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Colleish-Ollooscoill Ellan Vannin:
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Mega Trends in University Teaching and Learning: From Bricks to Clicks

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"I need someone well versed in the art of torture—do you know PowerPoint?"

MEGA TRENDS IN UNIVERSITY TEACHING AND LEARNING: FROM BRICKS TO CLICKS:

- *TERMS AND TYPOLOGIES:* What is meant by E-Learning?
- *TENDENCIES:* What changes have taken place in higher education teaching and learning?
- *TRENDS:* What have been the global developments in technology enabled learning?
- *THEMES and TACTICS:* What lessons can be learnt from the global development of e-learning?
- *TESTING TIMES:* What are the possible impacts of COVID 19 and Artificial Intelligence (ChatGPT) on teaching and learning in higher education?

What is Distance Education?

Distance Education has three defining features:

1. The student is distant from the teacher
2. The student has a planned and guided learning experience
3. The student and the teacher participate in a two-way structured discourse which is distinct from the traditional classroom/seminar.

Hence the separation between student and teacher requires that teachers plan, present content, interact, and perform the other learning processes in significantly different ways from the face-to-face environment of the normal classroom.

ODL and E-Learning: Terms and Definitions

Distance Education	Planned learning that occurs in a different place from teaching and so requires special techniques of course design, special instructional techniques, and special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements
Distance Learning	Instruction and learning practice using technology and involving students and teachers who are separated by time and space
Distributed Learning	Learning environment [which] exists among a dispersed student population, is structured according to learner needs, and integrates traditional functions (e.g. Classrooms, library) through both synchronous and asynchronous communication
E-Learning	Subset of Distributed Learning. Relies on digital content, experienced through a technology interface, and is network-enabled. Collaboration is a desirable feature of e-learning
Networked Learning	Type of learning in which learners and instructors use computers to exchange messages, engage in dialogue and access resources any time and any place
Open Learning	Learners work primarily from self-instruction, completing courses structured around specially prepared, printed teaching materials, supplemented with face-to-face tutorials and examinations

What is E-Learning?

The fact that the phrase e-learning is used to describe very different uses of technologies to accomplish very different tasks for very different student cohorts, explains why there is huge variation in the identified costs and benefits, successes and failures of e-learning.

What is E-Learning?

Robin Mason, from the UK Open University, defined three usages of the term e-learning, each with their own focus, activities and benefits.

[Robin Mason, (2002) *Working Paper: Information And Communication Technologies In Education And Training*, (Brussels: E.U. Directorate-General For Research)]

First, the training and workplace use of the term e-learning carries strong overtones of computer-based training transferred to the Internet. Hence the emphasis is on the electronic nature and delivery of the content, and *NOT* the communicative potential of the web.

What is E-Learning?

Practitioners who emphasise the content delivery side of e-learning often have a behaviourist or cognitive conception of learning, and focus on the development of clearly presented content, facilities for testing the learner and multimedia materials for increasing learner motivation. Access to training, reduced costs and speed and retention of learning are the attractions of this form of e-learning for them.

What is E-Learning?

Second, within higher education, there is greater consensus that e-learning means electronic access and interaction by students with learning materials, fellow learners and tutors. Hence the second focus here is on the communicative potential of e-learning, and *NOT* just the delivery of content.

What is E-Learning?

Practitioners of e-learning who emphasise the communicative nature of e-learning draw on constructivist and social practice theories of learning, often very deliberately aiming to transform the role of the instructor from that of a teacher, to that of a facilitator of knowledge construction, and seeking to create a social environment in which students learn online, both from the tutor and each other.

What is E-Learning?

Third, beyond these ‘course-based’ approaches to e-learning, Mason identified the growing opportunities for educational technology to support informal learning in the workplace. Informal learning is intimately related to job performance; it may not be formally organised into a programme or curriculum by the employer, or assessed and accredited, but it accounts for a good deal of the learning arising out of interactions between colleagues, *ad hoc* personal studies, and the experience of work itself.

What is E-Learning?

The technologies of most relevance to informal e-learning may be grouped into two clusters: information retrieval and knowledge construction. Informational retrieval covers all forms of search and retrieval software including databases, data mining applications, information services, electronic performance support and, of course, the web. Knowledge construction covers all forms of communications technology from simple email to shared virtual whiteboards and web facilitated student feedback in real time. (e.g. www.pollev.com/)

E-Learning Forms: Mason's Typology

(1) Web-based training	(2) Supported online learning	(3) Informal e-learning
Content-focused	Learner-focused	Group-focused
Delivery-driven	Activity-driven	Practice-driven
Individual learning	Small-group learning	Organisational learning
Minimal interaction with tutor	Significant interaction with tutor	Participants act as learners and tutors
No collaboration with other learners	Considerable interaction with other learners	Multi-way interactions among participants

E-Learning in Higher Education

The growth of the use of new technologies in university teaching, has made their use common place, rather than novel or unusual. However, the use of these technologies has also prompted a greater debate about the theoretical underpinnings of teaching and learning, causing leading practitioners to argue:

When it comes to “E-Learning”, it is the Learning rather than the “E” that is important.

Azma Abdul Hamid (2002) “E-Learning, Is It The “E” Or The Learning That Matters?”, *Internet And Higher Education*, 4: 311–316,

Blended Learning in Higher Education

As new technologies become main stream, many "traditional" universities are starting to offer a “blended learning approach” to teaching. Such an approach uses multiple media (rather than multi-media) to offer learning content in a variety of formats to embrace the differing learning styles of students and enhance their learning experiences.

To be successful, the “blend” of learning technologies should relate to the subject content, and the students’ learning styles and needs, which vary from individual to individual.

