

Adoption of Technology Enhanced Learning (TEL) in Higher Education: Influences of Institutional Policies & Practices



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Overview

Terminology Issue

The Study

- Purpose, setting, researcher roles, participants
- Literature review
- Theoretical framework » research questions
- Research design & data analysis
- Participants & perspectives
 - **Focus group process model » purposeful sampling**
 - **Excerpts from case studies » common themes**

Common Themes: Cases + TEL documentation

Discussion & Implications



So many terms, so little time...



- e-Learning
- Technology enhanced learning (TEL)
- ICT in learning & teaching
- Online / Web-based learning / education
- Computer-mediated learning technologies (CMLTs)
- Computer-assisted learning (CAL)
- Computer-assisted collaborative learning (CCL)
- Networked Learning (NL)

And ...

Blended Learning: “the integration of on-campus and online education for the express purpose of enhancing the quality of the learning experience”

Vaughan, N. & Garrison, R. (2006).

The Study (1)

Purpose

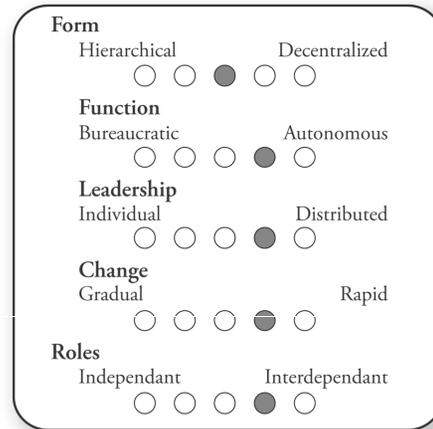
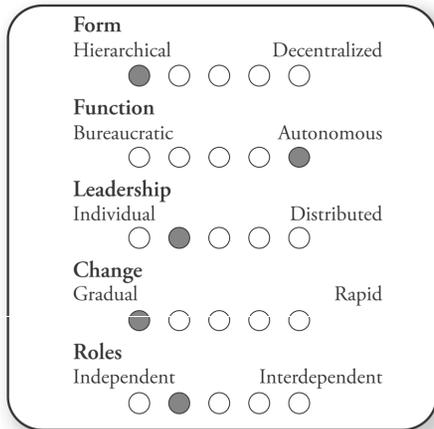
- Examine the influences of organisational policies and practices on faculty choices around adoption of TEL in HE.
- 4 organisational dimensions
 - Structures
 - Cultures
 - Pedagogies
 - Economies (reward systems)



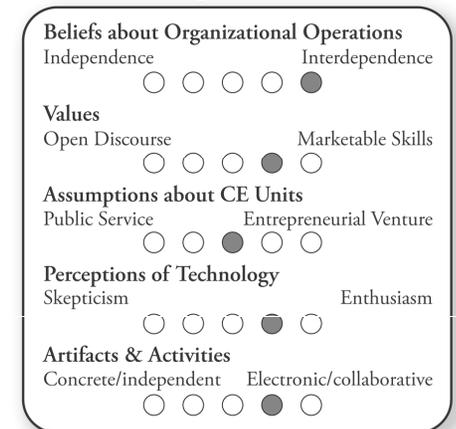
The Study (2): Lit. Review Pre- & Post-TEL Organisational “Positions”



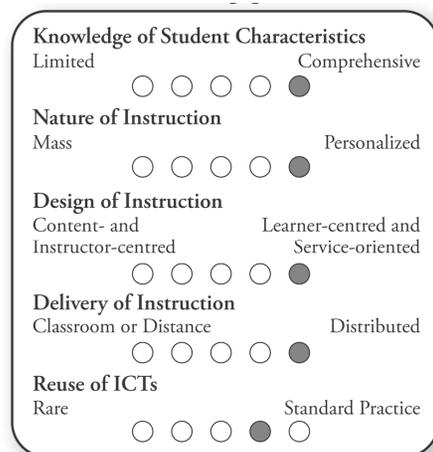
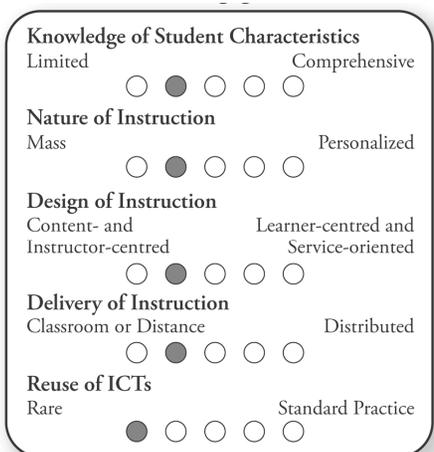
Structures



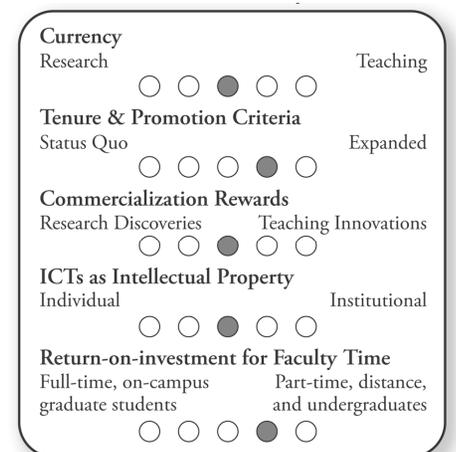
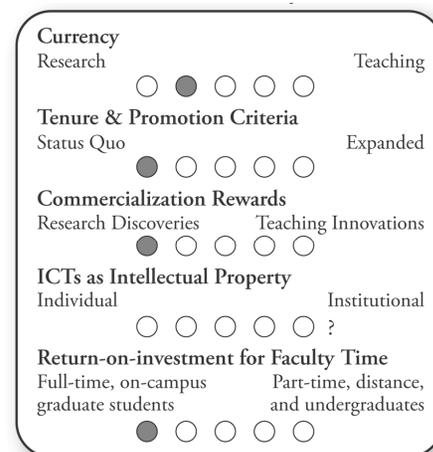
Cultures



