnet. CCIP has chosen not to implement any kind of performance monitoring.

Outcome

At the time of the official end of the project the installation at CCIP was not finished yet, and there were not enough data to make any forecast about its outcome. There have been major delays due to customization

problems and to a lack of co-ordination with the users and the CCIP project managers, but also to a basic organizational complexity, as the project management was originally entrusted to Le Preau, an IT research center affiliate to CCIP, while the system had to be deployed at DFISE. This duplicity probably made more difficult to obtain a good co-ordination and a sufficient level of commitment. As a matter of fact the system has not been successfully deployed yet and a contingency plan still has to be defined.

Conclusions

The outcome of the installation has been very different in the three test sites, although the technology used was exactly the same and the objectives were very similar. The successes obtained seem to confirm the validity of the BOPS concept and of its implementation from a pure technical perspective, but the failures imply the existence of other necessary success conditions, which in some cases have not been accomplished. We have identified the following key success drivers in the deployment of an "information portal" like BOPS:

1. *Corporate IT culture.* A large diffusion of PC usage and the familiarity with a networked communication in a company obviously favour the adoption of a new IT system on the user side. In the case of Siemens, in which IT is part of the core business, a high level of IT culture also helped the developers to speed up the installation: the data population has been easier thanks to the existence of digitized documents, the server deployment has been supported by the company EDP staff, and so on. On the other hand we must say that the lack of corporate IT culture at Caritas lead to relevant delays but did not compromise a final good outcome of the project. Therefore a very basic level of IT culture is definitely a disadvantage when adopting complex information system, but does not preclude the success. Moving from typewriters to portals is possible. It just takes more time and the risk of underestimating the amount of time required is very high.
2. *Users motivation and involvement.* The BOPS project has had a special attention for the change management. The first warning about potential failures due to organizational resistances to change had been given since the very beginning of the project; afterwards, approximately two months before the installation in the test sites, a series of change management activities, like a session to train change agents in each pilot organization and the periodical drawing up of a change management report, have been launched. Results seem to be strictly related to the intensity of these activities. At CCIP they have been neglected. At Siemens and at Caritas they helped to avoid significant resistances to change. Nevertheless they came late and were not of any use to really involve users in the system deployment, taking advantage of their point of view. BOPS is a very information-intensive system; its usefulness is proportional to the quantity of data, information and documents stored in it. Employees are not passive users of this information, but actively participate in its creation. Therefore it would have been useful to involve them in the pilot system design, addressing issues like motivation and change management much earlier, at least four months before the actual installation. Probably this would have helped not to underestimate the data population at Caritas.
3. *Responsibility and organizational framework.* We already mentioned the fact that Le Preau was responsible for the installation of BOPS at DFISE (CCIP). As a matter of fact the two organizations are independent and people from the first were not in the best position to manage a project inside the second one, i.e. they had the responsibility but not the formal authority (though the most complete co-operation). Additionally we should consider that due to its size Le Preau did not have the organizational resources and control of its counterparts, Siemens and Caritas. The combination of a small and not powerful organization, a difficult organizational framework and a complex IT system prevented to achieve the expected results. Even in its simplest form BOPS impacts on several business processes and deeply affects the way in which organizations handle their knowledge and procedures. Those in charge of deploying it must have a proportionate control over the target organization and its active collaboration. Roles and responsibilities must be as clear as possible.

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The Instructional Plan for Learning and Curriculum Alignment: The IPLCA

The Instructional Plan for Learning and Curriculum Alignment (**IPLCA**) is an instructional model that relates three major areas of educational importance: curriculum development, learning, and technology. The **IPLCA** derives originally from the nine-step process for instruction suggested by Professor Robert Gagne, the Events of Instruction, which is based upon the Information Processing Model of Learning (Gagne, 1985). In its present form, the **IPLCA** addresses two educational goals. The first goal is to provide instructional planners with a methodology based on an understandable and pertinent theory of learning. The second goal ensures that instructional planners align instruction with curriculum standards.

Part 1. Instruction and Information Processing

The Information Processing Model of Learning, like all models of learning, offers a metaphor that explains the process of human learning, and in this particular case, learning is compared to the way that a computer processes and stores information (Gagne, 1985). The process of learning is compared to the sequence of information processing, i.e., inputting data, processing data, and storing data for later retrieval. The steps of information processing are also related to concepts of human memory, implying that humans process data for learning in a manner similar to the way that computers process data (see Figure 1). Of course there are complicating factors, not the least of which is the human mind.