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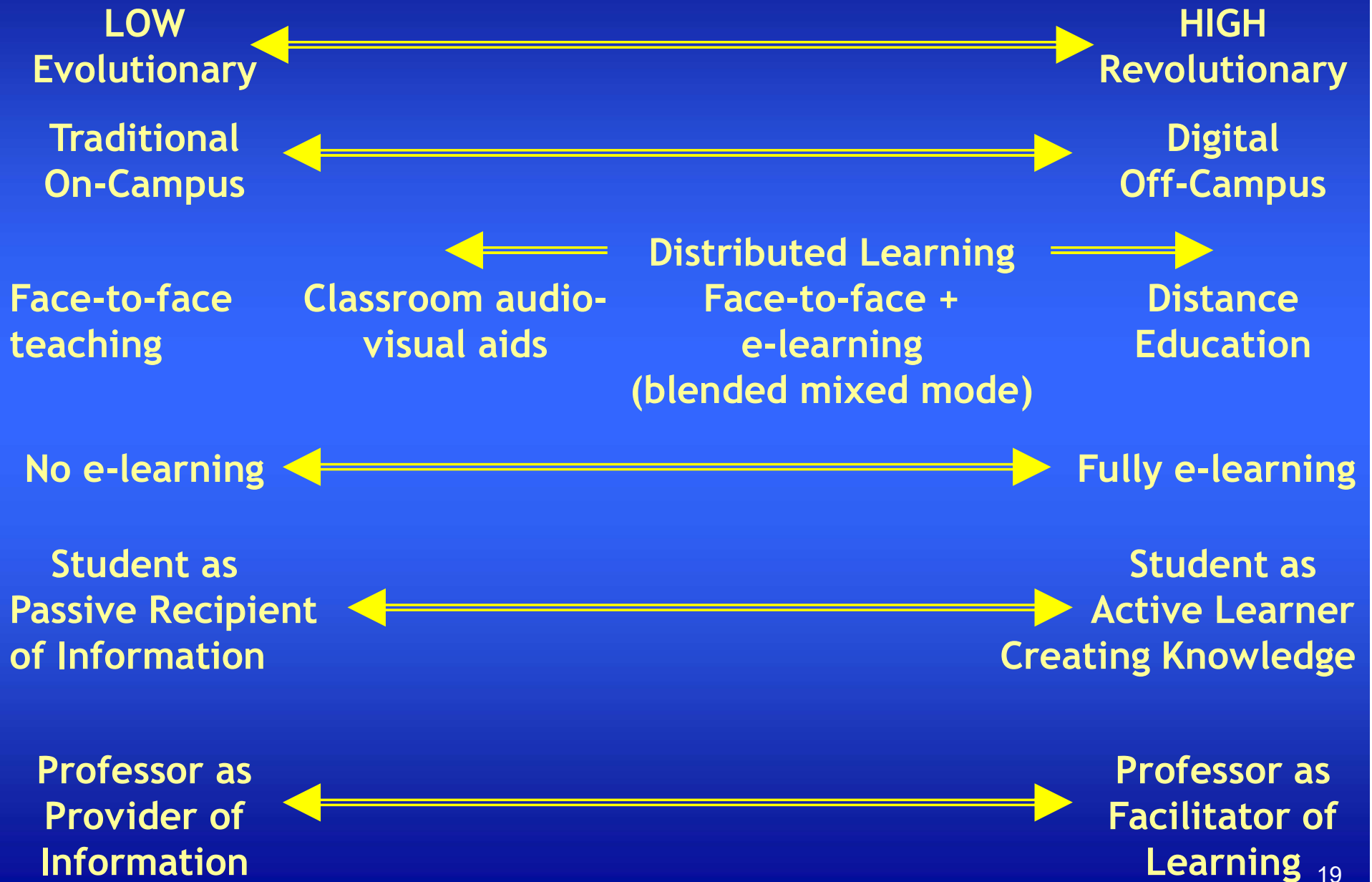
The Changing Dimensions of H.E.

Old Paradigm for H. E.	New Paradigm for H. E.
Take what is on offer	Courses on demand
Academic calendar	Year-round operations
University as an institution	University as an idea
First degree only	Lifelong learning
University as an Ivory Tower	University as partner in society
Student = 18 to 25 year old	Cradle to grave learning
Books are the primary medium	Information on demand

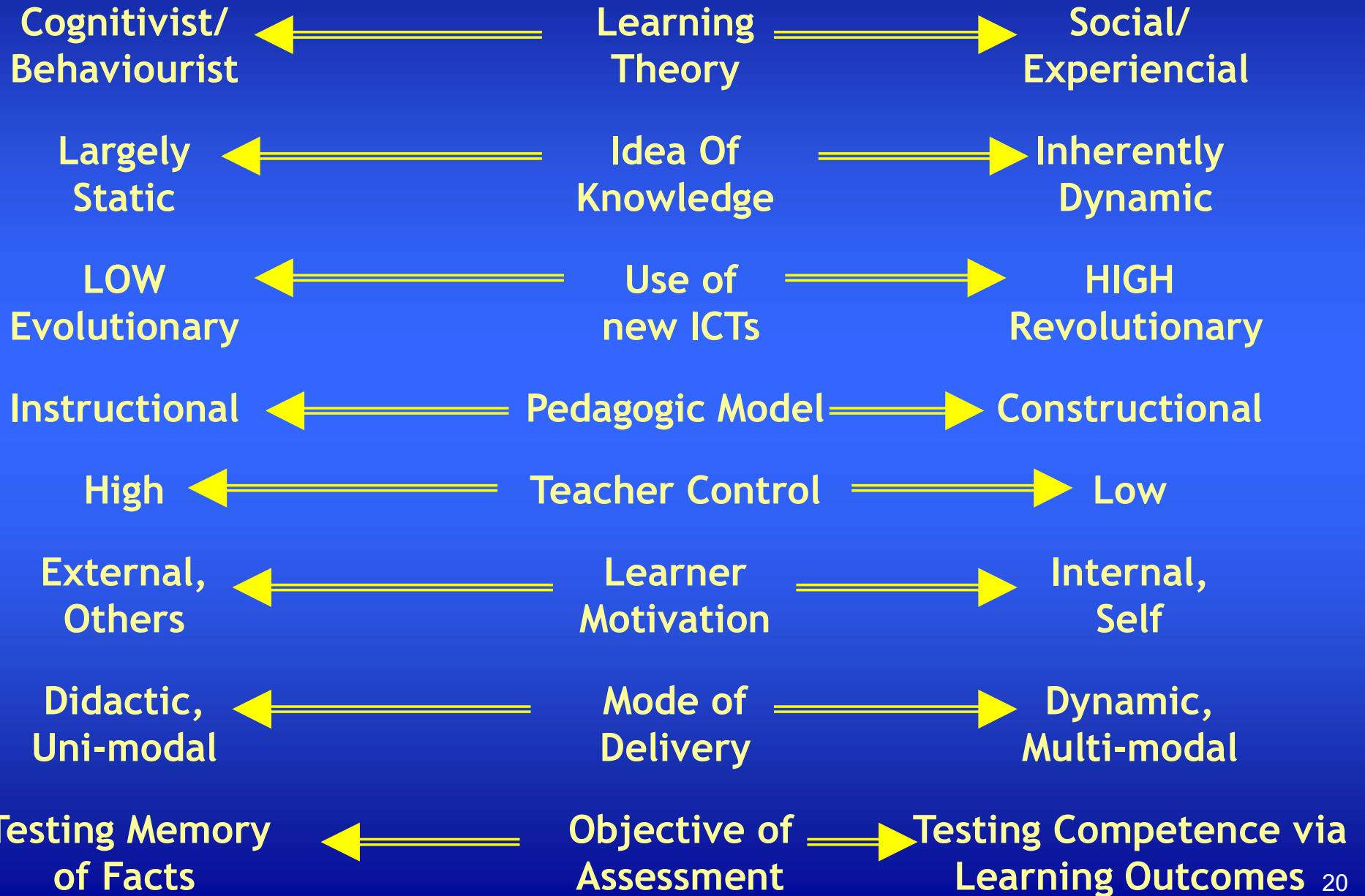
The Changing Dimensions of H.E.