Pedagogies



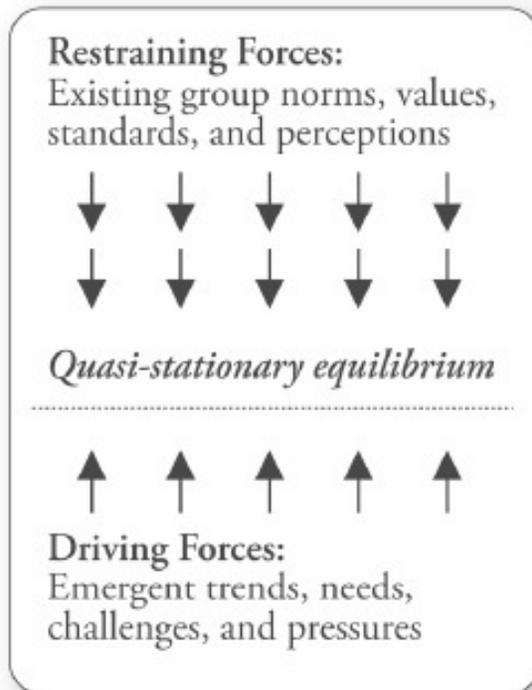
Economies



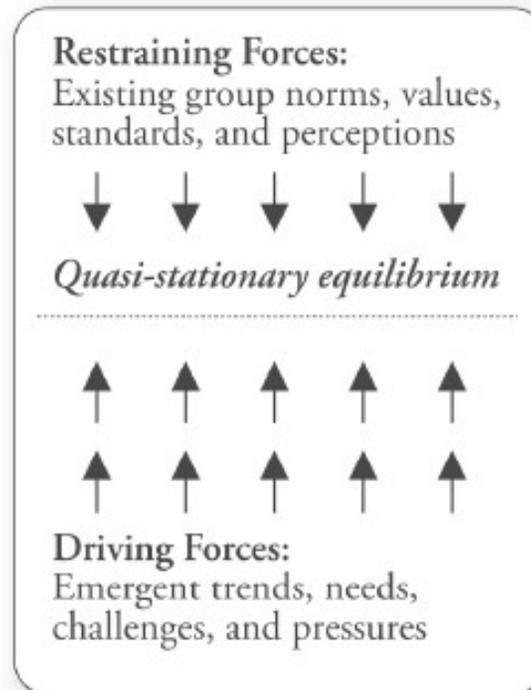
The study (3): Theoretical framework » Research questions



Timeframe 1



Timeframe 2



Research Questions

- Motivations
- Scholarship / approach philosophy of teaching
- Academic / career return on investment
- Institutional supports / barriers to TEL

Relative strengths of driving and restraining forces for change over time:
Adapted from Lewin (1951, pp. 198-208)

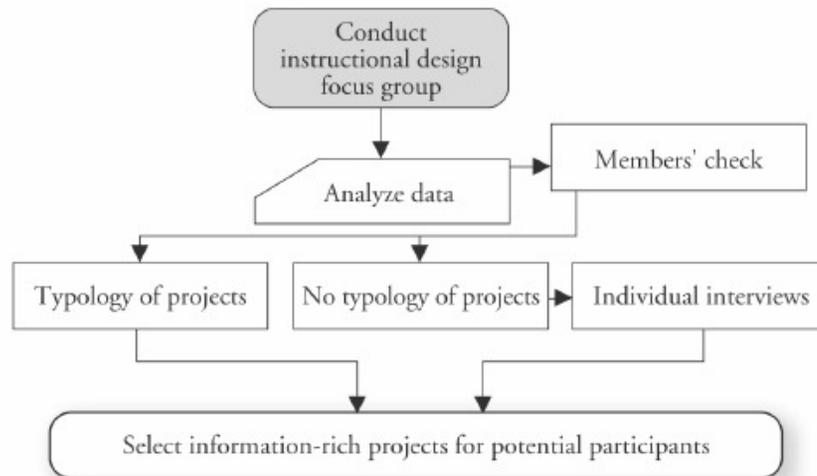
The Study (4): Setting & Researcher Roles



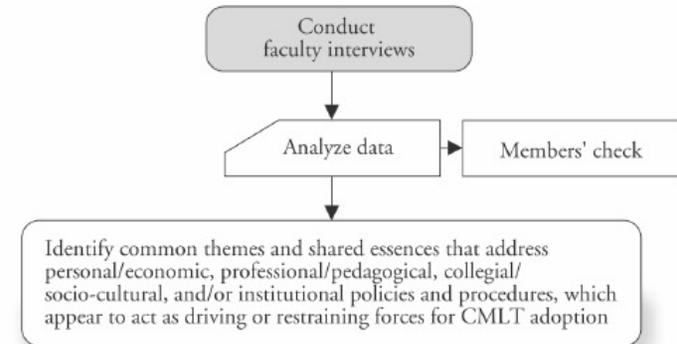
- **Macro:** 5-year (2000-2005) provincially funded TEL development programme across CE, FE, & HE settings
- **Messo:** Focus on policies & practices in one mid-sized research oriented Canadian university
 - ~ \$4.5 M funding to the research site
- **Micro:** In-depth investigation into 9 case studies
 - Purposeful selection of case studies
 - **8 educational technologists (Design, Media, & IT)**
 - **9 HE teachers from 9 academic disciplines**
 - Formal data collection & analysis over 2 years
 - “Lived experience” – full 5 years
 - Researcher roles = Aware observer + Full member researcher

