

FOR SPEAKERS

Contribution to the Stellenbosch Declaration

The Stellenbosch Declaration will be the output of WCCE 2005.

The Declaration will be a brief document, addressing the principles, ideas, trends and recommendations which seem essential to the delegates.

It will be drafted on the basis of the input provided by delegates, speakers and chairpersons of the Conference.

It will encapsulate the key messages that the Conference wants to send to policy-makers, decision-makers and colleagues at all levels around the world.

Name: _____ Surname: _____

Country: _____ e-mail: _____

Title of your paper presentation at WCCE 2005: _____

ONE key idea / recommendation / reflection from your presentation (maximum 3 lines):

Please hand this form in at the SBS Conference Office in the Lettere Building immediately after your presentation.

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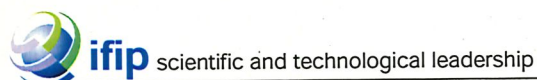
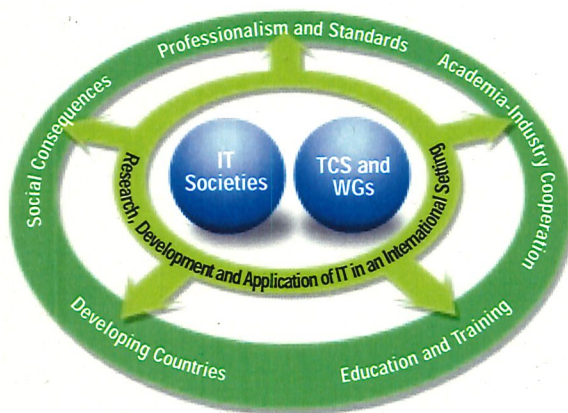
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- IT societies members find a meeting place for sharing experience, and discussing challenges and opportunities
- TCs and WGs contribute to, and often lead, progresses in the state-of-knowledge and state-of-the-art



- is warranted by WG membership, based solely on individual excellence
- is asserted by the organisation of some 100 highest quality international events; and the publication of some 30 new books annually that are distributed worldwide



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How to get involved?

Visit the IFIP web site (www.ifip.org), where you will find links to your Member Society and to the Working Groups of IFIP. You may also contact the IFIP Secretariat directly:

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www.ifip.org



ifip, The International Federation for

Information Processing is a non-governmental, nonprofit umbrella organisation of national societies working in the field of Information Technology. It was established in 1960 under the auspices of UNESCO as a result of the first World Computer Congress held in Paris in 1959.



- Is the leading multinational, apolitical organisation in Information & Communications Technologies and Sciences, recognised by United Nations and other world bodies
- Represents **IT Societies** from 46 countries or regions, covering all 5 continents with a total membership of over half a million
- Links more than 3500 scientists from Academia and Industry, organised in 80 **Working Groups** reporting to 12 **Technical Committees**
- Sponsors 100 conferences yearly providing unparalleled coverage from theoretical informatics to the relationship between informatics and society including hardware and software technologies, and networked information systems



Technical Committees (TC) and Working Groups (WG)

TC1: Foundations of Computer Science

- WG 1.1 Continuous Algorithms and Complexity
- WG 1.2 Descriptive Complexity
- WG 1.3 Foundations of System Specification
- WG 1.4 Computational Learning Theory
- WG 1.5 Cellular Automata and Machines
- WG 1.6 Term Rewriting
- WG 1.7 Theoretical Foundations of Security Analysis and Design

TC 2: Software: Theory and Practice

- WG 2.1 Algorithmic Languages and Calculi
- WG 2.2 Formal Description of Programming Concepts
- WG 2.3 Programming Methodology
- WG 2.4 Software Implementation Technology
- WG 2.5 Numerical Software
- WG 2.6 Database
- WG 2.7 (= WG 13.4) User Interface Engineering
- WG 2.8 Functional Programming
- WG 2.9 Software Requirements Engineering
- WG 2.10 Software Architecture
- WG 2.11 Program Generation
- WG 2.12 (= WG 12.4) Web Semantics

TC 3: Education

- WG 3.1 Informatics and ICT in Secondary Education
- WG 3.2 Informatics and ICT in Higher Education
- WG 3.3 Research on Education Applications of Information Technologies
- WG 3.4 T-Professional and Vocational Education in IT
- WG 3.5 Informatics in Elementary Education
- WG 3.6 Distance Learning
- WG 3.7 Information Technology in Educational Management

TC 5: Computer Applications in Technology

- WG 5.2 Computer-Aided Design
- WG 5.3 Computer-Aided Manufacturing
- WG 5.5 Cooperation Infrastructure for Virtual Enterprises and electronic business (COVE)
- WG 5.6 Maritime Industries
- WG 5.7 Integration in Production Management
- WG 5.10 Computer Graphics and Virtual Worlds
- WG 5.11 Computers and Environment
- WG 5.12 Architectures for Enterprise Integration
- SIG-CAI Computer Aided Innovation
- SIG Bioinformatics

TC 6: Communication Systems

- WG 6.1 Architectures and Protocols for Distributed Systems
- WG 6.2 Network and Internetwork Architectures
- WG 6.3 Performance of Communication Systems
- WG 6.4 Internet Applications Engineering
- WG 6.6 Management of Networks and Distributed Systems
- WG 6.7 Smart Networks
- WG 6.8 Wireless Communications
- WG 6.10 Photonic Networking
- WG 6.11 Electronic Commerce - Communication Systems

