Key axes for the integration of ICT in higher education institutions in Mexico.

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Study about the use of ICT in higher education in Mexico, undertaken by DGTIC-UNAM for the Fideicomiso SEP-UNAM in 2017.

Purpose: to elaborate a diagnosis about the educational use of ICT in different institutions, so that axes to provide orientation on ICT integration in higher education institutions, could be formulated.

Part I

An assessment of the current state of ICT infrastructure was made for all public higher education institutions.

The current state of computing, networking, and audiovisual infrastructure available in all public higher education institutions was assessed.

This was made based on information found in the 911 format of the Mexican Ministry of Education and a sample survey.

A desired minimum capacity was defined based on information provided by ICT vendors and infrastructure experts.

A significant gap was found between the current and desired infrastructures levels.

Research Question

What are the determinants of ICT integration in Higher Education

Institutions?

Literature Review

- International organizations' guidelines (UNESCO, OEI, OECD).

- International standards for students and teachers on ICT skills (ISTE, ICDL).

- Public policies on ICT integration for educational institutions, govermental experiencies in Latina America (Colombia, Chile).

- UniversiTIC Study, CRUE, Spain.

- Different authors, specialized in ICT institucional integration research.

Methodology

- From the literature review, five dimensions were identified: two were considered part of a technological axis, and the other three as part of the pedagogical axis.

- The five dimensions were comprised of (T1) political commitment with the university technology adoption, (T2) quantity and quality of ICT resources available, (P3) teaching training and development, (P4) degree of integration of ICT in the curriculum, and ICT access, and (P5) integration of ICT-based educational resources in the teaching-learning process.

Methodology

- An interview and observation guide was developed to be applied directly on the field.

- Strategic sample of universities to cover differences in size (mega, large, medium, or small), source of funding (private or public), and with a certain variation in national context, as well as in the vocation of the institution (general vs. specialized).

- The coding allowed placing each university in one of five level of maturity for each dimension: absent, incipient, medium, integrated, and consolidated.

- A reference framework for ICT planning in higher education was developed.

Reference framework

The reference framework is organized around five action lines that are fundamental to ensure a real impact is obtained from any technology investment, aligned with the educational purposes of the higher education institution:

- Government and ICT management

- ICT infrastructure operation

- Faculty development

- ICT integration to the curricular design

- Learning and Knowledge Technology units.

Government and ICT management

Visible in the planning and allocation of computing and networking resources, and based on academic needs, with the explicit reference to educational models that guide the integration of technology in each institution

- Centralization level

- ICT policies

- Educational strategy

- Infraestructure diagnosis.

- Planning ICT acquisitions (connectivity, computers, software, information systems).

- ICT investment to solve basic needs.

- Support units: training and certification of IT team and technical support to guarantee the operation of the institution.

ICT infrastructure operation

Infrastructure: computing and networking services available for academic, and academic administration activities performed by professors, researchers, and students.

- Definition of procedures for technology management.

- Definition of strategies to guarantee technological availability.

- Implementation of computer security measures.

Faculty development

Developing of skills in the faculty to apply technology creatively, providing significant learning environments.

- Diagnosis of teachers digital skills.

- Integrate ICT in teacher training with the purpose of developing the digital skills required by students in each field of knowledge.

- Training planning in various modalities.

- Linking ICT training with incentives and institutional evaluation protocols.

ICT integration to the curricular design

Curriculum design: explicit presence of ICT in different disciplines. Use of LMS in virtual and b-learning classes.

- Diagnosis of students digital skills.

- Identification of the necessary skills and competencies in each professional profile.

- Identification of specialized technological tools required by each field of knowledge.

- Integration of technology within the study programs to promote learning and guarantee professional training.

- Integration of strategies for the development of students' digital skills within the curriculum.

Learning and Knowledge Technology units

Special units dedicated to supporting and monitoring teachers in their integration of technologies

relevant in their teaching practice.

- Personnel who are not only competent in the technological aspect, but also in the pedagogical one.

- Identify the needs of teachers and technologies that best solve them.

- Identify basic and specialized software for each educational program, always in coordination with teachers.

- Provide personalized accompaniment to each teacher to achieve the integration of ICT in their class and determine training needs.

Conclusions

- Technological and pedagogical perspectives are inseparable and necessary to consider to evolve the level of ICT integration to a higher level of maturity.

- It is necessary to place priorities in the continuum of the two axes, and evaluate the desired state of every institution based on their educational model.

- ICT governance has to be oriented for educational purposes.

- ICT managment requires definition of strategies to guarantee technological availability.

Conclusions

- Diagnosis of teachers and student digital skills.

- Integrate ICT in teacher training with the purpose of developing the digital skills required by students in each field of knowledge.

- Curriculum analysis for the integration of ICT in a cross-sectional way.