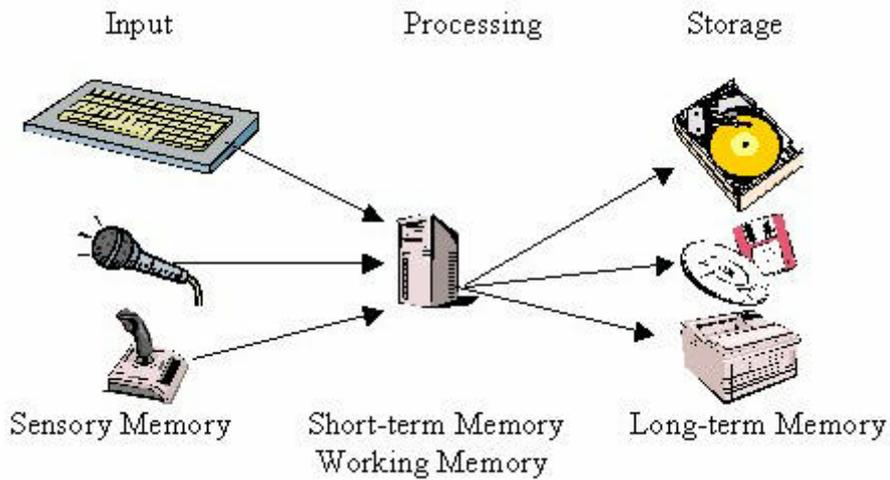


Figure 1. Computers and Humans: Information Processing

Human Memory and the Information Processing Model

The mind continually receives data from the five senses into the *sensory memory*. When motivated or activated, the mind can selectively focus on target data for input into the short-term memory. After selecting data for input into the *short-term memory*, the data is held for a few seconds of time. If during those few seconds, the learner begins to manipulate the data, with the *working memory*, at least some of the data can be retained. The *short-term memory* holds data long enough so that the *working memory* can attempt to assimilate and accommodate, in Piaget’s terms (Woolfolk, 1998), the new learning into the *long-term memory* for permanent or long-term storage. Although data in the *long-term memory* is not altogether permanent and is thought to evolve and “fade” (Garry, 1999), data in the *long-term memory* can be retrieved for use long after initial learning.

	Human Memory			
Sensory Memory	Short-Term Memory	Working Memory	Long-Term Memory	
Receives data	Holds data	Processes data	Stores data	
	Computer Operations			
Basic input of data	Input of data into applications	Manipulation of data	Storage of altered data	

Figure 2. Human Memory and the Information Processing Model

The IPLCA: Three Main Levels of Instruction

The Instructional Plan for Learning and Curriculum Alignment (**IPLCA**) has three main levels that correspond to the above view of human memory, i.e., Orientation, Instruction, and Reinforcement. A primary function of the Orientation level is to prepare every unique learner to encounter the upcoming instruction with optimal

results. During this stage, the learner must focus the sensory memory to accurately select data impressions for input into the short-term memory. Further, the learner needs to activate the long-term memory for the inculcation of new data. Ask this: What were you doing exactly ten years ago on this date at this time? Few remember, but remembering is not the point. The point is that every individual was then involved in a unique experience, as much as every individual has a different history of experience, of life and of learning. No two long-term memories are alike: they could not be alike, and the current status of each long-term memory needs to be vitalized to establish the potential for learning.

The second main level is Instruction. Instruction is the activity, which requires the learner to select data from the sensory memory, input data into the short-term memory, and manipulate data with the working memory. This level of the **IPLCA** allows the learner to encounter the new data based on the preparations accomplished by the Orientation.

The third main level is Reinforcement, and in this context, reinforcement means to strengthen learning (Woolfolk, 1998). Precisely, the effects of the previous level, Instruction, are strengthened (reinforced) in order to assimilate and accommodate new data into the long-term memory.

The Six Steps: Two for Each Main Level

Orientation
1. Orientation/Motivation
2. Verbatim Transmission of the Learning Objective
Instruction
3. Guided Learning
4. Independent Learning
Reinforcement
5. Evaluation, Feedback, Re-teaching
6. Retention and Application

Figure 3. The Six Steps

In Steps 1 and 2 of the **IPLCA**, at the **Orientation** level, there are two steps. The first step, Orientation/Motivation, is a general orientation and motivation of the learner to encounter the upcoming instruction. These pre-instructional activities (Hartley & Davies, 1976) should be inclusive and user-friendly, and they should relate to the learners' level of proximal development, a term from Vygotsky (Woolfolk, 1998), as well as link to previously learned curriculum. The second step, Verbatim Transmission of the Learning Objective, is to directly relay the learning objective to the learners. This step often confuses instructional planners, so I will explain. The **IPLCA** method requires the instructor to inform students, using any of an array of alternative media, **EXACTLY** what the learning objective is for the instructional plan. Many of the errant use Step 2 to *symbolically* relay the learning objective to the students. Instead, make sure to relay a verbatim transmission of the learning objective, to the point that all learners could write the

learning objective in their notes.

Steps 3 and 4 relate to the **Instruction** level. Step 3, Guided Learning, is the traditional “teaching” step, in which the instructor fosters and encourages students’ initial encounters with the content of the learning objective. Handouts, Chalkboard, PowerPoint presentations, Cooperative Learning, Games, and other strategic techniques are used to help learners get a first grasp on the new knowledge. In step 4, Independent Learning, the learners are required to work with the new learning independently of the instructor. Each learner must begin the task of assimilating and accommodating the new learning into their uniquely evolving long-term memory with the help of their working memory. This step is crucial for long-term learning and is linked directly to Step 5.

Steps 5 and 6 relate to the **Reinforcement** level. In step 5, Evaluation, Feedback, and Re-Teaching, the learners have just completed their first attempt at assimilating and accommodating the learning objective, and their efforts should be evaluated to give immediate feedback for the correction of their mistakes. A common error at this step in the instructional plan is to construct a new exercise for learners to “evaluate” their learning progress. Steps 5 and 4 should be linked and related: the Independent Learning in step 4 must be evaluated in Step 5. If, after evaluation of the Independent Learning, the instructor determines that the some or all of the learners need more instruction, the instructional plan should be looped back through steps 3 and 4.