TC 7: System Modelling and Optimization

- WG 7.1 Modelling and Simulation
- WG 7.2 Computational Techniques in Distributed Systems
- WG 7.3 Computer System Modelling
- WG 7.4 Discrete Optimization
- WG 7.5 Reliability and Optimization of Structural Systems
- WG 7.6 Optimization-Based Computer-Aided Modelling and Design
- WG 7.7 Stochastic Optimization

TC 8: Information Systems

- WG 8.1 Design and Evaluation of Information Systems
- WG 8.2 Interaction of Information Systems and the Organization
- WG 8.3 Decision Support Systems
- WG 8.4 E-Business: Multi-disciplinary research and practice
- WG 8.5 Information Systems in Public Administration
- WG 8.6 Transfer and Diffusion of Information Technology
- WG 8.8 Smart Cards

TC 9: Relationship between Computers and Society

- WG 9.1 Computers and Work
- WG 9.2 Social Accountability
- WG 9.3 Home Oriented Informatics and Telematics
- WG 9.4 Social Implications of Computers in Developing Countries
- WG 9.5 Applications and Social Implications of Virtual Worlds
- WG 9.6 (= WG 11.7) Information Technology: Misuse and the Law
- WG 9.7 History of Computing
- WG 9.8 Women and Information Technology

TC 10: Computer Systems Technology

- WG 10.1 Computer-Aided Systems Theory
- WG 10.3 Concurrent Systems
- WG 10.4 Dependable Computing and Fault Tolerance
- WG 10.5 Design and Engineering of Electronic Systems

TC 11: Security and Protection in Information Processing Systems

- WG 11.1 Information Security Management
- WG 11.2 Small System Security
- WG 11.3 Data and Application Security
- WG 11.4 Network Security
- WG 11.5 Systems Integrity and Control
- WG 11.7 (= WG 9.6) Information Technology: Misuse and the Law
- WG 11.8 Information Security Education

TC 12: Artificial Intelligence

- WG 12.1 Knowledge Representation and Reasoning
- WG 12.2 Machine Learning and Data Mining
- WG 12.3 Intelligent Agents
- WG 12.4 (= WG 2.12) Web Semantics
- WG 12.5 Artificial Intelligence Applications
- WG 12.6 Knowledge Management
- WG 12.7 Computer Vision

TC 13: Human-Computer Interaction

- WG 13.1 Education in HCI and HCI Curricula
- WG 13.2 Methodology for User-Centred System Design
- WG 13.3 Human-Computer Interaction and Disability
- WG 13.4 (= WG 2.7) User Interface Engineering
- WG 13.5 Human Error, Safety and System Development

SG16: Specialist Group on Entertainment Computing

- WG16.1 Digital Storytelling
- WG16.2 Entertainment Robot
- WG16.3 Theoretical Basis of Entertainment
- WG16.4 Games and Entertainment Computing
- WG16.5 Social and Ethical Issues in Entertainment Computing



Contribution to the Stellenbosch Declaration

ALL SECTORS

- Overcome digital divide
- More attention/awareness rising for the accessibility of learning environments(digital) and digital learning materials for students with a handicap/functional impairment.
- There are no borders , no walls on the Internet. Digital libraries built with open sharing protocols are effective tools to the wide spread sharing of learning resources.
- Student use of technology must be authentic for it to be of real use in their lives.
- A knowledge of the history of the field is essential for understanding the present - its beliefs, desires and intents for ICT in education and how it might evolve.
- E-learning is a good supplement but not a substitution for traditional classroom learning – students still value human interaction with their teachers/tutors
- Critically important that ICT use in education is rigorously assessed and evaluated – ICT must be used effectively.
- Via an understanding of the learners 21st century culture- place them at the heart of any e-learning system.
- Maintain the focus for the use of technology ie. Curriculum delivery enhancement and get all relevant role players involved including communities.
- The concept of network of excellence should be extended not only to European level, but also on a world basis.
- How might we use the technology to represent analysis of research more imaginatively.
- Forums should be used for collaborative learning and debating.
- Creativity should be a compulsory aspect and underlying principle in
 - education (and teacher training).
- There should be developed a very cheap world wide PDA, specially designed for education.
- Put ICT knowledge in a working context.
- I urge everyone involved in collaboration to seriously contemplate the use of XML/SOAP/ web services in creating interoperability infrastructures.
- Common criteria for quality assessment of e-learning. Jointly accepted credit system, eg. European Credit Transfer System (ECTS)

- Internet mediated communities as a vehicle for transformation.
- Intelligent software that implants educational characteristics in online environment can reduce the workload of online teaching.
- Focusing on teaching and learning rather than technology.
- Learning Technology Standards are essential – but how will we agree on what to standardise and how and by whom?
- There should be more debate on formal and informal learning.
- The dialogue between educators and technologists about learning technologies should be mediated (e.g. by use of Cases) to get the technology the students need!
- Keep empowering practitioners and allowing for collaboration between researchers, practitioners and decision-makers.
- In order to understand contemporary practice in education with ICT, it is necessary to know the history of its use.
- Include a little history in all that we teach since history links computing facts with people, places and events.
- Digital divide is partly caused by lack of education. Education problems can be solved by open educational resources, form of digital solidarity.
- Use of virtual collaboration tools can improve the cooperation process.
- Computers can be used to bring international communities together.
- We would like to see national initiatives and policy that support educational technology and communities that use technology.
- Use of various technologies can aid in a sense of community/immediacy while participating in a subject.
- Learning tailored to the individual student's requirements by using metadata-tagged source material.
- Learning systems should be possible to be tailored to the students requirements and allow for collaborative work.
- Next generation for of e-learning needs support for modelling the educational and learning process (visually).
- There should be improved international and professional collaboration in the ICT professional collaboration in the ICT professional field i.e. try new mergers between international and political organisations/EU-UNESCO-etc.