Old Paradigm for H. E.	New Paradigm for H. E.
Student as a “pain”	Student as a potential colleague
Delivery in classroom	Delivery anywhere
Local/national provider	Global Partner
Bricks and mortar	Bits and bytes
Single discipline	Multi-discipline
Institution-centric	Market-centric
Government funded	Market funded
Technology as an institutional expense	Technology as a learning differentiator

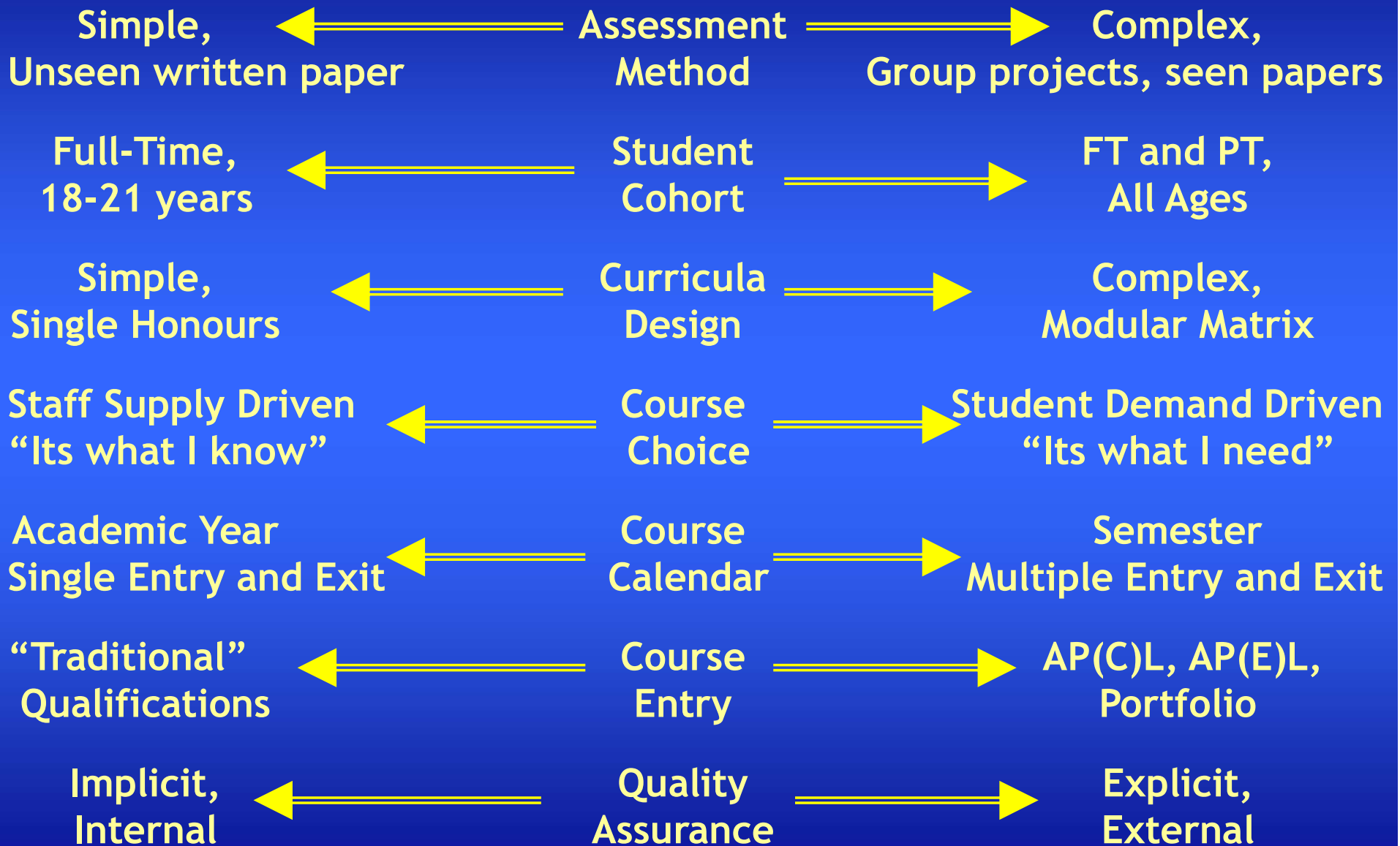
The Use of New Technologies



Changing Features of Learning and Teaching



Changing Features of Learning and Teaching



Shift from teaching to learning

MODEL 1

I TEACH WHAT I KNOW

I AM “THE SAGE
ON THE STAGE”



TEACHER-CENTERED
Maintenance Learning
“Just in Case” Knowledge

MODEL 2

I DEVELOP MINDS

I AM “THE GUIDE
AT YOUR SIDE”