Step 6, Retention and Application, is structured to solidify the learning or to ensure that the new knowledge is ensconced in the long-term memory. This step could include a future examination, a summarizing exercise, or more practice in a different format. In particular, this step should help the learners retain the new knowledge and facilitate its application in future, related learning or practical use.

Part 2. Curriculum Alignment

Nearly as important as the learning fostered by the **IPLCA**, is the alignment of the instructional content with applicable curriculum standards. Consequently, there are two important steps to complete prior to planning the instruction. First, general, standards-based learning objectives should be referenced, and then, a specific learning objective should be written.

For example, the state curriculum in Oklahoma is called the Priority Academic Student Skills, while the Texas state curriculum is called the Texas Essential Knowledge and Skills. Both Oklahoma and Texas require that every school district in the respective states administer achievement tests, which are based on the standards set forth in the state curriculum. It is very important that instructors base their instructional plans on these state standards, to ensure students’ success on achievement tests. The use of standards is by no means limited to the public school classroom. Both business and university education needs to conform to higher level profession organizations, which in turn set standards for proficiency.

Finally, the **IPLCA** requires the instructional planner to estimate the duration of the plan. Any plan lasting longer than two periods or hours should be reconsidered for potential restructuring as two or more instructional plans.

Part 3. Using the Instructional Plan for Learning and Curriculum Alignment

Using the **IPLCA** is not an onerous task. The instructional planner should determine the general content of the plan, based upon a larger planning document, such as a curriculum guide. State or learning society curricular standards should be consulted to ensure curriculum alignment, and then a specific

instructional/learning objective should be constructed, preferably in the form of performance objectives, using action verbs. After that, the instructor estimates the duration of the plan.

The *Three Main Level/Six Step* format should be completed in outline form, with the Main Levels and Steps marked accordingly. The steps should be overtly numbered from 1-6. The written description for each step should consist of a few sentences that describe the teaching strategy and/or learning activity that is planned, as well as what media or materials will be used. A replicable version of the **IPLCA** is attached.

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Appendix 1. Instructional Plan for Learning and Curriculum Alignment: IPLCA

(Directions: The steps should be overtly numbered from 1-6. The written description for each step should consist of a few sentences that describes the teaching strategy and/or learning activity that is planned, as well as what media or materials will be used. Be sure to write clearly and use correct grammar.)

Standards-Based Objective(s):

Lesson/Learning Objective(s):

Duration (hours, periods, weeks):

Orientation

1. Orientation/Motivation

2. Verbatim Transmission of the Lesson/Learning Objective

Instruction

3. Guided Learning

4. Independent Learning

Reinforcement

5. Evaluation/Feedback/Re-Teaching

6. Retention and Application

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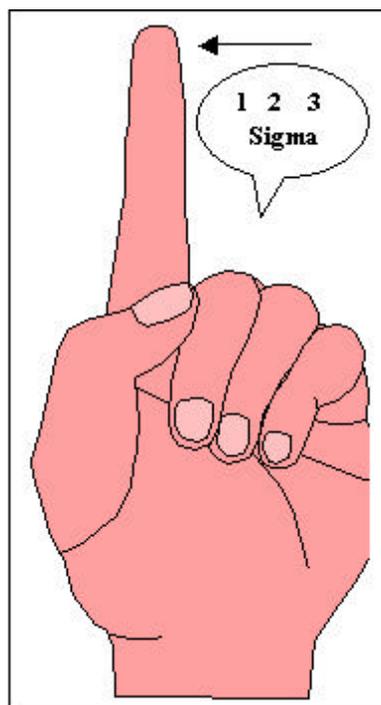
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Organization as Brains

Can Six Sigma Teams Innovate?



Can we agree on innovation and creativity?

Organizations are literally “in love” with the drive for Innovation. This is understandable. Connected to this concern is the word “Creativity”. A study of 20 public sector organizations and 13 private sector organizations in 3 SEAsian regions reveals that Innovation and Creativity are often used interchangeably. On the surface of things, some believe that creativity produces innovation. Others argue that innovation produces creative ideas. So creativity brings forth innovation which in turn produces creative solutions. The tautology is obvious. Such ambivalence blazes a trail that is wrought with varied interpretations. The actions that follow are likely to match such ambivalence.

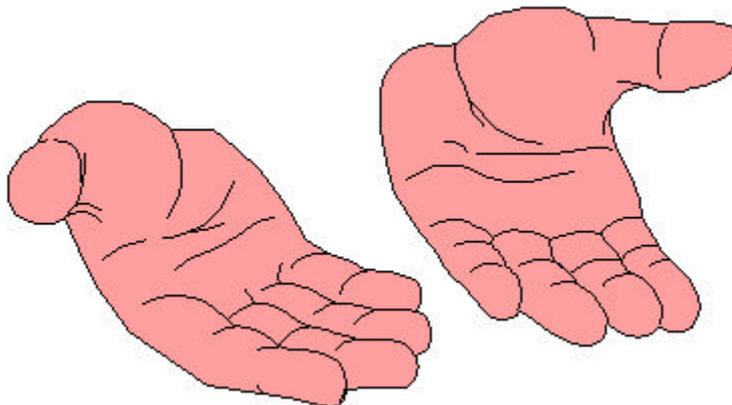
Can there be more than Ideals?