- Measuring knowledge and skills leaving out use of ICT are meaningless in today's society (digital/information society).
- We need to learn and reflect on both (what is) the history of ICT and all the different whys' of history.
- ICT and its history need to be related to the different contexts and cultures in which it is used.
- Effective evaluation of ICT in education may require creativity and innovation.
- Cost of ICT can be a serious problem in developing countries.
- The overhead in learning to use an ICT tool can be significant in terms of the time required.
- Via an understanding of the learners 21st Century culture – place them at the heart of any e-learning system.
- Maintain the focus for the use of ICT curriculum delivery enhancement and all relevant role-players involved including communities.
- Critically important that ICT use in education must be effective and regularly evaluated
- Not only learn ICT, but use ICT to learn.
- Reinforce research on ICT's education issues outside western countries (which dominate)
- Digital divide is still increasing → necessity of realistic strategical policies and e-piloting.
- The most important enabler for computers in education is the teachers. More focus should be given to training and motivating teachers.
- Informal learning should be better exploited and applied in structures and conditions of work at school so learners can better accommodate and be more effective.
- Learning Management Systems should not control the pedagogy. They should not hide or steal the presence of the teacher.
- Virtual Distributed experiments provide a rich opportunity for collaborative distance learning.
- Student evaluations of e-learning should be more rigorously assessed and fed into the design of e-learning environment.
- Online learning environments need to be designed carefully and appropriate instruments developed for reflection on what works and what doesn't.
- Promote and encourage Lab devices and student concrete artefacts to be exposed on the Web.
- Using a system of Open Source components a traditional lecture can be recorded, making it possible for remote students to participate.

- To make sensible use of the immense data provided by a meta digital library, you have to develop portals for different age groups.
- ICT allows customisation of content and approach to meet diverse needs of students.
- ICT facilitates formation of virtual communities and allows use of various media to improve communication.
- Introduce technologies in educational processes without considering cultural and social contexts will turn in failure
- In a changing world, we need to have an idea about what LL Learners do in their professional life and personal life to be able to develop effective policies.
- Lifelong learning is required to ensure economic, social, cultural and political development of education through ICT.
- We need to question our ability to prescribe to anyone else.
- Lifelong learning is only meaningful in a local authentic context.
- People want one answer to resolve their questions about technology. There are as many answers as there are teachers.
- On line applications for courses combined with distance learning (on-line) widens the catchment area from local to global
- We need to be very careful how we interpret “research” info ICT and learning, as much ICT research is poor.
- Evaluation of interventions making use of ICT need to take place sometime after the intervention
- A need to focus online learning research and practice to include issues of student diversity.
- There is a need for dedicated software for teaching, as smart as commercial general purpose products, but with pedagogical attributes.
- Related to the shift of focus from teaching to learning is a shift of focus from input to outcome and impact.

HIGHER EDUCATION

- Online learning and teaching can be undertaken by lecturers mainly for idealistic reasons, with little other incentive, despite huge increase in workload.
- It is important to introduce young researchers into research networks in order to expedite their integration into top research activities.
- Quality is an issue for higher education in computer science: there is need of standards and of cooperative actions in the academic community.

SCHOOL

- We in South Africa need a free broadband internet connection to ALL schools (private and government).

- Online teacher communities of learning/practice encounter issues beyond technological barriers and process. Teachers often do not have the philosophical underpinnings for inquiring into their practice.
- The internet is big, but if teachers use it well, it is manageable and can make even the world seen smaller.
- An exemplary “computer engaging” teacher must conscientiously plan for opportunities where they can actively support children using computers during quality task based computer activities.
- A central repository for student files and resources via a student portal is an achievable, viable, economic and sustainable solution.
- Learning for socially -disabled can be highly motivated by use of ICT.
- Interruption to school education resulting from prolonged hospitalisation and rehabilitation can be addressed by using ICT to maintain connection with the student’s classroom.
- Social proximity in computer classroom can be highly motivating for secondary students that should be considered in learning technology.
- Does a constructivist approach really make a difference – should we do some more comparison studies to find out?
- Does technology really make a difference? In maths, it seems to help correct misconceptions in several concepts.
- Sharing knowledge of the fundamentals of maths/computer science, will raise the standard of ICT teaching in many countries.
- Information and Communications Technology must be in the HANDS of the pupils – through PDAs, smart phones, slates etc.
- Use of ICT with the help of facilitation triggers improvement of basic skills in learners.
- Software that incorporates meta-cognitive features and which records students’ actions can provide strong insight into learning processes.
- Schools need Internet access. For this access to be effective it must be at broadband connectivity speeds to allow multiple users and access to multimedia sites.
- Anchoring fundamental concepts of ICT in subject-matter problems is essential to getting students to “Being Fluent with Information Technology”!
- Create higher standard through peer support between pupils.

- Teachers might use ICT in their ICT lessons but don't automatically think of using ICT in their other lessons.
- Simulation with ICT can stimulate learners.
- The Internet makes the world very small and developing countries like South Africa can take part in international projects.
- Students from schools lacking computer resources showed lower levels of self-efficacy and lower usage of tools.
- Have all stakeholders design software together iteratively.
- Open Source software can work well e.g. VPortal and eDoc project.
- Learning management systems (e.g. WebCT, Blackboard) designed for broadband access create inequalities of ease of access for students still dependent on phone line access.
- Teachers are convinced of the value of ICT to students' learning but developments in ICT are making the teachers role much more complex.
- Constructivist principles are best learnt than taught. Careful and considered use of rich tasks can provide opportunities for developing real knowledge about teaching and learning.
- Informatics education should give children orientation for their future lives.
- The learner should be always in the centre.
- The teacher has to maintain its leading role in the classroom – too much technology is detrimental.
- The entire notion of assessment can produce a real impoverishment of the learning experience.
- Some technologies work well for certain educational purposes, some don't and impact on the educational contexts in which they operate.