LEARNER-CENTERED
Dynamic Learning
“Just for me” Knowledge

Shift from dependence to autonomy

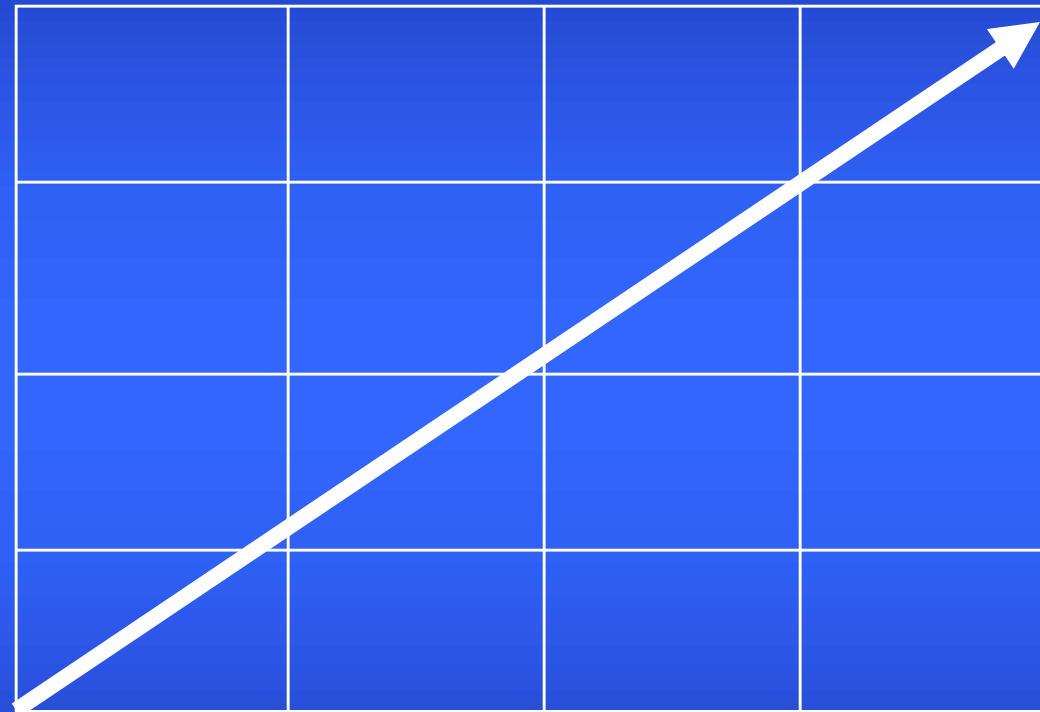
LEARNER

Autonomous

Engaged

Interested

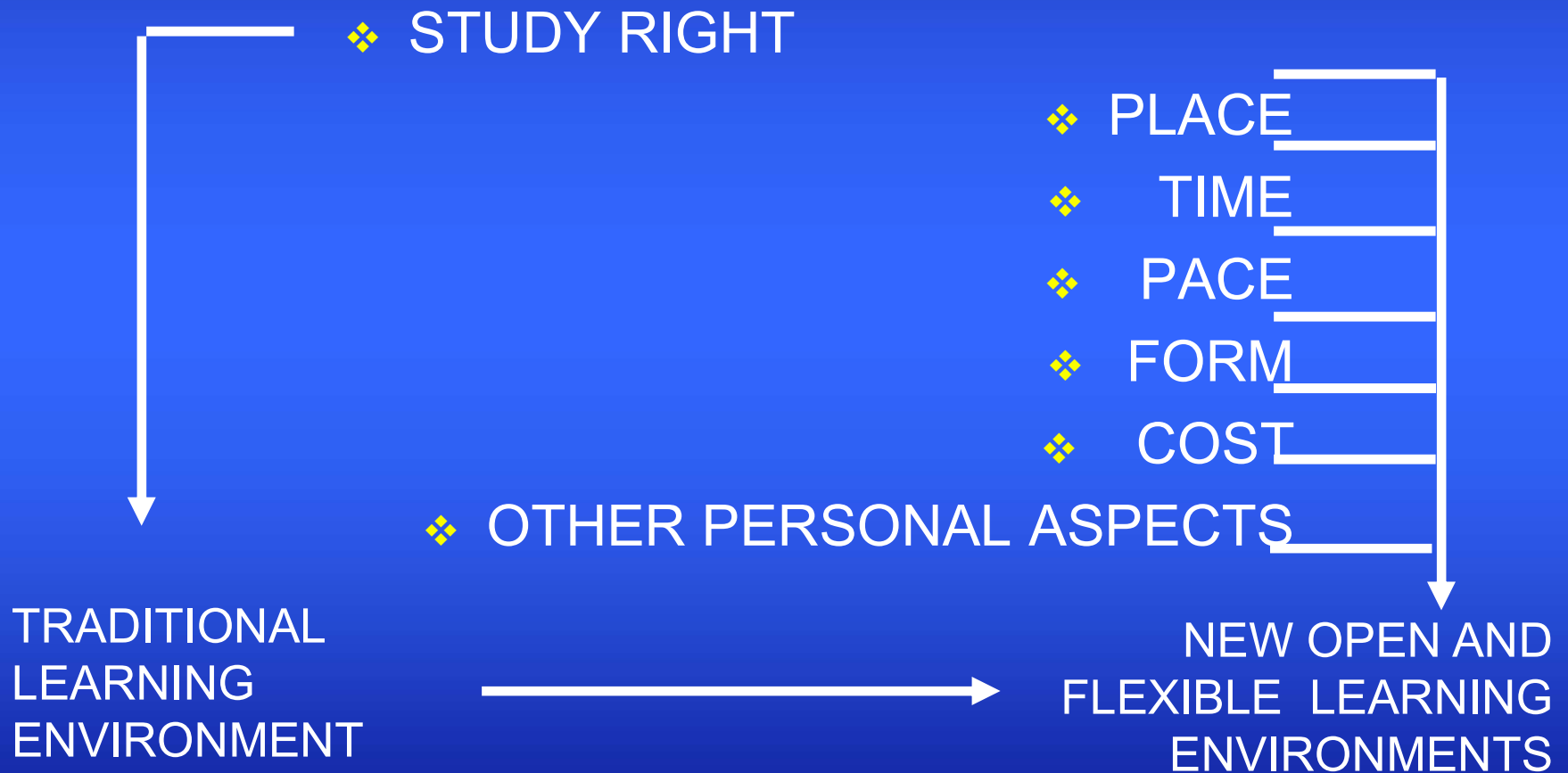
Dependent



Authority Motivator Collaborator Colleague

ROLE OF TUTOR

Shift from closed to open environment



SHIFTS IN KNOWLEDGE DOMAINS

FROM:
WELL-STRUCTURED
COMPARTMENTALISATION

TO:
FLEXIBLE
MULTIPERSPECTIVES

SHIFTS IN LEARNING and TEACHING

FROM:
CLOSED, STABLE,
FIXED

TO:
OPEN
SELF REGULATING
CHANGING

SHIFTS IN TECHNOLOGY

FROM:
ONE WAY
ISOLATED MEDIA
FIXED LOCATION
INDIVIDUAL

TO:
INTERACTION
A-LINEAR
INTEGRATION
NETWORKING

SHIFTS IN ORGANISATIONS

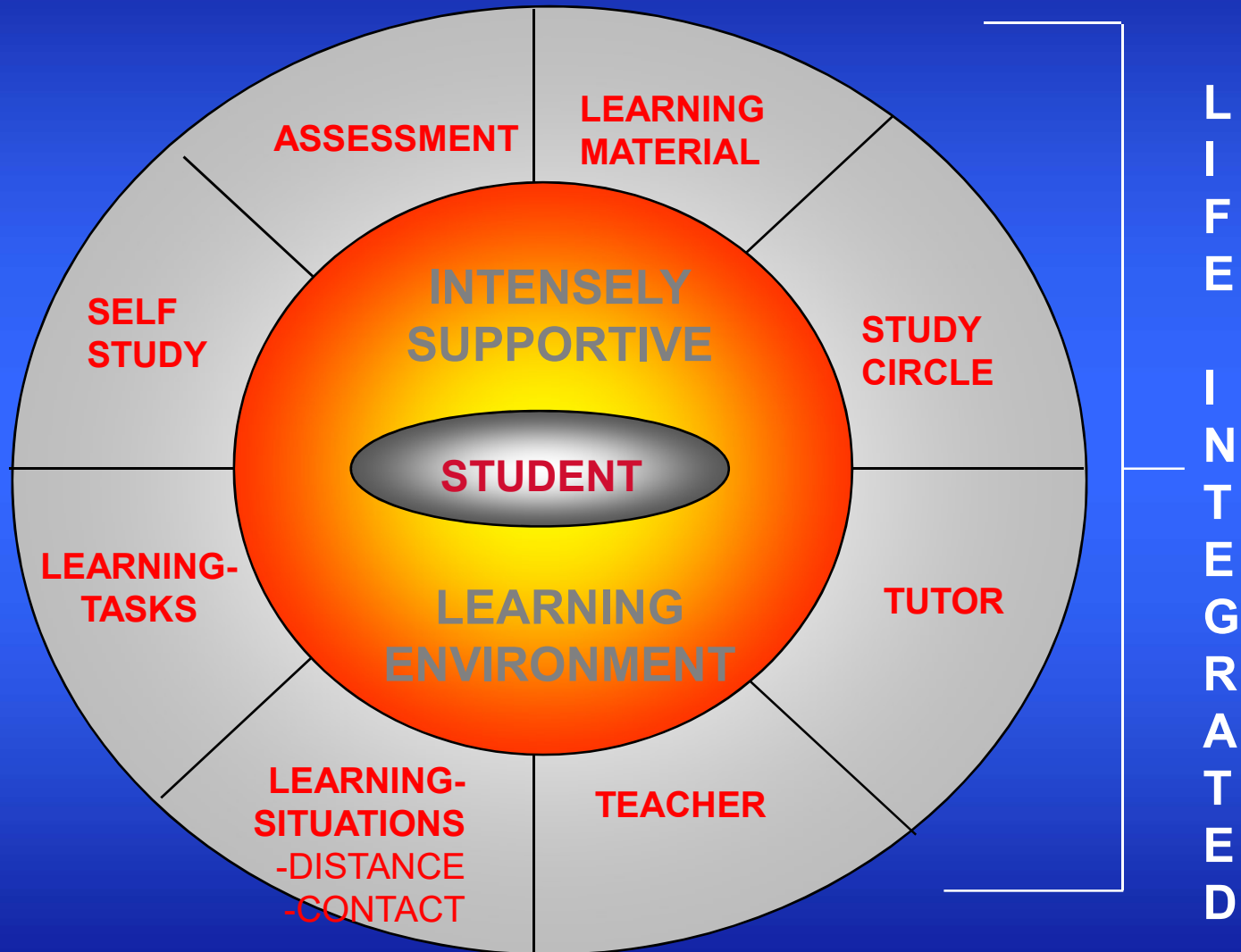
FROM:
HIERARCHIAL
STRUCTURE

TO:
(INTER)NATIONAL
NETWORKS

EDUCATIONAL
TECHNOLOGY

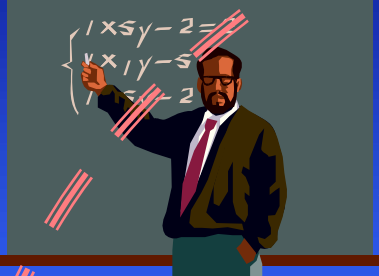
**VIRTUAL
CAMPUS**

The student within the Virtual Campus



New Learning Environment – On Campus

Intensely Supportive Learning Environment



Live Lecture



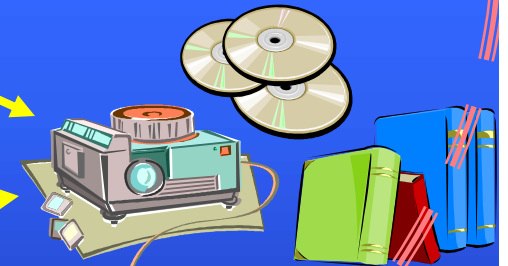
Face to Face Seminar



Lecture via WWW/
videotape/CD Rom



Intranet



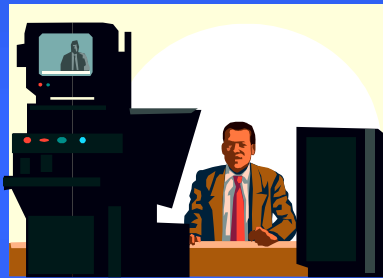
Learning Resource Centre



Internet/ WWW

New Learning Environment – Off Campus

Intensely Supportive
Learning Environment



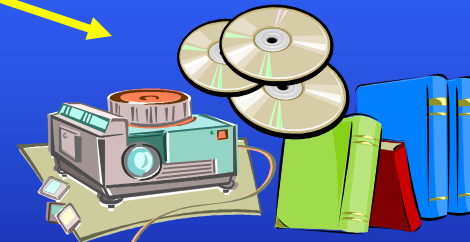
Lecture via WWW/
videotape/CD Rom



Seminar via Computer
Mediated Technology/
Video Conference



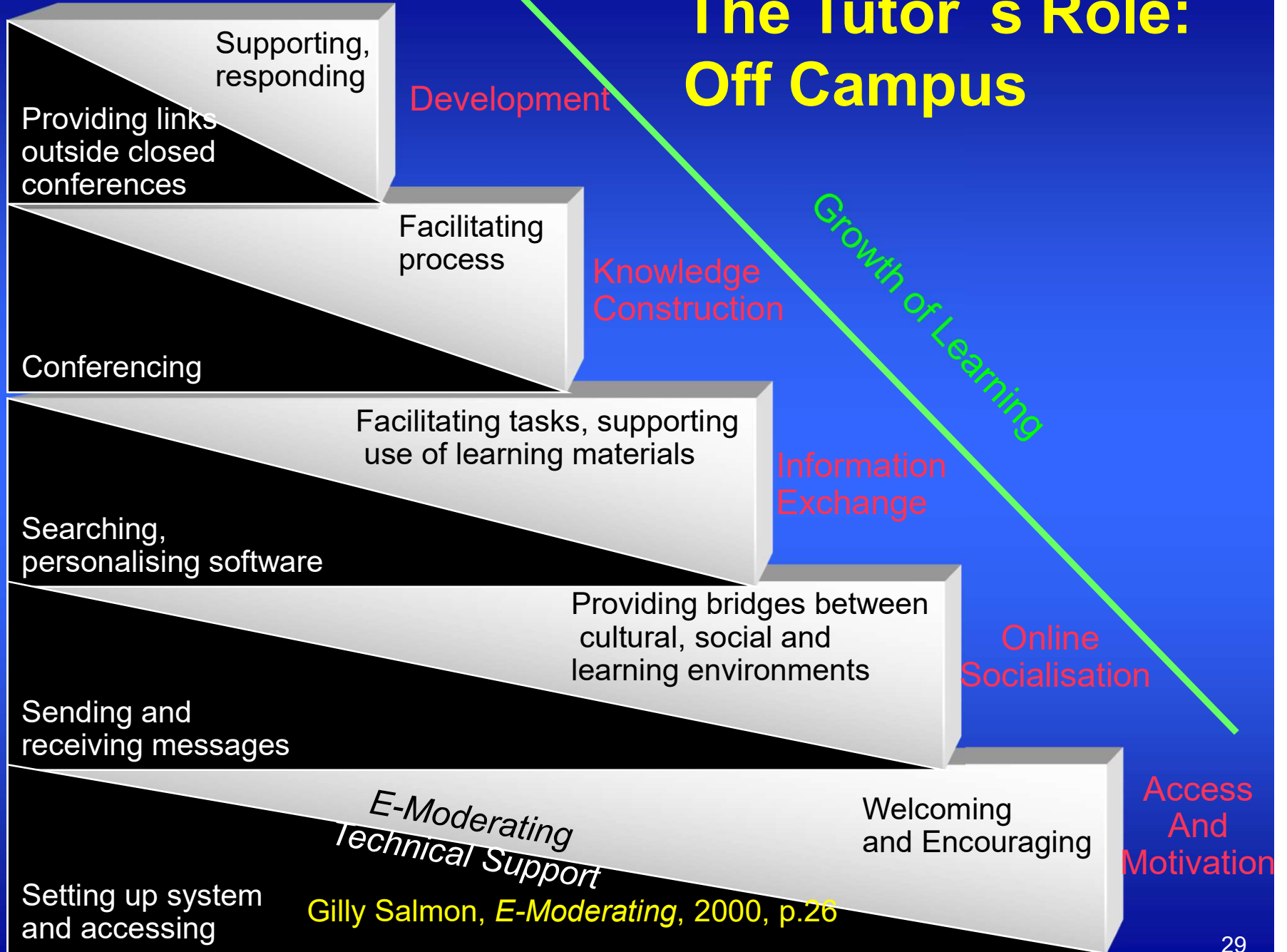
Internet/ WWW



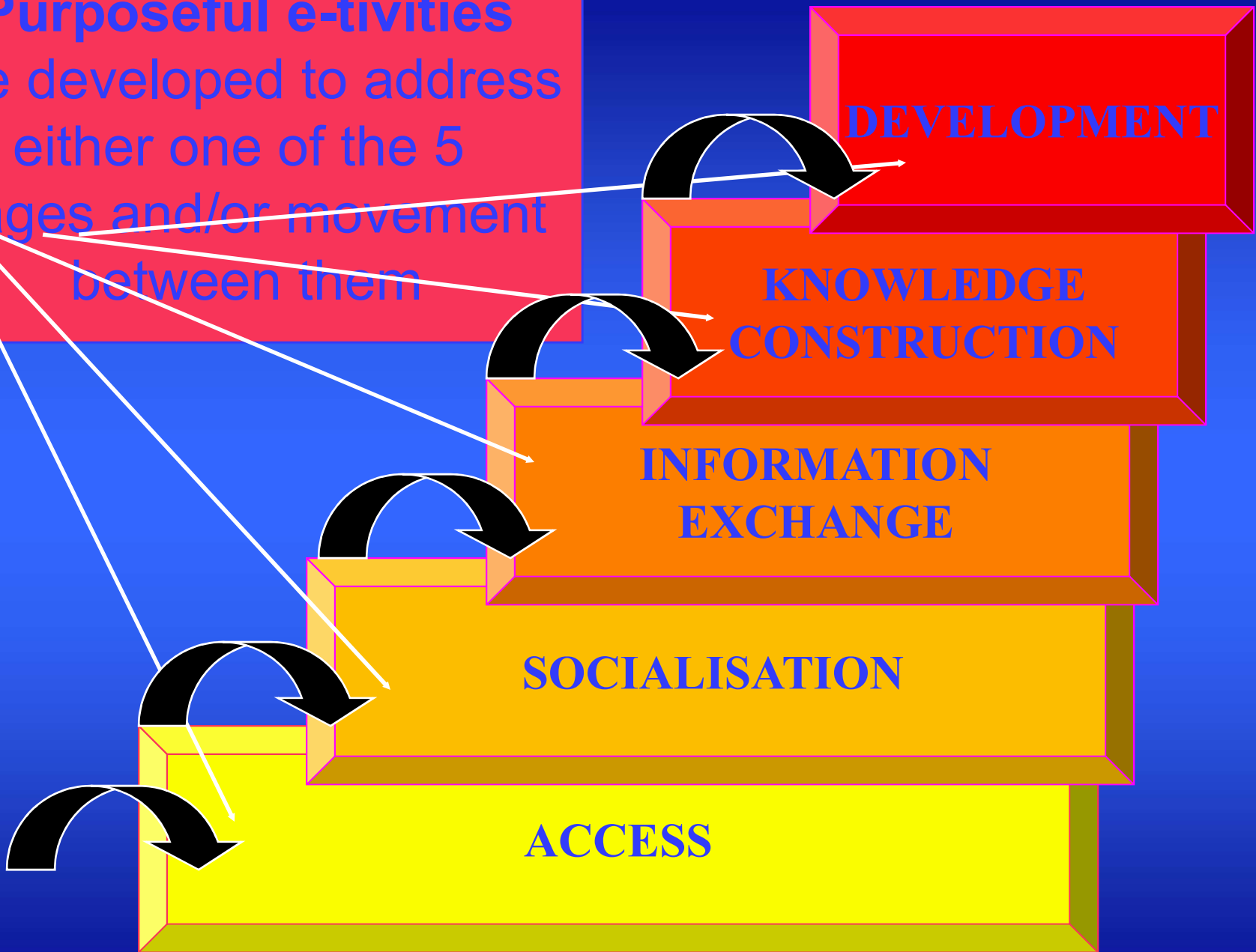