The Study (5): Research Design

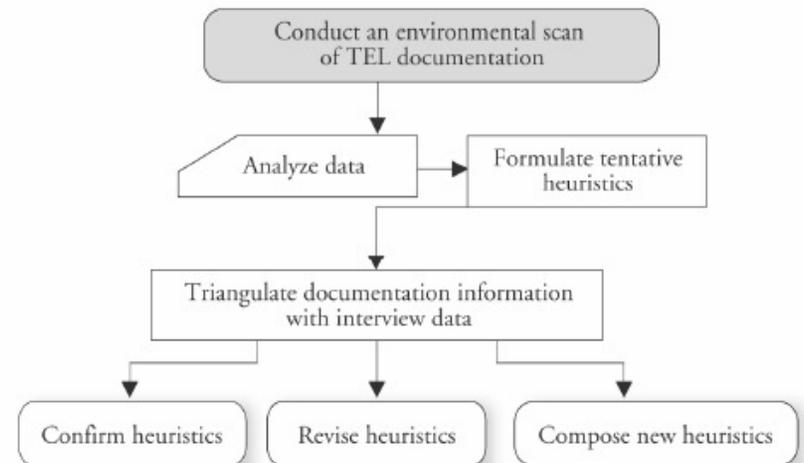
Stage 1: Data Collection & Analysis



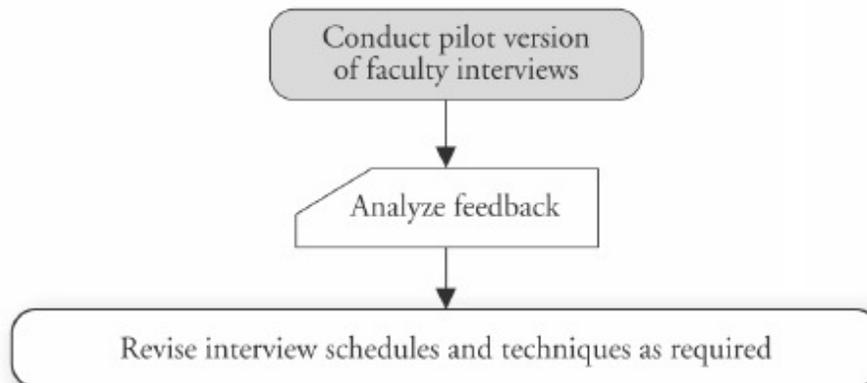
Stage 3: Data Collection & Analysis



Stage 4: Data Collection & Analysis



Stage 2: Data Collection & Analysis



The Study (6) FG Data Analysis



Plan A – Try the Animation

Plan B – Subsequent slides

The Study (6): FG Data Analysis



Process of creating a shared vision

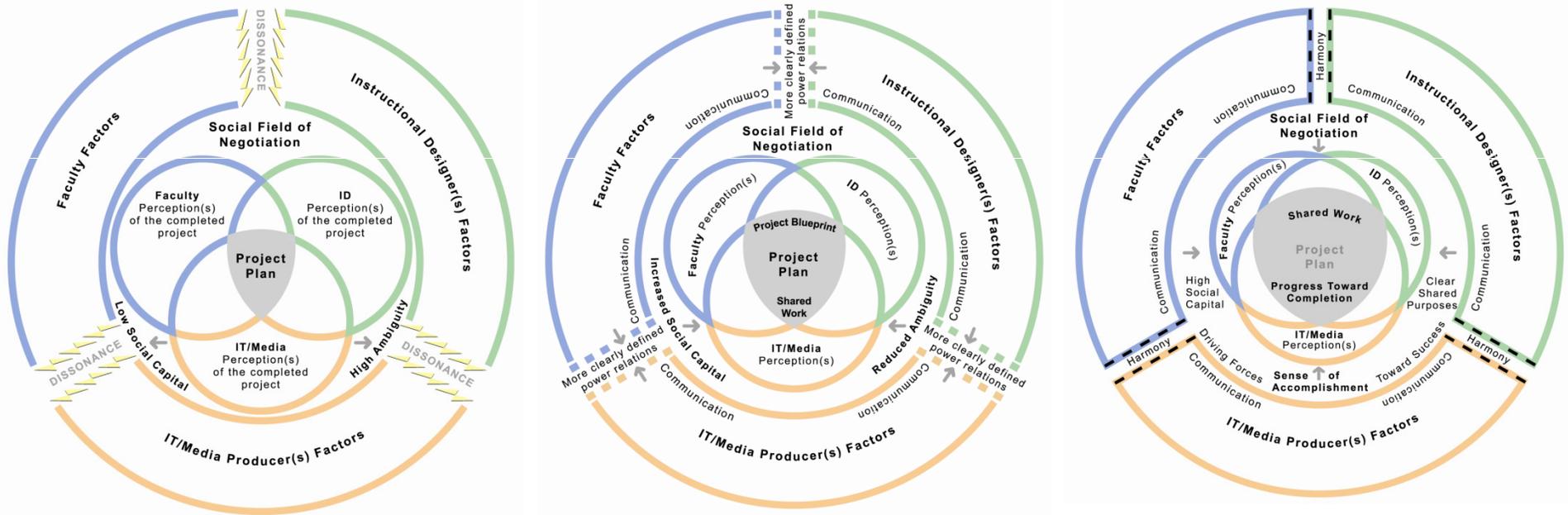


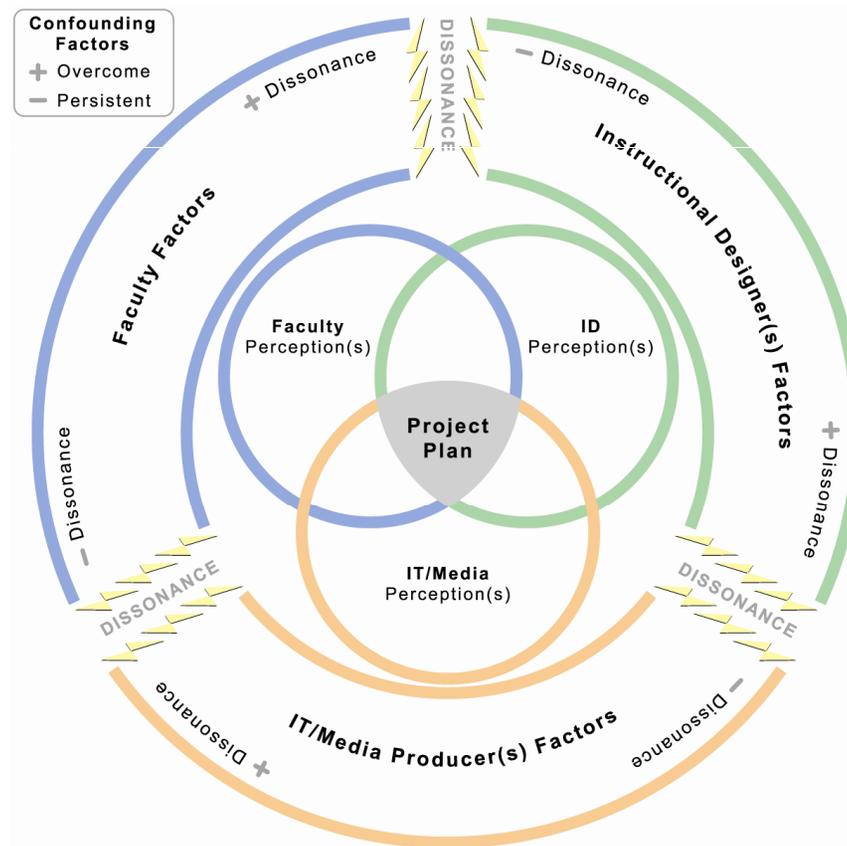
Fig.1: Natural Beginning Point Fig.2: Work Underway Fig.3: Moving Toward Completion

Unfreezing: SQ is Independent teaching Moving Refreezing: Teamwork as new SQ

The Study (7): Purposeful selection of cases



Typical, critical, and controversial cases – had to do with social negotiations, human relationships, confounding circumstances



The Study (7) – Case Study Data



Participants' Perspectives:

- Motivations for adopting TEL into teaching practice



- Case Study 1 (A-1) - Dentistry



- Case Study 2 (A-2) - Education



- Case Study 3 (A-3) - Veterinary Medicine



- Case Study 4 (A-4) - Chemistry

Case study transcripts are included in the handouts as appendices

Predicted Pre & Post- TEL 'Value' Positions - 1



Organisational Structures

Pre-TEL

Form					
Hierarchical	●	○	○	○	○
Decentralized					
Function					
Bureaucratic	○	○	○	○	●
Autonomous					
Leadership					
Individual	○	●	○	○	○
Distributed					
Change					
Gradual	●	○	○	○	○
Rapid					
Roles					
Independent	○	●	○	○	○
Interdependent					