1. Globally people are struggling with many problems :

- Getting a job and keeping it
- The displacement and separation of families
- Contextual problems that cannot be solved by one expert
- Economic survival –getting the bread at the table , alone
- The spread of HIV/AIDS and the low age of senior family societal
- Breakdown of the country/community member
- The high number of persons who have problems with literacy

and formal education is not helping as much as it should because it is a system which has barriers to the outside world. We need system changes but then we must help the people in the system to adapt. And then we need new qualifications for our educators to help them adapt.

2. Globally people are struggling with many problems and formal education is not helping as much as it would. ICT should help overcome these by breaking down the barriers. Children's and adults attitudes to learning need to change. We must help them to cope with the problems they meet throughout their life. This is LLL in practice.

3. Globally , people are struggling with many problems and LLL will help solve these. However each LLL solution is contextual to the situation which may be for example: cultural, social , economic but generic techniques can be adapted to other contexts. Out (IFIP, TC3 and SIG3.8) work is to find these important generic knowledge solutions including the effective use of ICT.

S We can learn some things that are useful today from the lessons of history.

S Everyone should have equal access to ICT products, services and user knowledge in their own native language .

C 1. Build partnerships with local business and parents
2. Use ICT to protect and nourish local culture and language.

C 1. Use of a modal improves quality of education
2. It is necessary to develop an understanding of the culture and context for ICT.

S It is necessary to support and teach collaborative learning because students do not learn successful collaborative skills in school.

S All public education including lectures and seminars should be accessible to anyone via the internet interactively

D Teach the teacher /empower the teacher

S Much more attention needs to be paid to what is meant/understood by integration to reach the generative use of national policy otherwise representational use will dominate in practice.

- C
1. Public-private partnership must be policy driven through a framework
 2. Companies should develop and share the concept of corporate citizenship. And develop collaborative imitations
 3. PPP needs complementarity

S Education needs to reflect a balance between twenty first century goals and traditionally important goals, which implementation should be facilitated by ICT. International comparative research should accompany countries' implementation of these changes.

- C
1. A unified effort to construct learning objects can be adopted by an entire nation, allowing great impact of the effort.
 2. There is room for improvement in course management systems to allow two or more different types of materials to be visible at one time.
 3. There is need for broader study of status of pedagogical changes relevant to twenty first century goals.

C

1. To support the principle that knowledge is a public good, the WCCE 2005 recommends that the intended organisation support the open-sharing of knowledge.

2. The knowledge gap between the developing and developed nation creates tension and intolerance. Making content free and open on the web is a powerful way of reducing the knowledge gap.

S WCCE should support open educational resources to equalise access to knowledge across the globe. Open educational resources includes high quality content and tasks to support the use and re-use of the content.

S Projects to implement ICT in schools must be driven by education objectives rather than technical objectives (the technical tail must not wag the educational dog!)

- C
1. Need to demystify informatics as a subject for 'geeks' and 'technocrats' if we are to address gender imbalance
 2. Need for assessment systems that match new capabilities
 3. Need further investigation of problems solving as key teaching and learning tool.

- C
1. School reform needs to accompany technological use.
 2. Technology must support, promote, sustain and amplify progressive educational practice.

3. Current internet policies and practice may undermine school reform

S. The impact of socio-economic factors cannot be ignored when implementing technology for education in developing countries.

S. Governments and administrations need to support technology integration in ways that best meet the unique needs of their constituents.

S. The needs of every student could be met using adaptive hyper-media and concentrating on modules they require assistance.

C 1. A flexible monitoring system helps the leaders achieve a better use of ICT in education

2. Students may help students .Students may help teachers.
3. Flexible entrance courses at educational institutions are necessary.

S Digital divides such as the one described in this paper , seem to extend and reflect a range of social , economical and cultural divides.

S The design of PISA studies is appropriate for informatics education because a core curriculum is not necessary and all knowledge sources were treated on an equal basis.

S. The computing information sciences (ICT) discipline should find ways to make computing safe and communications /computing utility for the world and all people.

- C 1. The task of developing descriptors to define and distinguish e-learning is difficult , but important for developers.
2. Students who are well prepared can teach teachers about technology to the benefit of both teachers and students.
 3. Papert's theory of constructionist learning can be implemented on-line with adult learners with very impressive results.

Sneed for e-learning descriptors . Please undertake projects to develop a shared necessary list of learning properties unique to e-learning.

S We should carefully investigate ways of using digital technology for formal summative assessment, ensuring student identity is authenticated.

C 1. ICT is more than computers. Mobile phones are forgotten in the area of education

2. In educational research more attention should be given to how to get better education with ICT.

3. Plagiarism is in many cases the result of a badly design education and not per say the fault of students,

S Keyboarding is still an essential skill for computer users in the 21st century

S Pursue possibility for zero rating sms for student learning

S BLANK

S Need to share best practice in construction of digital content – how can research on learning be translated to curriculum focused digital content?

Dear colleague,

I would like to draw your attention on a very important issue: As an output of the Conference, we are preparing the "Stellenbosch declaration", to be forwarded to the WSIS (World Summit on the Information Society) and to other appropriate persons and institutions.

Below you will find a description of what the Stellenbosch Declaration is.