Learning
Resource Centre

The Tutor's Role: Off Campus

Amount of Online Interactivity



Purposeful e-tivities
are developed to address
either one of the 5
stages and/or movement
between them



What are e-tivities?

- ◆ Structured participative group work online
- ◆ Motivating, engaging & purposeful
- ◆ Based on interaction between individual learners/students via active collaboration
- ◆ Designed & led by an e-moderator
- ◆ Usually asynchronous (i.e. not time bound)
- ◆ Can be driven via simple text based bulletin boards, but are usually more sophisticated
- ◆ Can be used on or off campus, for blended learning or online only courses
- ◆ Can be used as a “one-off” element for a module or build into an entire programme

Changes for New Technologies

The use of new technologies in universities means that the differences between delivering distance education and traditional teaching are becoming less distinct. For universities to be able to use these new technologies successfully, changes are needed in the university's traditional operations.

These changes include the following:

- *from*: a teacher centred didactic instructional mode, *to*: a learner centred interactive exchange, in which students take greater responsibility for their learning needs and skills requirements;
- *from*: traditional “chalk and talk”, *to*: delivery via multiple-media, based on access to materials and resources world-wide, innovative teaching technologies and computer mediated communication;
- *from*: an externally time-tabled, temporally and geographically fixed, examination focused, passive instructional teaching mode, *to*: an individually determined, task related, active constructional learning process, unaffected by time and/or location;

- *from*: individual pursuit of classroom tasks,
to: co-operative and collaborative learning within real and virtual peer groups characterised by increasing diversity (age, gender, location and learning style);
- *from*: assessment based on accurate memory of given facts,
to: assessing achievement through students' long term learning outcomes and goals, arising via personal reflection and the creation and testing of knowledge;
- *from*: face to face tutoring with a known uniform student group via synchronous vocal discussion,
to: an asynchronous oral and text-based debate via computer mediated communications with an unknown differentiated virtual group;

- *from*: local utilisation of prescribed print based materials to answer tutors' questions,
to: distance information mining of multiple-media sources via web-based technologies to solve student's own learning tasks;
- *from*: a differentiated support network,
to: an integrated support network, with students creating knowledge via interaction with specialist facilitators, not just academics but also Learning Support and other staff acting as “knowledge navigators”;
- *from*: students having a subordinate role,
to: that of students an equal colleagues, engaged with academic staff in a joint research enterprise and the creation of knowledge.