Linked to these buzzwords are other concerns. They are often used to support exhortations for “building a knowledge based enterprise”. This is accompanied by other words such as “value added work”. In an effort to clarify the innovation and creativity thrust, a prominent organization in Singapore describes elements that attempt a definition. The definition is intended to be instructive for teams working on projects. These include:

1. New ideas are made used of or used in a creative way.
2. Solutions are extensive in their applications.
3. Impact of the solutions extends to departments and agencies in other organizations.
4. Revolutionary and even long lasting solutions are implemented.
5. New value is added to work.
6. Solutions contribute to achieving the business objectives.
7. Methods used by teams involve lateral thinking, even “out of the box” thinking.

The elements do well to suggest the qualities for a major, groundbreaking invention, even close to solutions that may qualify for the “Nobel” awards. The words merely state the form and expected ideals of innovation...or creativity. The likely response from improvement teams indicates that it remains as “IDEALS”. In fact, the same organization presents an example to illustrate its definition of innovation.

A photocopier was a source of disruption in an office. The frequent breakdowns and faults created backlog and frustration. An idea was mooted to “outsource” the photocopier requirements to a vendor.



Can we “drive” the change or be “driven”?

In the photocopier case, the start point for change is a negative occurrence or problem. The solution here can best be seen as a “fire fight”. **Was the brain a driver for the change or driven by set solutions?** It works but the result is hardly new or revolutionary. An innovation “shifts” paradigms. A possible innovative inquiry could have considered the need to photocopy, the volume, causes and approaches to overcome faults by inventing an improvement to the photocopier.

The Prime Minister of Singapore Mr. Goh Chok Tong presents another explanation that may well be recognized as a suitable definition. He said:

“Innovation is not just about creativity but also about implementation. Innovation need not be limited to the realms of technical and scientific”

The key word here is “implementation”. Ideas are transformed and become tangible in the work place. According to the PM, creativity is visible in positive change. It can be attempted by anyone in any field. He adds:

“Thus, innovation is a social phenomenon – it occurs when people think up new ideas, accept these new ideas and work together to realize these ideas.”

A social phenomenon implies that innovations affect people’s lives. There is an element of building consensus on the change. The other significant dimension is captured in the words “new ideas and work together to realize these ideas.” New ideas would refer to new approaches to work methods and processes. The other concern that is raised here is the need to understand the concept of teamwork.

Teams are a social phenomenon and exist where people rally behind common goals. The goals surely seek to benefit the people working on the ideas as well as the organization and customers that the team serves. The concept of teams, in the light of a social phenomenon, is one where positive changes affect organizational growth and survival.

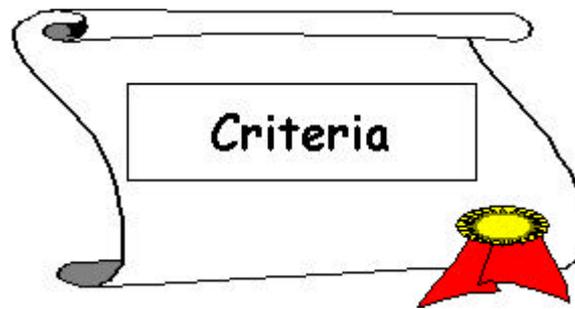
The PM adds that teams:

“need to also bring their ideas to fruition and ensure that such ideas create value for the organization”.

The key dimension expressed is the creation of value. **Value is visibly measured in terms of profits, time, cost, output, effort, positive occurrences etc.** “Create value” suggests that there is a saving. This contrasts with concerns often used in problem solving. In problem solving, the efforts focus on:

- correcting,
- maintaining standards or current accepted values,
- reducing time, cost and eliminating negative outcomes.

The creation of value runs closely with the concerns to add value rather than keep the values at planned levels.



At last – a working definition

To summarize, the elements that define innovation are seen by the PM as including:

1. Themes aligned to the objectives of value creation in the organization.
2. Projects create positive changes by adding value to work processes and methods.
3. New technologies that set new standards derived from knowledge and expertise of people.
4. Cost savings in time, manpower resources and maximizing the use of available resources.
5. Impact of solutions benefit other work processes and methods and become best practices in the industry.
6. “Built in” reviews that upgrade the new technologies, making them lasting and creating “spin off”.

Brain – Driver for new technology

The creation of new technologies, thus, is seen as the cornerstone for implementing innovations.

Charles Perrow considers technology as:

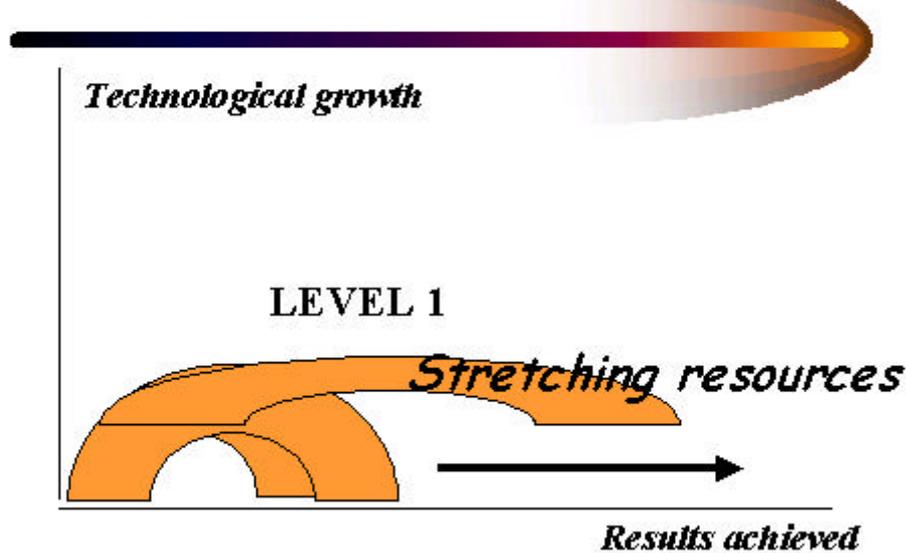
“The action that an individual performs upon an object, with or without the aid of tools or mechanical devices, in order to make some change in that object”.