Post-TEL

Form					
Hierarchical	○	○	●	○	○
Decentralized					
Function					
Bureaucratic	○	○	○	●	○
Autonomous					
Leadership					
Individual	○	○	○	●	○
Distributed					
Change					
Gradual	○	○	○	●	○
Rapid					
Roles					
Independent	○	○	○	●	○
Interdependent					

Participants' Perspectives: (A-5) : Leadership (Q) Pace of Change (Q) Roles

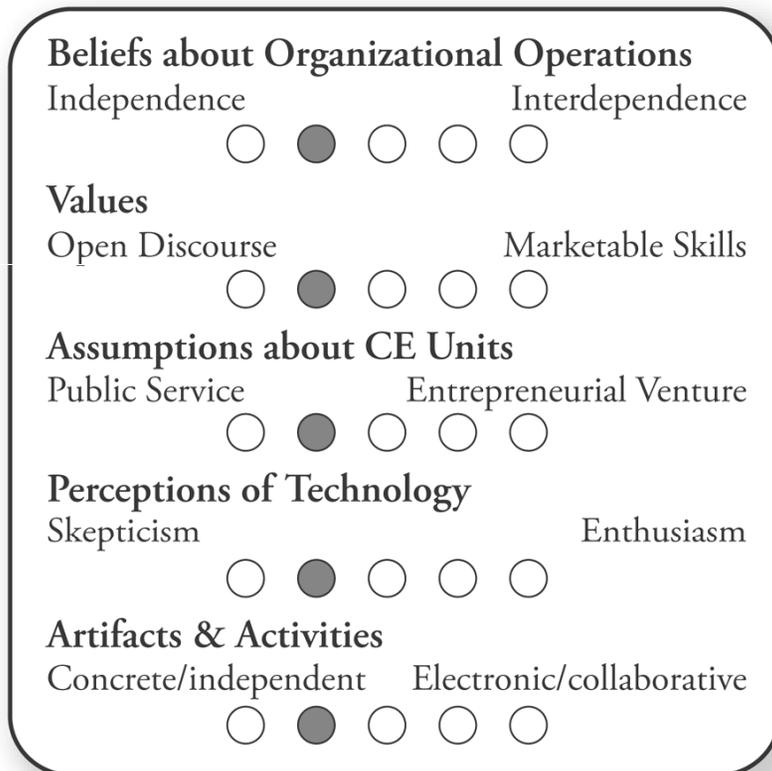


Predicted Pre & Post- TEL 'Value' Positions - 1

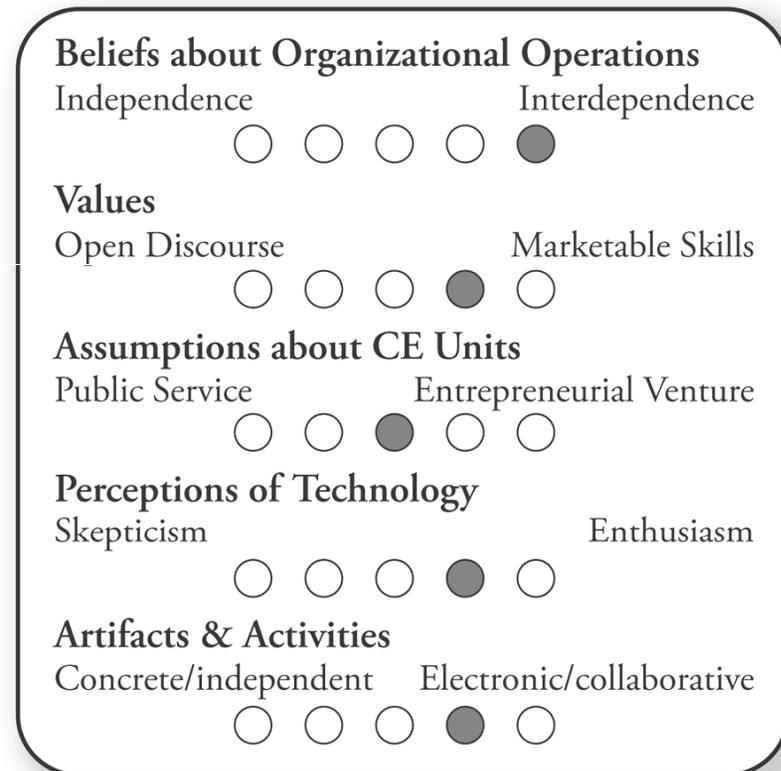
Organisational Cultures



Pre-TEL



Post-TEL



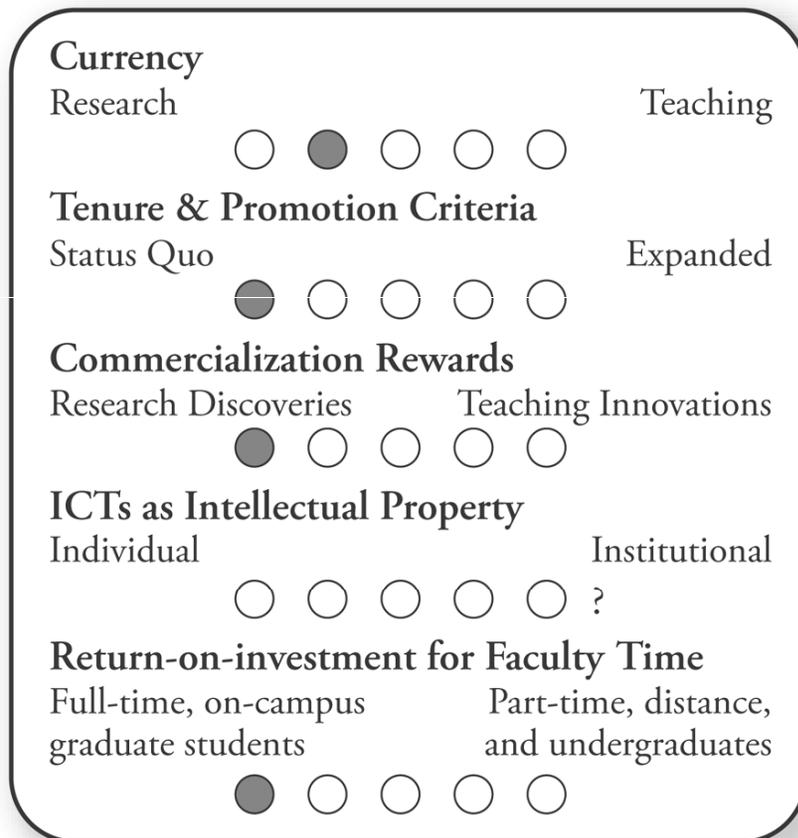
Participants' Perspectives (A 6) - Perceptions of Technology 🗣️ & (Q)
Artefacts & Activities (A 7) 🗣️