- Identification of specialized technological tools required by each field of knowledge.

- Special units dedicated to supporting and monitoring teachers in their integration of technologies relevant in their teaching practice.

Finally

Education is a process, and technology the vehicle for its facilitation. Educational technology products will never be the end, but merely the means. Understanding the new rule of socialization of our time is fundamental for closing the gap between professors and students in relation with ICT use to learn.
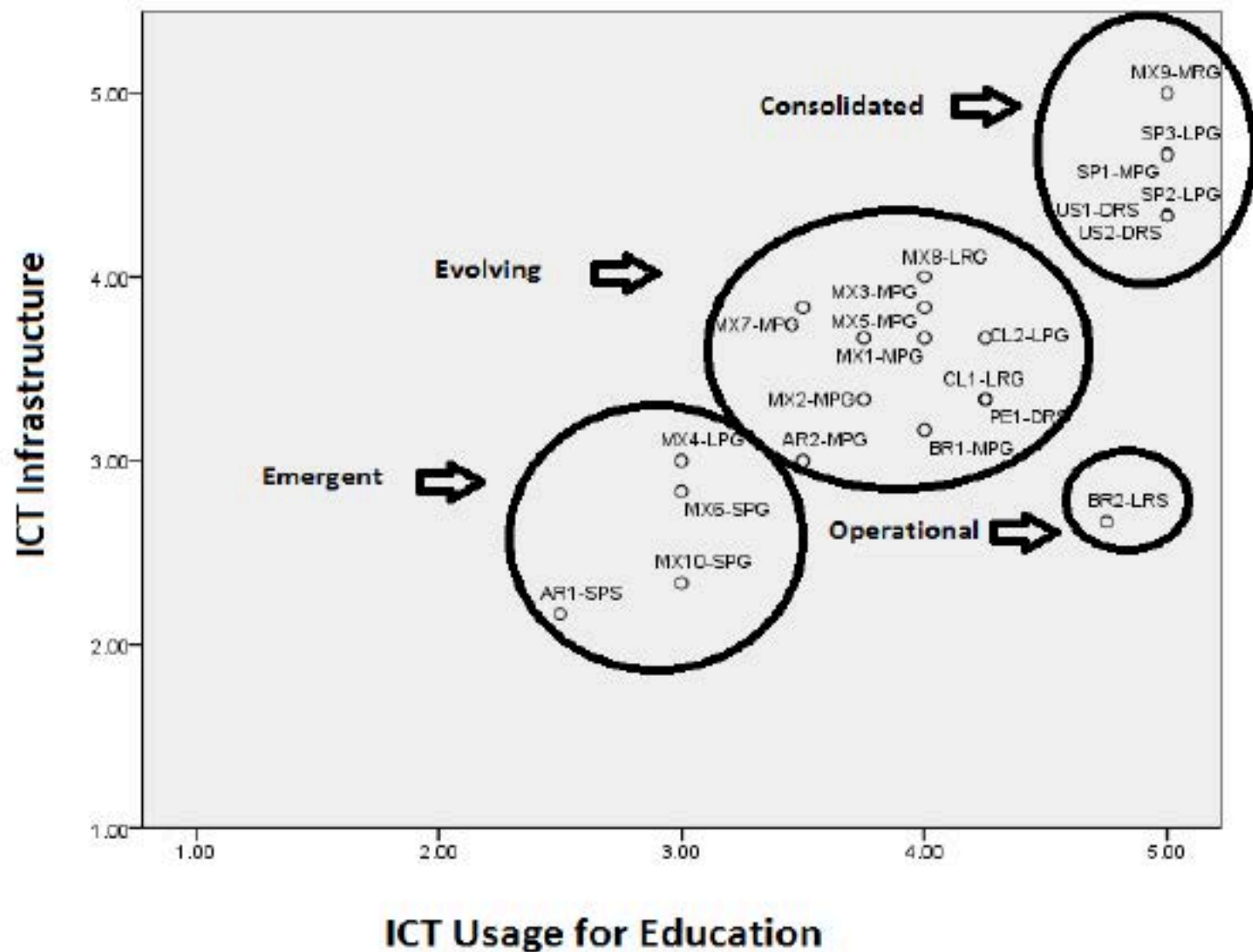
Thanks!

¡Gracias!

Methodology

Country	Funding		Size				Vocation	
	Private	Public	Mega	Large	Medium	Small	General	Specialized
Mexico	7	3	6	2		2	10	
Peru	1				1			1
Chile	1	1		2			2	
Argentina		2	1			1	1	1
Brasil	1	1	1	1			1	1
U.S.A.	2				2			2
Spain		3	1	2			3	
Total	12	10	9	7	3	3	17	5

Results

Levels for both axis: (1) absent, (2) incipient, (3) medium, (4) integrated, (5) consolidated