This expands the perspectives often attached to the creation of technologies. Ideas produce change. The change in this regard is positive to the community.

Technology trajectories

Technologies inherently carry trajectories. By this we mean the path that controls the relevance and value created by a technology. **Innovation is that action that intervenes in the path to launch changes.** The changes in turn produce new trajectories. This is understood as the process of technological growth.

PATH DEPENDENT TECHNOLOGY



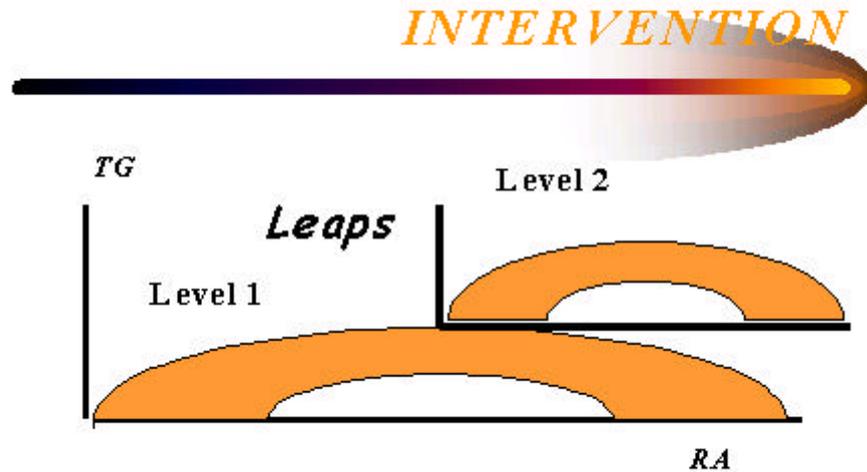
Technology – Comfort zones

Technologies also carry degrees of “**comfort zones**”. By this we mean, the resistance that is often experienced when intervention in the path is attempted. The common thinking is of course, “if it ain’t broke, why fix it”. So tested technologies go on functioning until failures, downtime and problems rudely disrupt the path. The common response is to solve the problem. The goal is to keep the technology working. The effect of such measures invariably places people in “fire fighting” modes of action. Quite often, these are the routine actions that keep people busy and stressed at work. In another study of the type of projects presented in most conventions shows that 93% of the themes are “fire fighting” solutions.

Best brains in action

Bill Gates, in his book of the same title describes innovation as “business at the speed of thought”. Tiger Woods, the World’s No.1 golfer, is quoted as saying, “change is best attempted when you are at the height of success”. He explains that his record breaking score at the Pebble Beach meet in Y2000 was only possible because he innovated his swings to add value to his “hits” on the ball. These are samples of innovation in practice.

- **That innovation is not “settling into” a one successful strategy but a constant search to challenge the technologies that are at the height of their success.**
- **That improved result in performance is the search for new designs and methods that add value to achieve phenomenal results at lower levels of cost.** In the case of Tiger Woods, it was the smart moves to his swings. The Brain is the driver not the driven.



Brain blocks – Block heads!

A field of study of project teams in 23 organizations in SEAsia shows a common mindset towards innovative changes:

1. There is no time to reflect on success; problems keep us busy.
2. Better people and improved equipment is the answer to doing things smarter.
3. Innovation needs time. When all the problems are solved, there is time.
4. Solving problems is making improvement.

Brains “driven” by fixed paradigms

The general work climate in most organizations is a mad rush to ensure that work methods and processes in use are working as designed and planned. **The climate breeds an atmosphere where people move from “what went wrong” to “who is responsible for it”.**

Solving the problems in most cases is getting people to do the right thing, policing the right actions and enforcing the right action through more instructions and procedures. The results are:

1. Reliance on education and training to correct actions.
2. Cost reduction efforts that actually increase the cost of operations.

Brains for technological growth

Technological growth takes place when people intervene to challenge the cost of using successful performance of:

1. Equipment, machines and tools, and

2. Methods of work, approaches and schemes,

Technological growth is evident when:

1. Brain or knowledge based work increases.
2. Body stress and strain is eliminated.
3. Quality of work life is enhanced
4. Tangible savings are evident

Mindsets is Action – Position the Brain

The innovation mindset is illustrated with 2 examples.

Example one

A production facility measures downtime of equipment. The current downtime is measured in terms of machine utilization rate 75%. 2 machines are down in a month.

Current Mindset

Theme: To get the 2 machines up and running

Paradigm: A problem solving project that looks at WHAT and WHY the machines went down and find ways to prevent down time.

Resistance: None. The concern is to identify causes and fix the machines – a “fire fight”.

Alternative Mindset

Theme: To increase the machine utilization rate by 20%.

Paradigm: To find solutions. The focus here is on HOW to increase.

Resistance: Strong. Innovation is possible where the solutions create cost savings and benefits that impact on business goals and adds new value. Studies show that in most cases it is attempted as a special project.