Predicted Pre & Post- TEL 'Value' Positions - 1

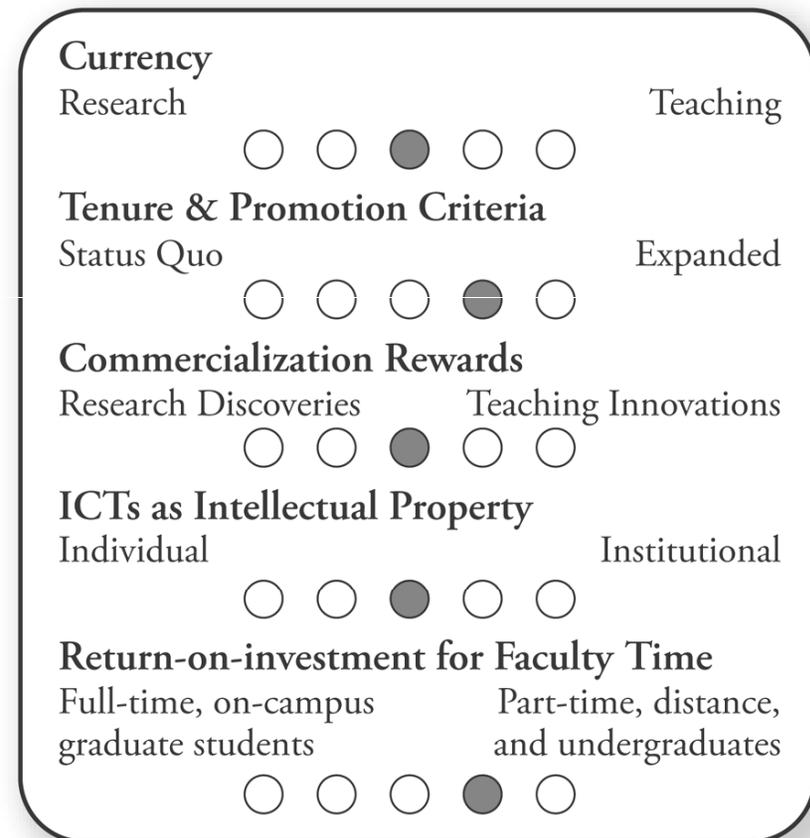


Organisational Economies – Reward Systems

Pre-TEL



Post-TEL



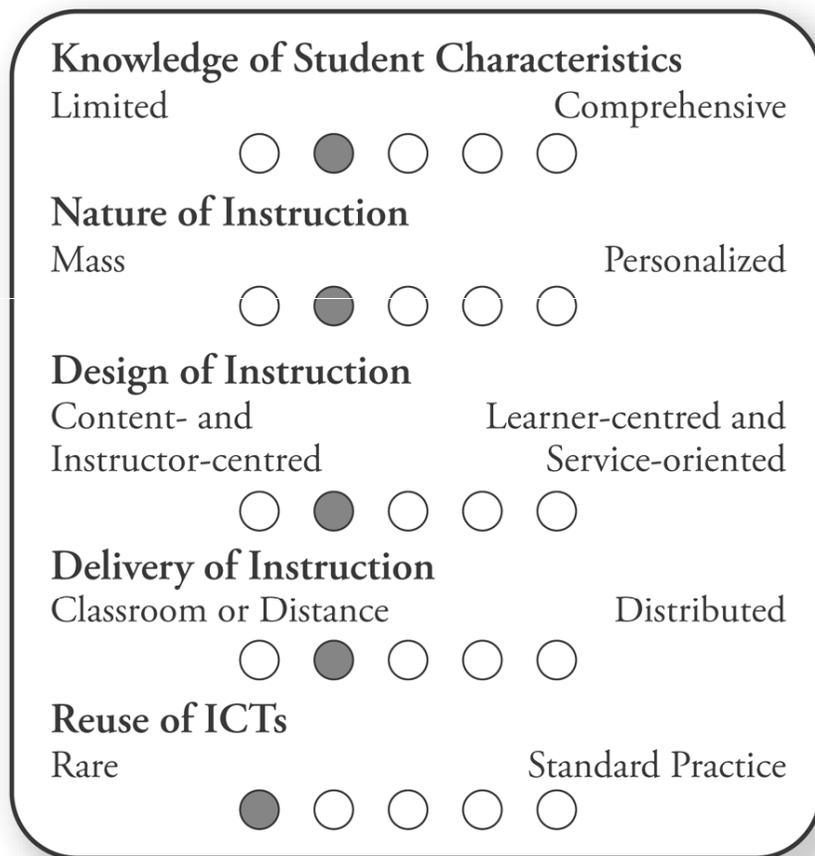
Participants' perspectives - IP & Return-on-Investment (A8) 🗣️ Teaching/Research (Q)