In order to prepare this declaration during the WCCE, we need the help of all Chairpersons: The Declaration will be drafted on the basis of the input provided by speakers and chairpersons of the Conference. Each speaker is asked to provide 1 idea or recommendation (not more than 3 lines) ; each chairperson is asked to provide a set of 3 ideas or recommendations from his/her session. This must be done on the appropriate form (" elements for the Stellenbosch Declaration " ; the form has to be given back to the SBS Office at the Conference at the end of the session.

I count on you for:

- being sure that you get the appropriate forms, for you and your speakers, before your session (ask the SBS office on the conference site);
- gather the forms from your speakers, with one idea or recommendation each;
- fill your form with 3 ideas or recommendations from your session;
- give all the forms to the SBS office soon after the end of your session, so that the drafting group can take your input into account.

I thank you again for your valuable contribution,
with my best wishes,

Prof. Bernard Cornu
IFIP WCCE 2005 IPC Chairman

THE STELLENBOSCH DECLARATION:

IFIP TC3, the Education Committee of the International Federation for Information Processing, is holding its World Conference on Computers in Education (WCCE 2005) in Stellenbosch, South Africa, 4-7 July 2005. WCCE is held in a different country every five years.

In Stellenbosch, more than 600 delegates, from more than 30 countries from all continents will work and reflect together for 4 days.

The WCCE Conference is a major opportunity to gather educators, teachers, practitioners, decision makers, researchers for a common reflection about Information and Communication Technologies in Education. The conference is an occasion for sharing our experiences, ideas, projects, policies, for making everyone aware of the < state of the art > of the integration and use of ICT in Education, and for addressing the main trends and evolutions in Education over the next decade

The WCCE Conference will have outputs, for a wider audience than those who attend the conference. Some key messages are to be addressed by the Conference delegates to all their colleagues around the world and to the decision makers in Education at all levels.

This is why we will create the < Stellenbosch Declaration >, as a major output of our work at WCCE 2005.

The Declaration will be a 3 pages document, addressing the principles, ideas, trends and recommendations which seem essential to the delegates.

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Individual contributions are also possible (3 lines maximum), and must be provided on the appropriate form, available at the SBS office.

A synthesis of the contributions will be created by the drafting group. Two working sessions, open to all delegates, will discuss and finalize the Declaration (Thursday July 7th, 8 :30-10 :00 and 10 :30-12 :00). The final Declaration will then be presented, discussed and submitted for approval at the Plenary Closing Session of the Conference, Thursday 7th, 12:00-13:30, which will be attended by the IFIP President.

The Declaration will then be forwarded to suitable forums, and particularly to the WSIS, World Summit on the Information Society, the second phase of which will be held in Tunis in November 2005.

This will make our Conference have an impact on what happens in Education far beyond our own organisations and long after we have gone home!
I thank you for your contribution,

Bernard Cornu

JCD/WCEE'05

STEERING PROFESSIONAL DEVELOPMENT SYSTEMS FOR TEACHERS AS A LEARNING ORGANISATION

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ABSTRACT

This paper looks at the monitoring systems and the thought processes that took place in the organization, pedagogy, communication and technology, conceived by the F3-MITIC¹ project managers (interstate project of The Geneva Education Department), to organize and supervise the learning of teacher educators. We present the results of 3 years of experience in managing a project, which emphasizes a socio-constructivist approach of teacher education, and which considers the reflexive approach system itself as a "laboratory" in constant evolution. Indeed, encountering frequent difficult situations forces us to imagine innovative solutions and to change our strategy in order to take into account the institutional and social settings and context.

Besides the description of numerous tools that we have set up to favour the development of competencies of MITIC teachers of teachers and in view of privileging collaborative learning and a reflexive approach (creation of scenario groups, learning teacher logbooks, work spaces for recollecting and building up experience, formative evaluation, learning process regulation, etc.), as well as steering the project (participant observation, external advisors expertise, participant productions and implementing analysis methods, etc.), we demonstrate the importance of the thought process, which accounts for the mental representations of the different actors and favours social interactions, which is important for the success of such networked education.

We present the benefits the management of education projects can obtain with methods aiming at developing in all participants a culture of critical analysis and reflexive thinking. We think that steering ~~(the thought process as)~~ a *learning organization*, considering continuous learning as a central value and operational method, favours the professional development of teacher educators. <-- do you really want to steer the thoughts of participants ?

KEYWORDS

Teacher education, management of innovative projects, reflexive approach, professional development, collaborative learning, social interactions, learning organisation, media education, life long learning.

1. INTRODUCTION

Since the beginning of the F3-MITIC project, we postulated that a system, which ambition would be to *work as a learning organization*, should promote *collaborative learning*, development of *reflexivity*, *priority of pedagogy* over technology as well as exchanges between participants and the recollection and building up of experience (*collective memory*). We present here the development status of this system after three years of activity.

1.1 Brief description of the project F3-MITIC

F3-MITIC is a learning process for teacher of teachers (F3) in media, image and ICT (MITIC) started by the Canton of Geneva Education Department. The aim of F3-MITIC is to develop the motivation and competencies of teaching professionals to provide courses to further teachers or to operate as resource-persons in teaching institutions.

The project is part of the general program aiming at integrating pedagogical use of media, image and ICT in the teaching and learning processes at all education levels. It is an attempt to answer the growing needs in education of teaching personnel in this field (Morel, Domenjoz, Lachat *et al*, 2003).