Innovative Mindset

Theme: To improve the technology of current machine utilization rate.

Paradigm: To achieve a cost saving for 75% machine utilization rate.

Resistance: Strong. The concern is to search the reasons and cost dimensions that enables the realization of such a success rate.

Reason: There is no guarantee that the 75% rate will be sustained. Problems in the future may arise from this group of machines. There is a cost of obtaining 75% success today. Is the approach to the current value and success achieved the best? An intervention in the technological path begins here.

Example two

An education institution records an 89% pass rate in an examination of a trade subject.

Current Mindset

Theme: To cut down the number of failures.

Paradigm: WHAT happened? WHY? What can be done to get the students to pass?

Resistance: None. The response is natural. The solutions are also obvious, since the inquiry looks at the students that failed. It is a routine “fire fight”. The problem is acute when the pass rate falls below the expected tolerated level planned.

Alternative Mindset

Theme: To increase the number of passes in the examination.

Paradigm: The efforts get underway to find solutions to help the 11% to pass. The solutions are more relevant to the group that failed.

Resistance: Strong when the level of passes is above the desired or expected level. The response is more amenable when the expected level of failures is considered as normal. In this case it is seen as a special project.

Innovative Mindset

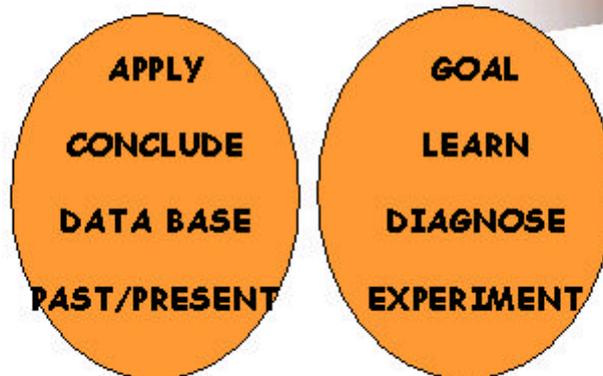
Theme: To find new ways to achieve the 89% pass rate.

Paradigm: The search is for cost effective approaches that achieve the pass rate. The questions raised include:

- WHAT is the cost of this pass rate?
- WHY is the current method of teaching incurring such costs? HOW could the pass rate be obtained at lower cost?

Resistance: Strong. The common objection arises from “comfort zones”. The 89% pass rate may be the best ever achieved. The achievement is already celebrated as “best in class”.

MY_RIGHT_BRAIN.COM



Brains for innovation – “challenge what is best”

The intervention in current technological paths challenges what “exists as the best”. The questioning process challenges the paradigms in use. All technologies carry shortcomings when applied to real situations. The “fire fight” mode is a natural response in the application of any given technology.

It therefore follows that people pride themselves as experts in “fire fighting”. This mindset sets the organization into strong inertial forces when external competition and unforeseen circumstances force change upon it. The innovation mindset breaks that “laid back taken for granted” approach.

Brain triggers - Innovation triggers

The innovation mindset is triggered by:

1. Measurements that track performance of equipment and competencies.
2. Language of the Right Brain.
3. Action Learning thinking processes.

In another field study of 57 organizations from the public and private sectors in SEAsia shows that less than 20% capture measurements that track performance of work methods and processes and competencies of people. 45% of these organizations captured measurements such as:

1. Defect rates
2. Complaints and types
3. Delays in meeting schedules
4. Breakdowns and failures
5. High cost and time spent

The current mindset is “locked in” by these data. **The measurements assume the relevance and acceptance of technology already in use.** These measurements are important. In Sigma terms, the data shows non-compliance, deviations and stretch the acceptable Sigma level standards. The questions raised by these measurements focus on meeting the standards, keeping the current value and reducing the non-compliance. The technology in use is not challenged.



Brain works – innovation in action

The measurements that trigger innovative thinking are:

1. Pass rates
2. Acceptance levels
3. Performance that keeps within the Sigma levels
4. Cost of meeting the required or acceptable levels of performance.
5. Success rates.

The innovations are triggered by paying attention to:

1. Documented procedures of work methods and processes in use.
2. Equipment capabilities and performance that is within the specifications.
3. Current expected response rates.
4. Current designs of work methods.
5. Business strategies in use.

LANGUAGE OF THE BRAIN

- | | |
|-----------------------|-------------------------|
| • DEFECT RATE | • NO DEFECT RATE |
| • FAILURE RATE | • PASS RATE |
| • DOWNTIME | • UPTIME |
| • MTBF | • SIGMA LEVEL |
| • MTTR | • COST SAVE |
| • LOSS COST | • PROFIT LEVEL |

**WHAT IS
WRONG**

**WHAT IS
RIGHT**

The Brain remains the primary “driver” that positions the mind to seek innovation. Then again, it is the choice that is made that enables people to use the side that opens up the inquiry to:

- Select a topic that promises innovation,
- Reflect on the issues that make up the current cost of producing quality,
- Search inventions that save the cost for producing quality,
- Look ahead to build upon the new methods of work.

The Brain is positioned by mindsets. A left brain mindset produces actions that apply “learned” knowledge. The database, built up over years of experience, values and norms help to produce solutions to problems. These are non-conformances and defects. It is the “fire fight” side that spontaneously seeks out possible solutions to visible causes. The mindset here is to make a decision on the best solution. The left brain is indispensable for routine actions in the work place.