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Global Trends: The World Bank's View

- The emerging role of KNOWLEDGE as a major driver of economic development.
- The emergence of NEW PROVIDERS of tertiary education in a “borderless education” environment.
- The ICT REVOLUTION which has transformed delivery modes and organisational patterns in tertiary education
- The rise of MARKET FORCES IN H.E. and the emergence of a global market for advanced human development.
- INCREASED REQUESTS for financial support for tertiary education reform and development made to the World Bank
- Recognition of the need for a balanced, comprehensive view of EDUCATION AS A HOLISTIC SYSTEM, including the human capital contribution of h.e., its humanistic and social capital building dimensions and its role as a vital public good.

The Emergence of the Knowledge Economy

“the combination of under-funded universities, high tech developments, corporate needs, and the prevailing ideology have led to a basic transformation in the university ... to a university oriented to the market place”, Buchbinder, H., (1993), "The market oriented university and the changing role of knowledge", *Higher Education*, 26:331-347.

“Higher education is now in the global, competitive, marketplace .. where individuals are able to choose what they wish to acquire rather than accepting the dictates of institutions.” Arbeles, T., (1998) "The Academy in a Wired World", *Futures*, 30(7):603-613

“What would the post secondary marketplace look like if (say) Microsoft Deutsche Telekom, International Thomson and the University of California combined to offer UC courses and degrees world wide? In time, its only competitor could be a combine of like standing and deep pockets: an IBM-Elsevier-NEC-Oxford combine, for example.”
Marchese, T., (1998) "Not so distant competitors: how new providers are remaking the post-secondary marketplace", *AAHE Bulletin*, 50(9):3-7

The ICT Revolution

The ICT Revolution has created two major challenges for h.e.:

- (1) achieve the appropriate integration of ICT into overall education systems and institutions;
- (2) ensure that ICTs are agents of equity and can expand access and increase educational opportunities for all, not just the wealthy or the technologically privileged.

There is a concern that: “The Web shatters geographical barriers to educational access, but it also may create new ones. ... Not all students have equal access to computers and the Internet. ... there is evidence that students with the greatest need get the least access.” [Gladieux, L., & Swail, W., (1999) *The Virtual University and Educational Opportunity*, (Washington: The College Board), p.17]

For example, there are 8 pcs per 100 of population in South Africa, 14 in Chile, 62 in Singapore and 86 in Switzerland. In Africa 39.7% of the population are internet users, in Europe the proportion is 89.5%

Impact of ICT on H.E. - Demand

THE INFORMATION AGE AND THE KNOWLEDGE-BASED ECONOMY HAVE CHANGED THE DEMAND FOR HIGHER EDUCATION IN THREE WAYS

1. Knowledge based economies require increasing levels of education and training, which has led to an increase in demand for higher education of all types at all levels.

2. Change in demand – students demand courses to aid their career progression and equip them to be life long learners.

3. Change in demand - greater personalisation of provision with flexible courses to meet students individual learning styles and training needs.

Impact of ICT on H .E. - Supply

THE INFORMATION AGE AND THE KNOWLEDGE-BASED ECONOMY HAVE CHANGED THE SUPPLY OF HIGHER EDUCATION IN THREE WAYS

1. the growing market for higher education and life long learning has attracted the attention of the corporate sector as a possible producer rather than consumer of graduates.
2. there is a new type of corporate university enterprise which is exploiting the growing market for career training and industry related degree programs. (e.g. MBA, EdD).
3. in terms of delivery mode, more institutions (traditional universities, open universities, in-company universities and corporate universities) are using new technologies both for on-campus students and to provide courses at a distance

New Providers in the Knowledge Economy

- **University and Corporate Partnerships**, formal partnerships with strategic agenda, e.g. Anglia Polytechnic University and Ford providing MBAs for staff at Ford's European plants
- **Innovative Distance and Virtual Universities** – Open University of Catalunya, FernUniversität, Finnish VU
- **Private Universities** – vary in size and quality, e.g. International University in Germany, campuses in Bruchsal, Heidelberg and Bonn, using ICT in teaching, sponsored by IBM, Microsoft, Deutsche Systems and Siemens
- **Corporate Out Country Providers in Europe** – University of Phoenix, is headquartered in the USA, but has set up bases in the Netherlands and Germany – still small but likely to grow.

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Massification

There has been a large growth in student numbers to provide people with the skills demanded by the expanding global knowledge economy. However, as funding for h.e. has not increased as fast as student numbers, universities have been pushed to provide “More scholars for fewer dollars”. This has led to a greater use of new technologies in learning and teaching for students, both on campus and at a distance, in the hope of cutting costs.

Lifelong Learning

The need to update qualifications in order to retain employment in the knowledge economy has meant that students come to the university to study, not just for a single degree, but for the whole of their working lives. This means that students, in addition to becoming experts in academic subject domains, also need to know how to operate as autonomous learners, after they leave university. New technologies mean that part time students do not have to attend the university for tuition, but can study anywhere and anytime. However, new technologies like AI can also render knowledge redundant, and lead to job losses.

New ICTs

Massification and the need for lifelong learning have increased the use of new technologies in university teaching, not only for students on campus, but also for those off campus and in other countries. These technologies mean that subject content can be sent anywhere in the world, at little or no cost, and the subsequent rise of commercial global learning enterprises, which will compete with universities. The introduction of AI in university teaching and research will increase the use of educational technology in h.e., but could undermine the role of the traditional lecturer

Pedagogy and Professionalism

The interest in the effective use of ICTs has also focused attention on the effectiveness of face-to-face teaching. Also, the increase in part time and mature students has led to a greater degree of professionalism among university teachers. Today, in addition to being subject experts (in history, geography, etc), lecturers also need to know how to use technology to teach, using a variety of old and new techniques, to a greater diversity of students. This has led to the use of learning outcomes within academic units, and a formal structure for the creation of academic units. The emergence of commercial global providers has also meant the universities have had to adopt a more professional standard in their provision of teaching (e.g. HEA).

Flexibility

Students are now demanding flexible modular courses, to enable them to maximise their employment prospects and career progression, along with flexible delivery via the use of new technologies. In addition, they are also requiring courses on demand, with flexible entry and exit points, and accreditation of prior certificated and experiential learning. Hence although universities may have to have a global reach to survive, they also need to provide courses geared to the needs of individual students. Hence, on-line courses need to maximise students' educational options.