¹ F3-MITIC is a learning process for teacher of teachers (F3) in media, image and ICT (MITIC)

This education system named *Public-Private-Partnership-School on the net*, was created under the initiative of the Swiss Confederation, the Cantons and private economy for the 2002-2007 period. It aims at developing competencies at all basic levels in term of ICT and media teaching. The F3-MITIC project is supported by the Federal Office for professional education and technology (OFFT).

1.2 Basic ideas for the system set-up

The setting up and steering of a new learning system is a complex process threatened by multiple pitfalls (defensive routines, logistics, "polite interest" from the authority, simulation of a learning stance, fear of changes, difficulty to assume various roles, etc.).

It was all together necessary:

- To elaborate the outlines of a learning system in an established institutional setting
- To gather a team able to develop the thought process and to organise the contents of the learning system in practice
- To control the learning environment
- To assist the participants day by day
- To keep on target meeting the original project

Encountering difficult situations kept us in a constant research process and forced us to continuously look for new ways of improving our strategy in a systemic perspective.

2. GENERAL FRAMEWORK

The learning system became progressively more complex throughout the years until its current format. The synthetic representation of its main components is described as: *a learning area*, which goal is to offer a setting for the development of knowledge and competencies of the learning teachers, *the steering* of the system includes the project manager and the coordinator, who are both collaborating with the representatives and the external advisor expertise taking part to the development of the project. To ensure building up of available information, we created a *communication platform* to carry out the interface among actors involved.

Figure 1. System components

Project partners, steering and monitoring system, communication platform and learning area

2.1 The partners of the project

The project was created by the Service Ecoles-Médias (SEM) at the Geneva Education Department in setting-up a partnership with the Canton of Valais. As described above, this project was generously supported by OFFT, who's responsibility is to regularly check that the project is developing according to its initial objective (*controlling process*). Since the beginning, the University of Geneva and some private partners were associated with the development of the project.

2.2 The steering

Steering the system is ensured by the *Steering Committee*, which includes delegates from the teachers staff department and a joint commission (authority/trade union) of the continuous education services, institutions ensuring initial education of teaching professionals, the SEM managers (responsible for the project) and the *project manager*. The *coordinator* of the *Steering Committee* carries out the follow up of the working group and works closely with the *project manager*, who assumes the setting-up of modules and follow up of the learning participants.

The system benefits from input of external advisors. Every year the team responsible for the project writes a final report to the controlling authority on the basis of data collected by evaluations done throughout the year at different levels. This document evaluates the results in relation to the initial objectives and presents a financial summary.

Geneva University staff and advisors from the private sector are associated to the project. Several studies supervised by Prof. Daniel Peraya (Geneva University) on the analysis of scenarios created by learning teachers, on the analysis of new modalities created for teaching and its steering as well as evaluation of the needs of teachers of teachers and resource-persons at the Education Department have helped us to put this project in place.

Several external advisors from private partners provided their knowledge for the teaching and took part in the analysis of the modules (participating observers) as well as the evaluation of the learning process at the end of each year. The observations of modules were done through the “scope” of *adult education* and the “gender scope”. Indeed, one of the specific objectives of the *learning system* is to develop the participant’s sensitivity to the gender issues. The outcome from these partnerships was available to the participants and many cantonal officers and were discussed in the Steering Committee meetings. The outcomes provide the project managers with valuable information and advice in order to step back if necessary and constantly innovate to improve the system. The outcome from these partnerships is essential to the steering of the system in view of a learning organization.

In order to give a feedback to the learning teachers, we created a *readers forum*, which provides hints on elaborated pedagogical scenarios. The reader is considered as a “*critical friend*”, a partner able to provide advice and support to other learning teachers in a cooperative way. In F3-MITIC, the “reviewer friends” are the people who already completed the same learning process. (Kember *et al*, 1997).

At the end of the learning process, each participant presents a reflexive work (reflexive personal final report) to an international college of experts, who are active in the field of MITIC pedagogy. The experts discuss and comment in public the participant’s work and deliver a synthesis report. This presentation day aims to be a step in the certification process and a period of reflection.

2.3 The communication platform

To collect, build up and emphasize the experience from the research, the learning teachers productions and the resources provided by the organizer, we created an exchange and communication network. This system aims at the *creation of a shared culture by the actors*, to exchange information with our different partners and finally to keep in touch with the teachers who already completed this course.

It is important to dispose of ways to collect, manage and provide information in and out of the system in an efficient way in order to enable our system to evolve.

The communication tools currently used are:

- A web collaborative tool (Twiki)
- A publishing tool (SPIP) for sharing pedagogical scenarios
- A “classic” website to present the learning system
- Electronic mail

The web site provides documents presenting the learning system. It is a static site today. The electronic mail, besides the interpersonal communication among learning participants, persons in charge and partners, is an important monitoring means since participants only meet every two or three weeks for the courses (modules). Electronic mail is used for all memos sent by the project manager and the coordinator to the participants on a need basis (due dates, technical information, announcements, general information).

The intense reflection and creativity expressed in this professional development environment throughout the year is evidenced by the important usage of the Twiki and SPIP applications:

Table 1. Usage of the communication tools Twiki and SPIP

Role as	Twiki (collaborative web)	SPIP (Content Management System)
participants	to write personal pages to evaluate each module to contribute within each module to post suggestions to participate in a chat to write the reflexive personal final report to discuss in the forum	to elaborate scenarios to write a report on the creation of the scenarios to publish scenarios to discuss in the forum
project manager, project coordinator	to dispatch reference documents to post practical hints to display resources to save archives to pilot and monitor the participants	to discuss in the forum

	to discuss in the forum	
readers ("critical friend")		to give feedback reports to discuss in the forum
educators	to display resources	
researchers, observers	to share study cases and reports	to publish study cases and reports
experts	to give reports and suggestions	

3. THE LEARNING AREA

At the centre of the learning system, we have an immaterial entity which corresponds to an attitude that we constantly try to develop and which is at the heart of the learning F3-MITIC GE/VS - system values: *the reflexive approach*.