Predicted Pre & Post - TEL 'Value' Positions - 1

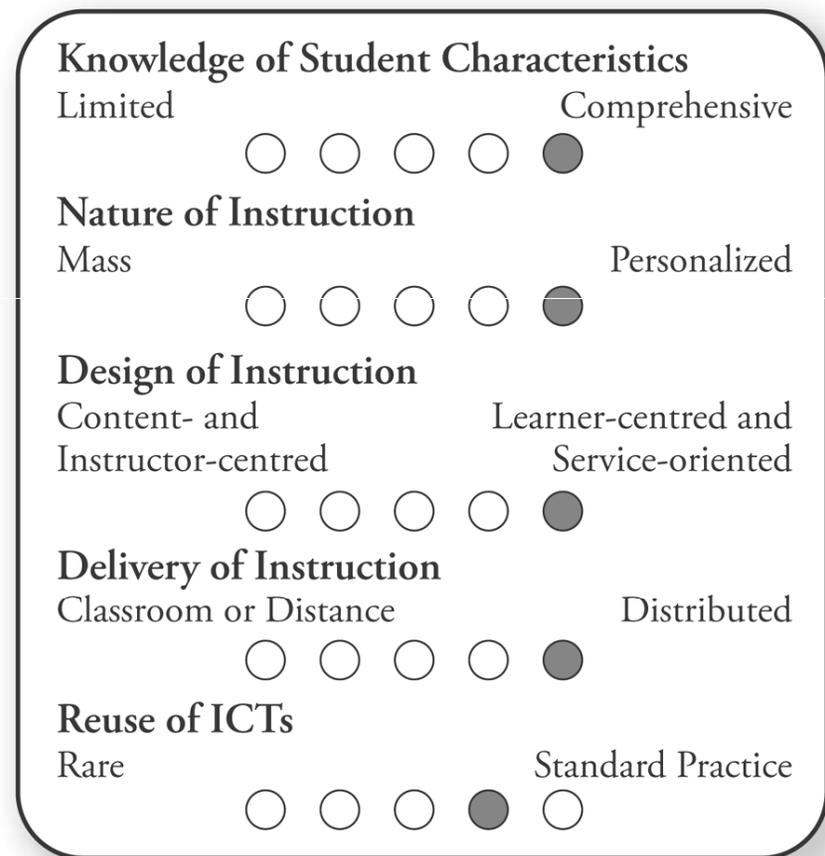


Pedagogical Praxis

Pre-TEL



Post-TEL



Participants' Perspectives: Nature & Delivery of Instruction (A9) (Q)
Reuse – Sense and Serendipity (A9) (Q)

Stage 4 – Common Themes: Cases & TEL documentation



Faculty Motivations

- (1) Responding to institutional and/or departmental initiatives
- (2) Course content development or renewal
- (3) Enhancing and expanding opportunities for student learning experiences.

TEL influences on teaching & learning

- (1) Increasing independent learning skills
- (2) Providing flexible learning options
- (3) Providing a better/enriched learning experience
- (4) Identified need for research into quality and effectiveness of new approaches

Return on Investment

- (1) Lack of faculty time as a “large” institutional barrier
- (2) “Lack of institutional incentives or recognition for faculty efforts

Institutional structures, cultures, and policies

- (1) Concerns that TEL undermines quality of teaching and learning
- (2) Lack of ongoing technical and administrative support
- (3) Concerns about intellectual property and copyright

Discussion: (1) Organizational Structures & Functions



- **Divergent Macro-Micro-Mezzo-level measures of success:**
 - Macro – Quantity (2000 TEL projects in 5 years)
 - Messo – Accountability (Each project on time and within budget)
 - Micro – Quality (Educational value & effectiveness)
- **Divergent Mezzo-Micro goals**
 - Messo – Focus on research, publication, clinical duties, advising grad students, classroom teaching
 - Micro – Focus on TEL development and innovation in teaching
- **Tensions between bureaucratic and autonomous organizational functions as barriers**
 - Messo-Micro tensions:
 - A one-size-fits-all institutional approach to TEL development caused a great deal of unhappiness
 - Curricular standardization led to disputes about relative levels of academic freedom based on employment status

Discussion: (2) Organizational Cultures



- Poly-cultural nature of the academy
 - Variant levels of skepticism, fear, and a misunderstanding of technology enhanced learning across college settings
 - Provision of resources for research / evaluation activities as core components of TEL development projects could mediate these concerns
 - Dissemination of information from early adopters' experiences
 - Recognize and respect differences in collegial settings and pedagogical cultures across the institution
- Implication
 - A very general institutional e-learning strategy, combined with sub-strategies, which respond effectively to variant disciplinary cultures and their specific needs

Discussion: (3) Organizational Economies (Institutional Reward Systems)



Lack of institutional recognition and rewards

The relatively “public” and pervasive nature of TEL:

- A sense of vulnerability / quest for perfection
- Significant time investment in renewing content via literature reviews & consultation with peers
- Time commitments to innovation: design and development process
- Expanded time commitment competes with existing scholarly duties

Problematic intellectual property policies

Implications

- Revised tenure and promotion criteria & intellectual property policy

Discussion: (4) Pedagogical Praxis



- Information-sharing across disciplines and colleges, for example:
 - Blended learning approaches to small-group tutorials
 - Use of peer-to-peer discussions for knowledge construction
 - Criteria for selecting appropriate curricular content for independent study opportunities
- Implication
 - Interdisciplinary discourse may be able to advance TEL in teaching & learning practices in higher education

Resources



Parchoma, G. (In press). Leadership strategies for coordinating distance education instructional development teams. In D. Kennenpohl & L. Shaw (Eds.) *Teaching Science at a Distance*. Athabasca, Canada: Athabasca University Press.

Parchoma, G. (2007). Visualizing ICT change in the academy. In E. MacKay (Ed.). *Enhancing Learning through Human-computer Interaction*. Idea Group: Hershey, PA, 1-20.

Parchoma, G. (2006). A proposed e-learning policy field for the academy. *International Journal of Teaching and Learning in Higher Education*, **18**, 3, 230-240.

Parchoma, G. (2008). *Adoption of technology enhanced learning in higher education: Influences of institutional policies and practices*. Saarbrücken, Germany: VDM Verlag.



Thanks for your time.

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Appendices



1. Case Study 1: Dentistry
2. Case Study 2: Education
3. Case Study 3: Veterinary Medicine
4. Case Study 4: Chemistry
5. Case Study 5: Computing Science
Case Study 4: Chemistry
6. Case Study 6: Interdisciplinary Masters in International Trade
Case Study 3: Veterinary Medicine
7. Case Study 2: Education
8. Case Study 7: Psychology
Case Study 8: Nursing
9. Case Study 9: Native (Aboriginal) Studies
Case Study 5: Computing Science

Further Thoughts...

10. LU e-learning strategy
11. Blended learning in practice

Appendix - 1

Case Study 1: Dentistry transcript from Slide 11



It started in a very simplistic way in that I was aware that there were people...who were doing more interesting teaching, using more interesting teaching technologies than the standard chalkboard approach to delivering a standard lecture. I had gotten a bit bored with my role as a teacher in that way. When [a colleague] approached me to say that he was aware that I had been involved in a continuing education weekend, “Could we possibly get my talk, jazz it up a little bit with some new technologies, and put that as a learning piece for continuing education?” So that is how I was innocently drawn into this web of using technology.

I felt that there was something lacking in the standard approach, something lacking in the eyes of the students. That sort of dullness. You see them so bright and alert when they first come into dental school. So keen. As we get towards the end of the first year, ... you see that fire lost. I think that that is one of the greatest disasters of the educational system... I mourn the loss of that fire. I am not sure that even with all of the technology we have that we have completely found a way of capturing that back again.... Anything I can do to make that better—my efforts have been pathetic over the years—so bring on anything that we can do to keep that fire alive.