LANGUAGE OF THE BRAIN



FIND THE SOLUTION	<i>FIND THE INNOVATION</i>
MAKE IT RIGHT	<i>MAKE IT MORE RIGHT</i>
MEET THE STANDARD	<i>SET A NEW STANDARD</i>
KEEP THE VALUE	<i>ADD A NEW VALUE</i>

Brain works – innovative solutions

A right brain mindset produces inquiries. The “WHAT” and “WHY” triggers are used to challenge current paradigms. This forms the basis to look at the accepted “logic” and seek changes. The changes become innovative when the solutions are:

1. Tested in actual situations through Action Learning,
2. “WIN - WIN” positions for the customers, organization and the team members,
3. Integrated into the current work methods,
4. Maximizing the use of available resources,
5. New and affect other work methods positively.

The language used is vital in opening the side of the brain that begins innovative inquiries. The language that describes “what is wrong” is routinely monitored and tracked. The language that describes “what is right” provides the basis to create new value. The data is often tracked to present the level success achieved by work processes and performance. Such measurements adequately offer the current value achieved. The innovative mindset begins to search the cost of realizing these “positives”.

The challenge that is posed by innovation is formidable. The resistance that the left brain presents is obvious. We are in control of the choices that create mindsets. Knowledge based work is driven by right brain inquiries. The question that remains, is our response. Success in any human endeavor has a cost. The search for an innovative approach to the “success in hand” positions the brain that drives the change for a new value of success achieved.

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Attitudes and representations of Greek educators concerning the use and application of new technologies at school

This is a two-year qualitative research project conducted between 1998-2000 by use of semi-structured, in-depth personal interviews with 33 schoolteachers in Greece. The main objective of this research project was to investigate the attitudes and representations of Greek educators towards the introduction and utilization of computers and of the Internet in education. Before we proceed to present the main conclusions of this study, let us note that this research did not aim at simply presenting diverse opinions. Instead, its aim was to examine critically and interpret the complex of attitudes, motives, emotions, expectations and fears, which ultimately determine how educators *think about* and *act* towards new educational methods based on information technologies. In which case, besides all the verbal references we have tried to explore those elements - implicit or explicit, conscious or unconscious - which underline the perceptions held by the participant educators.

Amongst the chief findings of this study are the following:

Educational Technologies

The attitudes and perceptions of the teachers we interviewed towards the question of incorporating educational technologies in education *are fundamentally ambiguous and contradictory*. Thus, teachers display a *positive disposition* towards new technologies in education, but this positive disposition is predominantly observed when they express their opinions in a more or less "theoretical" and hypothetical manner. When, however, they are asked to give more concrete opinions about specific technologies and specific ways of using them, they do not display an equally and firmly positive attitude.

The interviews reveal that the representations, which educators have formed of the educational technologies are rather "theoretical" and conceptual. In fact these representations lack an *experiential element* (educators in the greatest majority do not know how to use and actually do not use new technologies in schools). We can safely assume that the existence of knowledge and experience on the part of teachers would have helped them concretize their opinions and conceive of specific ways to improve their classes by the use of educational technologies. Moreover, the ambiguity of the teachers' attitudes often takes the form of skepticism and disbelief towards the use of information technologies, but also towards the need for a fundamental reevaluation of the conventional mode of teaching.

What is also worth noting is that most of the teachers who participated in this research conceive of the computer and the Internet as *supplementary* technologies, to be used sporadically and unsystematically and mostly in mathematics or physics. Very few teachers have realized the qualitative difference of incorporating educational technologies on a daily basis and within all realms of study.

The Computer

Talking about computer causes teachers to react in a more *intensely* and *impassioned* way - whether positive or negative - than the discussion revolves around the so-called "conventional" technologies of video or television. This, however, should not be taken to imply that teachers have more firmly structured and defined representations or attitudes towards these educational technologies. On the contrary, most participants have not formed an integral and consistent opinion about the role of computers in the educational process. They frequently give confused and logically incorrect answers when asked to talk about the utility and application of information technologies at schools. This obviously stems from their limited knowledge about the nature and use of information technologies. In brief, their representation of the computer is devoid of a *solid cognitive crux*, which would allow its better construction.

Conclusively, we observe that the educators' attitudes towards new information technologies are characterized by *a fundamental ambiguity*, since the overall recognition of the utility and usefulness of computers coexists with wide-spread skepticism and disbelief, as well as with expectations of a series of negative consequences caused by their use.

Schematically, their dominant representation of the computer is comprised of the following *antithetical pairs*:

- *Admiration* (for the possibilities of the medium) and *fear* (that it might prevail over the human)
- *Fascination* (for all the miraculous things it can offer) and *aversion* (expressed as doubts as to the meaningfulness and value of what computers may offer)
- Perception of computers as a *secondary supplement* to the traditional teaching (by breaking the monotony and linearity of the conventional class) and as *antagonistic* (by substituting the teacher him/herself)
- Perception of the computer as a medium which might *improve communication* in the classroom (by being used as a game) and at the same time as a medium which may easily *nullify communication* (by degrading the role of the teacher, dialogue and human contact)
- Perception of the computer as a medium, which might *enhance their status* in the classroom (provided that the teacher knows how to use it), while at the same time *diminishes their status* (when the teacher is proven to be an insufficient user).

Therefore, the unclear and ambivalent attitude of the educators towards information technologies is the effect of their contradictory representation of the computer as something that is *at once positive and negative*.