Figure 1. The learning area

The steering and monitoring system, the communication platform, the components of the learning system (modules on different themes, elaboration of teaching/learning scenarios in groups, exchange modules on scenarios, assessment day) and the tools for the reflexive approach (evaluation of each module, personal log, reflexive personal final report-RPFR)

The learning program spreads over a complete school year and is available for a maximum of 25 teachers per class. The professional development curriculum includes taking part to 11 one-day thematic modules, the creation *in duo* of 7 pedagogical scenarios and the writing of a reflexive personal final report, which is defended in front of a committee of experts. These thematic modules are completed during the year by 3 half days of exchanges to sum up the pedagogical scenarios created by the participants. A certification ceremony day ends the learning year. In order to keep in track the participants in the learning process, they are invited to maintain a personal log book. The program presents a total of hundred hours of direct tuition in addition to 150 hours of distant collaborative work.

3.1 Eleven thematic modules

The thematic modules offer the participants theoretical inputs and thoughts for the creation of specific strategies at the adult education level. In this perspective reflexive analysis and criticism of the experience gained from each modules is a very important component of this teaching system. According to the collaborative working approach, the 11 modules themes are: --> **where are the eleven modules ?**

- Status and roles of the media, image (MI) and ICT (TIC) in teaching and learning
- Cultural and social impacts of MITIC integration in education
- Information and communication systems, modelling and simulation
- Multimedia and Internet: integration of technologies in the learning process
- Adults education

For more information: <http://www.edu.ge.ch/cptic/f3mitic>

3.2 Creation of pedagogical scenarios

Each module is organised on a theme. It is the opportunity for the participants to develop in duo (team working) a pedagogical scenario on a new project using MITIC in teaching/learning. This thought process aims at emphasising the *creation of specific strategies* for adult education and reveal transdisciplinary uses of media, images and information and communication technologies in education.

A *pedagogical scenario* is a way to explain and communicate a learning project integrating MITIC activities. The scenario must describe in detail how the authors imagine creating a learning situation. The scenario is organised for determined learners. The notion of scenario can encompass the terms of project, pedagogical sequence, pedagogical uses, learning-teaching tools such as those usually included in pedagogy. The *reflexive*

and critical analysis of this live experience in each of the modules is an important component of the learning process.

In the process of learning, the creation of scenarios plays an essential role. The scenarios are seen more as a learning activity helping each participants personal development, rather than a way to evaluate the product to be publicised. Therefore, all means able to help trigger a feedback are valorised (reader reports, exchange day, additions to the scenario, other participant's reactions via the forum) because they are the privileged means to develop the participants competencies. The scenario should thus be a reflexive way of learning and an opportunity to put in action a pedagogical project.

After having created each scenario and after having presented it to the group, the authors are invited to come back to it and to produce a short report summarising their thoughts, this "post scriptum" is then added to the scenario.

3.3 Exchange modules

The *exchange modules* are an opportunity for the participants to analyse the scenarios they created and to develop a reflection on themes chosen by the managers of the learning system. The participants can also experiment the use of models developed by TECFA (University of Geneva) and others *to analyse and to criticise the modules* in a constructive way. In the learning process, the exchange modules are privileged periods allowing the participants to *share* experience, to try to enter scenarios of colleagues as well as to *identify* their knowledge and lack of knowledge.

3.4 Certification ceremony day

At the end of the year, participants who followed the entire course successfully are to present their reflexive personal final report to a college of experts. This day is dedicated as much to reflexion and sharing of experience as to the official certification. It brings the class and invited people together: members of the steering group, State officers, research advisors.

At a round table, participants present their oral contribution emphasising a chosen aspect of their learning process and discuss it with the experts. This moment represents the culmination of a reflexive work conducted throughout the year by the participants.

4. THE REFLEXIVE APPROACH

The system presented essentially aims at enabling the participants to acquire a reflexive and critical attitude from the very beginning of this education system. As Philippe Perrenoud, inspired by Schön's work (1983), showed in several books and papers, it is essential to put the reflexive practice at the centre of the learning project in order to reach a true professionalization of teacher educators (Ph. Perrenoud, 2001). We therefore elaborated multiple means to stimulate the development of the participant's state of mind presented here. We not only encouraged the participants to develop this state of mind, but the organisers also submitted their own activities to these reflexive procedures so as to get their own feed-back. The constant analysis of activities and their critical review is for the people in charge of steering the learning process, essential in order to allow its evolution.

4.1 Evaluation of modules to module analysis

From the first year, asking for a feedback and an evaluation of each module, was a constant concern and in coherence with the general view of learning monitoring. This satisfaction survey model rapidly showed its limits. It appeared to the organisers that to take into account the specific teacher of teachers attitude, a *reflexive dimension* should also take place in the feedback suggested at the end of each module. The *module analysis* concept in use today answers practical expectations. It is based on:

- Feeding the personal Log Book
- Sharing the different points of view on the learning process
- Emphasising reusable facts and knowledge in the scenarios

The organisers therefore suggest an oriented reflection in order to put forwards pedagogical, methodological, institutional, organisational, etc. aspects, so that the participants can position themselves away from the learner attitude and acquire a teacher or resource-person profile. It is necessary to ensure steering of the learning process in the short and long run through directed or open questions and through an exchange of information between participants, organisers, and teachers.