Appendix - 2

Case Study 2: Education – Interview transcript from Slide 11

- but as an educator, I am always open to alternative ways of reaching learners. As a scholar in higher education, it is not new news to know this is already the norm in many graduate-level programs. And also, I struggled when I came here with the amount of teaching that is done on Saturdays. I seemed to me that that was the alternative program here for reaching learners, which I wasn't necessarily or entirely comfortable with. I don't mind giving up a couple of Saturdays for students, but not every second Saturday, and I have done that for three years now. So every second Saturday because as you know I maintain a home in [another city] So what I am saying is that the TEL initiative and online delivery using WebCT became attractive to me as providing one more way to reach our grad students.
- Researcher: And flexible working conditions for yourself, eventually down the line.
- Randy: Right. That was a big factor this with this year in particular. My first year here, I focused on teaching and I was very much drawn to traditional ways of teaching just because it was one less thing to learn because I have a lot of teaching experience. In my second year, I continued to focus on teaching, but also began research. In my third year, I had to prepare my case file for renewal of probation. We are on probation for three years, and then you have to apply for renewal, prepare a case file like you would for tenure. It became very obvious to me then that I needed to produce more refereed publications. And so in talking to [the head of department], this was one way, without buying me out of a course, which this college and department can't do – there is no money for any course reduction – this was way to free my up during the week. So I was still teaching on Saturday, but because of the flexibility of the online delivery, it enabled me to have everyday of the week for writing and research time.

Appendix - 3



Case Study 3 - 3rd Year Veterinary Medicine From Slide 11

- Participant: As you know, I was a graduate student. I had to do a masters' project. I had a few options. One of them was to develop a new technology to teach veterinary medicine. I picked that one.
- Researcher: Were you happy with your choice?
- Participant: At the beginning, I might not have been, but now actually I am very happy because it has widened my horizons about how I think about teaching and the whole education process.
- Researcher: Can you explain that a little bit.
- Participant: I was more of a follower of the school that believes you have to have all of the time, live animals and live demonstrations. After I had done my research, I realized that that is not totally true. Certain parts can be taught with multimedia and the new technologies.

Appendix - 4

Case Study 4 - 1st Year Undergrad Chemistry from Slide 11

[A colleague was planning] a new course for Arts student, a science course for Arts students.

And he said, “What should have in it?”

And I said, “That’s easy. We have already had someone do all of the publicity for us.”

He said, “Who’s that?”

And I said...

Al Gore. Hang the whole thing on global warming, and you know, ask simple questions like, ‘The Antarctic is sunk under the weight of ice, so most of that ice is below sea level anyway, how come melting that ice will make the sea level rise?’ How many people can give you a clear explanation? Why not? Okay, very simple fundamentals... Global warming, it all depends on the shape of water. One of the most fundamental skills that you can give any chemist, .. like learning to play a C-scale on a piano, you practice by doing it over and over again...Okay.

So what we did for TEL was we simply thought, what are some of these basic skills and how could we ensure that first of all, that this was not aesthetically boring? Because practicing skills is not exactly exciting, so we have to make the experience faster paced, more appealing. Sure it is eye candy, but introductory science classes are also sales jobs. You try to convince people that (a) this is interesting and (b) this is not boring.

Appendix 5

From Slide 13

Case Study 5 – Computing Science On leadership....

- It was very hard to actually get through the campus bureaucracy to be recognized. The institutional drive was to have a one-size-fits-all solution but we didn't fit the mold.
- As it became clear that what we had to contribute, that what we could build was reliable, and that we could actually deliver on the objectives, those barriers came down.

Case Study 9 - Native (Aboriginal) Studies: On pace of change...

- So the conservatism, the incredibly slow moving systems of the university and so on, have really caused a lot of problems in change.

Case Study 4 - 1st Year Undergrad Chemistry: On roles...

- That is why the TEL development team works so well because you have people who understand ideas, people who understand how to put ideas across, and people from DMT [Digital Media and Technology] and ITS [Information Technology Services] who understand the mechanics [of getting the TEL activities] doing what we want them to do. So it is a job an interdisciplinary team.



Appendix - 6

Case Study 3 - Veterinary Medicine From Slide 14 On Perceptions of Technology...

- Participant: A few things. The first thing is it is a newly recognized field in veterinary medicine. Another thing is that it has not been tried before extensively. There is a lot of need to have it in veterinary medicine because there is lots of demand on teaching animals.
- Researcher: Yes. When you said TEL was “newly recognized, can you explain?”
- Participant: Well I shouldn't have said it was recognized. It is a new approach that hasn't been very well studied.
- Researcher: Okay.
- Participant: Actually, I should not have said it was recognized because for most of the universities, it is not. There is lots of fear about it.

Case Study 6 - Interdisciplinary Masters in International Trade From Slide 27 On Perceptions of Technology...

- “Some people [department and team members] are skeptical about online delivery in principle.”

Appendix 7

Case Study 2: Education from Slide 14



- ...for writing and research time. And of course, I spend a part of every day looking at the [course] discussions, moderating, and responding to student inquiries.
- Departmentally, I think I don't think there is a complete understanding about the time it takes either at the developmental stages, or once it is developed, at the operational stages for an online course. It is by far more work to teach online than it is in the traditional way.
- I know one of my colleagues comments often because I was freed up or so it looked freed up because I wasn't actually in a classroom during the week. I was on Saturdays, but not during the week. I had a colleague often say, "So how many courses are you teaching? I know you teach a Saturday course, but are you teaching no other courses?" It was because I wasn't in a classroom, and that actually bothered me greatly. At the departmental level, that lack of understanding.
- Just as I was saying about thinking about a new way of teaching and learning that the students that have not made the mental shift, nor have my colleagues in the department.

Appendix 8



Case Study 7 - 1st Year Undergrad Psychology From slide 15 On faculty time and IP....

- Participant: I would never enter into anything like this again because it is just all done on the margins.
- Researcher: Can you speak to that in detail?
- Participant: It is all done in terms of spare time that faculty have. There was some compensation that we worked out in terms of the course and I can't remember... I think that there was some compensation of maybe two half-classes. We calculated the faculty time that would actually be involved in generating this course. It was enormous. It was close to \$100,000 that we could estimate would be involved in the production of this course. That actually led to some negotiation with the vice-president academic's office with regard to providing the appropriate compensation back to the department for the faculty time. It all got lost when [the former VP academic] disappeared. Everything just evaporated. We never got to the point of worrying about that. Nobody received any money for doing anything.
- Part of it now gets back to the copyright issue. TEL wants all authors to sign away not only copyright, but their moral rights. It's a very common thing that is happening all over North America, especially with publishers. Moral rights means that they can do anything to the material and still associate the person's name to it even though they have no control over the changes that are made. To me, that is, personally, a huge problem..., The whole copyright and moral right issue really doesn't sit very well with me at all.