What almost all participants recognize is the *social necessity* of computers and the Internet, as well as the imperative need for them to learn how to use them (the issue of technological literacy). The emergence of new multi-use technologies brings about wide-ranging changes in social life, changes to which education ought to adjust and this is something that most educators have come to grips with. However, this realization causes them to feel anxious, puzzled, stressed and insecure.

As expected, the dominant representation in the teachers' minds is that of the *Computer as a Novelty*. Computers are no longer only viewed as physical objects, smart machines or dynamic media. Instead they have become *symbols* of a new era, the *emblems* of modernity and the signifiers of the role of the individual in new societal norms. Quite frequently, respondents associate computers with a particular model of a futuristic society, which they have either imagined or appropriated by several cultural sources (mainly television). It is a futuristic society, highly technocratic, automated society, which they, more often than not, juxtapose to an idealized society of natural law, humanity, feelings and simplicity.

It is also interesting to note many teachers identify computers with Technology as such. Technology (with a capital T) "is not natural", Technology "isolates", Technology "dehumanizes". These dehumanizing, isolating

and artificial characteristics are then, in an impressively unconscious way, transferred and attributed to computers even when the topic of discussion has been strictly defined as the educational uses of computers.

Accordingly, computers are frequently represented as the Perfect Machines, which are being compared to the Imperfect Human Being. In this manner the computer becomes a Threatening Object, the existence of which brings us face to face with our humanly erroneous and insufficient nature.

The relation between children and technology

Through their interviews, educators assert the following:

- Children have an *absolutely positive attitude* towards new technologies, particularly towards computers, the use of which they greatly enjoy due to their audiovisual nature and the high degree of participation that they afford the user.
- Children are *familiar with these technologies* and know more about them than their educators. This is often interpreted in terms of "a generation gap". Students are portrayed as having gained for themselves a generational right and privilege in terms of technological knowledge and literacy.

This last observation only helps to intensify the feelings of apprehension, insecurity and pressure experienced by the teachers themselves, who are for the first time faced with a transformation of their professional role and identity. A situation, as they conceive it, whereby children at school know more than their teacher who has traditionally kept the privilege of knowledge transmission is a situation of severe role-conflict and imbalance. In sum, the teachers feel that they have to come to terms with the fact that they are cognitively disadvantaged towards their cognitively advantaged students, an unprecedented reversion in the pendulum of knowledge. They know less about computers. They are less familiar with multimedia, software, the Internet.

More precisely, what we observed is that most educators conceive of a twofold threat. On the one hand, they feel threatened by technology as such, which undermines the dominance of the educator. On the other hand, they feel threatened by "an internal enemy" in the words of one respondent, by children, by their own students who are more in control of computer terminology and practice.

The overriding fear voiced directly or indirectly by all the interviewees is the *impending disappearance of the teacher*, when he/she will be rendered useless by the multi-dynamic and omnipotent computers of the most advanced technology. The question that arises is why do teachers necessarily have to conceive of this transformation as a diminution of their role and not as an opportunity to radically reevaluate their role in a more student-centered educational setting? It can be assumed that this stance is indicative of their insecurity in the face of radical changes and greatly stems from their limited knowledge about the nature and possible uses and benefits of new educational technologies. However, as attitudes and representations do not remain unchanged through time, we can expect that an increase in teachers' knowledge and information and the consequent sense of control over technology will lead them to redefine their role and modify their attitudes to new technological media in education.

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LearningVista Customer Solution Case

Client

Lockheed Martin Advanced Concept Center (ACC)

Challenge

Lockheed Martin ACC, desired an e-learning platform to enable their learner community to direct their own learning initiatives through the integration and combination of the best technologies resulting in a seamless learning experience to the user. The Advanced Concept Center offers a broad spectrum of innovative learning solutions that can be blended into a powerful Corporate University. “Corporate universities are emerging as exciting catalysts for making the “learning organization” a reality”, states Dave Bieg, ACC Director. “And the ACC needed a scalable solution to meet the needs of our customers learning initiatives. It was this vision that prompted the partnership with GlobalLearningSystems.com to create and deploy an ACC e-learning solution”.

Solution



The GlobalLearningSystems.com technical and instructional team designed the e-learning platform on top of Microsoft Windows NT 4.0 and Microsoft IIS web server that would provide Lockheed Martin ACC with a robust and secure web application that supported thousands of users. Back-end and user processing and the dynamic nature of the site are handled by Microsoft's ASP (active server pages) allowing pages to be created dynamically based on user input and preferences. The database behind the application drives the users' experience. Microsoft's SQL Server 7.0 offers high availability/volume database support. The combination of NT4, IIS and SQL7 provides the framework to build a world class-learning environment. The Lockheed Martin ACC learning platform utilizes Verisign digital certificates, SSL and encrypted message streams to ensure that environment is secure.

Key features in the Lockheed Martin ACC e-learning campus included:

- a full course catalog and search,
- course scheduling,
- automatic (secure) registration and payment,
- learning path identification, clean and crisp user interface,
- prompted identification or promotion/featured courses, and
- email capability to Lockheed Martin administrators.

Results

Elizabeth Bufo, ACC Marketing Manager, states "after the deployment of the Lockheed Martin ACC e-learning solution, our customers are experiencing the real time benefits of a system that is designed to quickly and efficiently bring the right learning solutions to their desktop". More information on Lockheed Martin's ACC is available at <http://www.acc-lmco.com>.

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