However, the concern to emphasise relevant elements in the contents (meaning) is increased by the organisers concern to offer the learning teachers:

- Various reflexive tools to analyse learning situations (models, indicators)
- Feed-back processes (written, oral, graphic, mandatory, optional, reactions to organisation auto-evaluation).

In order to adapt to real life situations and to the steering needs, **evaluation** questionnaires are used for each module.

The module evaluation by the learning teachers is completed by the external expert's observation reports and the evaluation day at the end of the year.

4.2 Personal Log Book

F3-MITIC learning system participants are invited to keep a personal Log Book throughout the year. This Log Book seems well adapted to collect information in the adult education process. According to Daele (2000), the Log book is a personal tool which contents can be freely shared with everyone. It is a document, which should be, a reflexive tool as well as a self-evaluation tool. It could contain reflections about concepts discussed in the modules, notes on interactions (observations, opinions, reactions, etc.) and encountered issues (understanding, collaboration, formation evolution) or personal feelings. The Log Book should help to better evaluate the progress made and be a valuable resource while producing the personal final report.

4.3 The personal reflexive final report

At the end of the F3-MITIC education, each teacher under training writes and presents a personal reflexive final report in which he/she brings a critical look at his/her training path and situates him/her-self in the learning process. This personal report therefore identifies acquired competencies, deficiencies and personal needs, explains why the learning process shifted his/her representations or practices in term of the following parameters:

- MI and ITC fields complementarities
- Adult education specificity
- Pedagogical process diversity
- Transversal competencies implementations
- "Collaborative" type work

Participants can select out one of the five parameters without ignoring the others. They are free to emphasise for example in class work (module) or distant work (creation of pedagogical scenarios). The personal final report is the result of a reflexive and analytical process which the participants are invited to practice throughout the F3-MITIC curriculum. The personal final report therefore *interacts* with other documents which the participants produce during the learning process such as:

- Pedagogical scenarios which evidence the reflection conducted for each module
- Module evaluations carried on as a self-evaluation of one's own conduct of the learning process
- The personal Log Book

At the end of the year, all participants meet to present their work to the project manager, the coordinator and a group of expert. Attendance to this day is compulsory for certification.

5. LEARNING ORGANISATION

5.1 A research-action perspective

Thanks to the support provided, the learning system was able to develop a research component, which lead to studies and analysis of the system itself and its environment (observation, modelization, and advice) which constantly fed the reflection of the steering staff and the learning participants. This thought process allowed us *to build an inside expertise*, which lead to enrichment of the steering tools. We also relied on partnership with our University and the private sector for their expertise. Since the beginning, we adopted in our work an *action research learning* perspective following Kurt Lewin works.

5.2 Towards a learning organisation

A *learning organisation* considers the *systemic approach* and permanent learning including its operational processes as its central values. It uses groups of participants for its *continuous development*; sub-system's learning at all levels, with the external support (Senge P., 1990).

Our learning system tends more and more to apply a definition of the learning organisation in line with Alain Bouvier's (Bouvier A., 2004) suggestion :

“une organisation intelligente ou apprenante est un système d'actions, de conduite de l'action et d'apprentissages collectifs, qui s'organisent pour apprendre en permanence, capitaliser ses savoir faire et ses compétences, pour les transmettre et se transformer volontairement pour atteindre ses objectifs en fonction des évolutions de son environnement, de ses ressources, de sa culture et des représentations des groupes d'acteurs en son sein. Pour cela, elle s'appuie sur les techniques de résolution de problèmes, les simulations et les expérimentations, la régulation de ses procédures, la remise en question de ses processus (par opposition à une approche centrée sur les tâches ou sur la stratégie) et sur une adaptation permanente à son environnement. Elle s'inscrit dans le paradigme systémique et la pensée complexe (au sens d'Edgar Morin). Elle assure une veille épistémologique, ontologique, éthique, scientifique et technologique”.

5.3 The foresight spirit

Over the past years, passionate talks took place in our *learning system* group about the role and importance of creating scenario units.

As creating the future presupposes banishing the lack of foresight in order to avoid being put under pressure or faced with obsolescence, innovation in pedagogy must follow the same pattern.

It is indeed well known that facing the uncertainties of future potentialities (evolution of the public educational system, integration of MITIC in teaching and learning, etc.) the three main attitudes could be:

- Remain passive (**undergo** changes) <-- why passive ?
- Be reactive (wait for changes and act)
- Be prospective in the sense of pre-activity (be prepared to an anticipated change) and pro-activity (provoke the desirable change).

The main basic characteristics of a foresight stance are:

- A pluridisciplinary systemic inspired attitude
- The will to consider the “long term” dimension
- The will to integrate breaks (threshold effect, rule modification, innovation, etc.)

6. CONCLUSION

The survival of an innovative system is often related to the possibilities there are of transforming the institutional setting in which it is included. It therefore implies the need to be able to force changes in other actor's minds. This is why interfaces such as, in our case, the “steering committee” are of such importance. This is a *strong constraint*.

The F3-MITIC experience is part of an inevitable process of *teaching staff professionalization* at all levels. This phenomenon is reinforced by the evolution of the setting in which the educational system takes place, such as the world becoming more and more dynamic and demanding regarding information, knowledge and communication tools. For our population of teachers this means acquiring new pedagogical, technological, communicational, organisational and citizenship competencies. The concern regarding professionalization is therefore very important.

In term of *learning organisation management*, it is more and more obvious that it becomes essential to review the steering system which cannot only rely on quantitative and economical criteria, but needs to turn towards basic criteria, values and strategies involving all participants of the system so as to make them actors of their own learning.

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