Case Study 8 – Nursing (for slide 28) On compensation and promotion....

- I have a passion for online teaching, but... [For tenure purposes,] an article in a published journal is still worth twice as much [as a TEL project].
- Right now I need to be doing research and publishing. I have developed enough courses. I need to work for tenure. [TEL] is just not recognized.

Appendix 9



Case Study 9: Native (Aboriginal) Studies (for slide 16) On teaching & learning...

- You know, it is amazing because I am getting so much more than I expected from the students. They are just throwing themselves into it. For instance, there was a little discussion about how many First Nations groups there are in Saskatchewan. If you go to the Websites, the FSIN claims to represent 84 different groups. If you go the government Website, it says that there are 74 First Nations in Saskatchewan. If you go to other Websites, you will find different numbers all over the place. So what the students decided to do last term was to go out and actually find out how First Nations groups there really are. And they did it.
- They reported it back. It was original research. They did it. They didn't just read the facts in the book, and say it is 74 and get the question right on the exam. They actually did some research on their own. It wasn't my idea. ...It is the freedom of using this new technology that allows that to happen. That, I would say, is the major learning situation on the Website. It is not the content I have placed there or the readings I have placed there, but the discussions that the students get involved in, and they actually start to see the issues as something they can actually understand. I cannot do that in a lecture.

Case Study 5 – Computing Science & (for slide 16) On reuse....

- We were not expecting to see how this would affect the delivery of our face-to-face courses [modules]. Online content is available for students when they want it and when they need it. What we have managed to do, over time, is to reuse those materials in a variety of ways.
- For example, online tutorials [labs] have become a really quite valuable component that we probably didn't expect. The development of these online tutorials has actually changed the way in which we deliver face-to-face tutorials. We actually use the online materials to deliver our face-to-face tutorials.

Appendix 10: LU e-Learning Strategy



- The LU Strategy specifically identifies:
- (a) a *programme-level* approach to ensuring greater consistency in the student experience of e-learning as an integral part of the Lancaster student learning experience;
- (b) a *blended learning* approach in which e-learning is conceived as both complementing and enhancing the overall student learning experience;
- (c) a commitment to the development of medium-term (2-3 year) *development plans setting out pedagogical priorities* informed by locally determined requirements of student communities and discipline contexts;
- (d) the *stepped threshold model* as an illustrative guide in the planning of e-learning development;
- (e) importance of considering e-learning requirements during the course design process, and a commitment to *regularly monitor and review quality and consistency of e-learning* as part of annual and periodic course reviews, and disseminate models of effective practice.

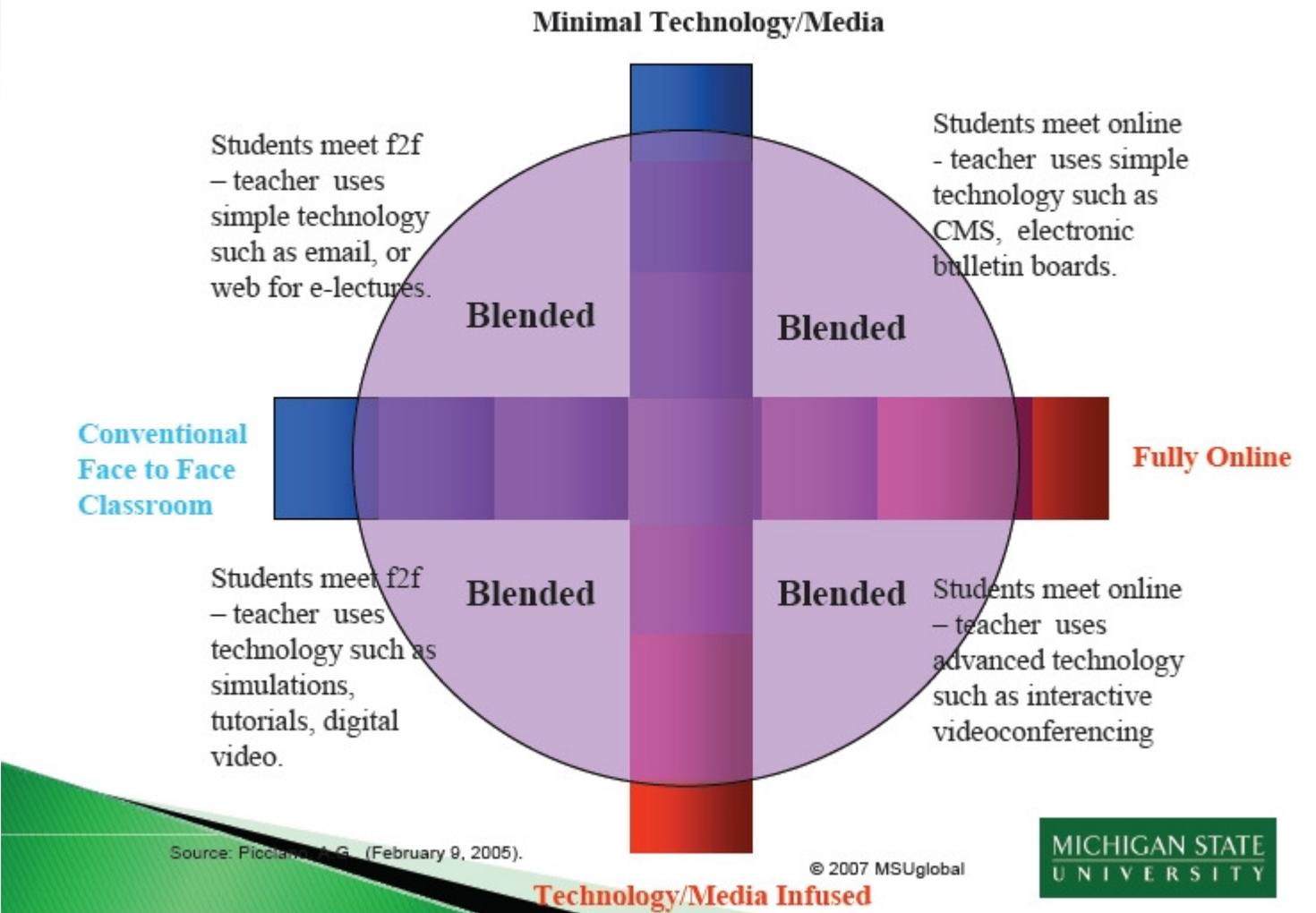
Available:

<http://www.lancs.ac.uk/celt/celtweb/files/eL%20Strategy%20Final%202006.pdf>

Appendix 11: Blended Learning in Practice

Blended Learning

Conceptualization



Source of this Slide: Lovell, K., Vignare, K. MSU Medical School