Collaboration

Addressing these global trends requires academic collaboration, between universities at national, European and international levels. Additionally, universities are increasingly involved with other knowledge based companies in the creation of bespoke qualifications and work-based learning degrees. Increasingly, in the underdeveloped world, such collaboration is often at national level, and is facilitated by international organisations. National Open Universities in Europe often collaborate with universities in developing nations, in order to extend their geographical reach, and increase their student numbers. For example, UNED, the Spanish OU, has set up learning centres in six Latin American nations

Strategic Thinking

“It is not an exaggeration to say that the issue of new information and communication technologies questions the basic functions of the university.” [Edwards, K., O’Mahony, M., (1997), *New Technologies for Teaching and Learning: Guidance to Universities on Strategy*, (Geneva: CRE), p.22.]

“Many academics will have to confront the reality that the task of the academic teacher, traditionally encapsulated in the designation of lecturer, is shifting from the transmission of knowledge towards the management and facilitation of learning.” [Coaldrake, P., Stedman, L., (1999) *Academic Work in the Twenty-first Century: Changing Roles and Policies*, (Canberra: DETYA), p.7]

“The history of universities is littered with situations of crisis, deterioration and take-over brought about by inability to respond to fresh requirements.” [Tabatoni, P., Barblan, A., (1998), *Principles and Practice of Strategic Management in Universities*, Geneva: CRE, p.16]

Strategic Thinking

“the use of new technology needs to be embedded within a wider strategy for teaching and learning...

Faculty members need much more support and encouragement than has been provided to date for their use of technology for teaching and learning...

Partnerships and collaboration are strategies for sharing the costs and leveraging the benefits of technology-based teaching...

The implementation of these strategies will require **fundamental changes** in the way our higher education institutions are organized and managed.”

Bates, A. (2000), *Managing Technological Change: Strategies for College and University Leaders*, (San Francisco: Jossey Bass/John Wiley) p.2-5

Strategic Thinking

... the widespread introduction of technology-based teaching will require such fundamental changes to an institution that its use should not be embarked upon lightly, nor will it necessarily lead to any significant cost savings, but nevertheless such an investment will still be necessary if universities are to meet the needs of its students and society at large in the 21st century..

...if the new information technologies are to play a central role in university teaching, **each institution needs to develop a set of strategies for change which will amount to no less than restructuring the university...**

[Bates, T., (1997) *Open Learning and Distance Education* (London, Routledge) p.43)]

The Need for Leadership

“If the university wishes to prepare itself for the tasks facing it in the future, it is not sufficient for it to regard the new technologies merely as additional media units and to misunderstand them as an extension and extrapolation of the previous familiar teaching operation ... In concrete terms **we are witnessing the change from traditional on-campus teaching to that of a university without walls**; from a university that remains closed to many, to an open university; from an exclusive system of teaching and learning to an inclusive system”

Otto Peters, the Founding Rector of the FernUniversität
[(2000) *Changing University Teaching*, (London: Kogan Page) p.21]

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The Impact of COVID 19

Until 2019, the extensive use of educational technology had been confined to the national open universities, such as the OU in the UK, FernUniversität in Germany, UNED in Spain, etc. Nevertheless, most traditional universities had moved towards a blended learning delivery model, in which powerpoint presentations replaced simple "stand up" lectures, and greater use was made of learning systems (like Blackboard) to archive and provide supplementary learning resources. However, rarely (if ever) were digital technologies used to provide synchronous dynamic interaction and discussions and feedback between learners and tutors – but Covid19 changed all this.

The Impact of COVID 19

COVID forced all h.e. institutions to use ed tech for the delivery of content and also the process of knowledge creation, by learning via online interaction. This greater use of ICTs was novel for students and staff, requiring both groups to become skilled at using ed tech in this way. However, research [Pozo, J-I, Pérez, M.-P., Cabellos B., Sánchez, D., (2021) “Teaching and Learning in Times of COVID-19: Uses of Digital Technologies During School Lockdowns”, *Frontiers in Psychology*, 12] found that ICTs were used to bolster existing teaching practices, rather than to encourage novel use of these technologies. However, the post-pandemic era is forcing academics to re-evaluate and reconceptualize the meaning of teaching and learning in higher education, and address the on-line versus face-to-face dichotomy.

The Impact of COVID 19

A large scale study of 330 students from four sciences courses across universities in Spain and Canada, revealed that students taking the course during the pandemic performed nearly as well. However, the students preferred hybrid education model to a pure virtual format. [Srinivasan, S., et al. (2021) "A Flexible Future Education Model—Strategies Drawn from Teaching during the COVID-19 Pandemic", *Education Sciences*, 11: 557] However, the interplay between anxiety, work, and social dysfunction induced by the Covid pandemic impaired students' learning. [Godoy, L. et al. (2021) "The Psychological Impact of the COVID-19 Pandemic in Remote Learning in Higher Education," *Education Science*, 11: 473]. The general anxiety caused by Covid made it problematic to compare the efficacy of face to face teaching and online learning.

The Impact of AI on h.e.

AI is defined as “computing systems that are able to engage in human-like processes such as learning, adapting, synthesizing, self-correction and use of data for complex processing tasks” [Popenici, S., & Kerr, S. (2017) "Exploring the impact of artificial intelligence on teaching and learning in higher education", *Research and Practice in Technology Enhanced Learning*, 12(1)]

Compton and Song [(2021) "The Potential of Artificial Intelligence in Higher Education", *Revista Virtual Universidad Católica del Norte*, 62:1-4], point to AI's "vast potential to support teaching and learning in higher education. ... such as bespoke learning, intelligent tutoring systems, facilitating collaboration, and automated grading".

The Impact of AI on h.e.

Launched in November 2020, ChatGPT reached 100 million users in two months. There is very little published academic literature on ChatGPT. A content analysis of news articles about how ChatGPT is disrupting h.e. revealed opportunities for innovative assessment design and a concern for academic integrity [Sullivan, M., et al (2023) "ChatGPT in higher education: Considerations for academic integrity and student learning") *Journal of Applied Learning & Teaching*, 6(1)]

Such concerns have led UNESCO to offer practical steps for universities to address the main challenges and ethical implications of AI in higher education.

[Sabzalieva, E., & Valentini, A., (2023) *ChatGPT and Artificial Intelligence in Higher Education*, (Paris: UNESCO)]

The Impact of AI on h.e.

The Educause 2023 Report [Pelletier, K., et al., (2023) *EDUCAUSE Horizon Report, Teaching and Learning Edition* (Boulder, CO: EDUCAUSE)] points out that "AI has sparked debates about academic integrity, accuracy, and fairness and equity. AI-powered writing technologies are becoming much more sophisticated and widely available, leading many to speculate that cheating will become widespread"

Additionally, Livberber and Ayvaz [(2023) "The impact of Artificial Intelligence in academia: Views of Turkish academics on ChatGPT", *Heliyon* 9(9)] found that ChatGPT is viewed positively by staff as a useful tool in scientific research and education, but that ethical concerns such as plagiarism and misinformation need to be addressed. Whether these benefits are realised, or these concerns justified, remains to be seen⁶⁰

University College Isle of Man
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**THANK YOU
FOR LISTENING!
ANY QUESTIONS?**

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