Instituto Tecnológico de Monterrey

**A CASE STUDY IN OPEN EDUCATIONAL RESOURCES PRODUCTION
AND USE IN HIGHER EDUCATION**

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BACKGROUND

1.   The Instituto Tecnológico y de Estudios Superiores de Monterrey (Mexico), widely known as ITESM or TEC de Monterrey, was founded in 1943 by a group of Mexican industrialists headed by Don Eugenio Garza Sada. Originally, the whole design was meant to replicate both the spirit and the operations of the MIT in the United States.

2.   ITESM was founded as a private, non-for profit initiative with the clear goal of responding to the needs of economic and technological development in the State of Nuevo León and in the whole country as well. Today ITESM has 33 campuses spread all over the country. Each of these campuses is the result of a partnership between the alma mater at Monterrey and the local group of promoters and founders, thus replicating the founders' original idea. ITESM has also recently known very strong international development with offices or campuses in Barcelona, Beijing, Bratislava, Boston, Scythes, Friburgo, Hangzhou, Madrid, Montreal, Paris, Shanghai, Vancouver and Washington and partnerships with other higher education institutions in Bogota, Caracas, Guayaquil, Lima, Medellín, Miami, Panama, Quito and Santiago. ITESM thus reaches all the continents except Africa.

3.   As is usual with Mexican universities and colleges, ITESM covers not only graduate and postgraduate studies but also upper secondary education, which is seen as a preparatory school for university entrance examinations. At the graduate and postgraduate levels ITESM offers 35 degrees, 6 specialised programmes, 51 masters and 10 doctorates in the areas of business administration, technologies of information and electronics, biotechnology, humanities, sciences, engineering, medicine, agronomy and food technology. An indication of the quality of this provision is given by accreditation issued to a number of these programs by different US bodies such as SACS.

4.   On the whole, it has more than 97 thousand students -29 thousand of them at the preparatory level, 58 thousand at graduate level and 11 thousand at postgraduate level-, and 8 thousand professors -2 thousand of them with a PhD. Since its beginning 128 thousand students have graduated from ITESM and more than 27 thousand got a postgraduate qualification. ITESM is also well known all over the world for its Virtual University operating since the 70s in Mexico and in other Spanish speaking countries mainly on the basis of satellite lecture broadcasting, and more recently with an increasing use of the Internet. In the last years, two new activities have been developed: the TecMilenio University and the PrepaNet, both aimed at covering the needs of non traditional students with an intense use of information and communication technologies.

5.   Three characteristics make the ITESM a very particular institution in the context of Mexican higher education:

   a)   Its system of governance, extremely influenced by an entrepreneurial approach to education but involving successfully all stakeholders –from students and ITESM graduates to academic staff, from representatives of the civil society to entrepreneurs. The whole operation of ITESM is leaded by the identification of a clear mission statement, recurrently reviewed and updated (the one currently in operation sets its objectives for year 2015).

b) A strong confidence on the standardization of teaching methods, involving a huge investment in teacher training and teaching quality controls, as well as on the role that technologies have to play in the teaching and learning process.

c) The high level of costs associated with this particular methodology, setting a high financial profile for students –although local entrepreneurs and firms participate in the investment costs to a great extent.

6.   The case study visit took place at the main ITESM Campus in Monterrey on the 30th and 31st of January, 2006. The interviews were kindly organised by Dr. José Escamilla, director of the Graduate School of Education. With no exception, all of the interviewees[1] were willing to participate in this study and extremely interested in knowing more about the implications of OER for higher education. We are indebted to all of them not only for their time during the interviews but also for their assistance in improving this report.

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[1] For a full list of interviewees, please refer to annex 1.

WHY THE ITESM WAS CHOSEN

7.   A number of reasons make ITESM worthy as a case study in the use and production of Open Educational Resources:

a)   ITESM maintains a leading academic position in the context of Mexican higher education and is prestigious worldwide, and particularly among Spanish speaking countries. This leading position is strongly reinforced by strategic alliances and partnerships with a number of Canadian and US universities, such as British Columbia or the MIT. Therefore, all kinds of developments in North American higher education particularly regarding teaching and learning, such as policies aimed at promoting the use or the production of open software or digital resources, are likely to be followed up very closely by ITESM.

b)   The intensity of use of information and communication technologies as teaching tools, which in an unusual way for most higher education institutions are widely used in virtually all courses. It is likely to be the only Mexican university which makes compulsory for teachers to use a learning platform, thus giving rise to a blended-learning approach in traditional courses which encourage the need for the use and development of digital teaching resources.

c)   The longstanding experience of the Virtual University which makes ITESM very sensible to technological developments in the field of distance higher education. The willingness to maintain or reinforce its position in an increasingly globalised market forces ITESM to pay particular attention to the requirements and the costs associated to internet-based or e-learning approaches, even more demanding in terms of digital teaching resources than blended teaching.

d)   The successful experience of ITESM in the creation of the open courses linked to the Centros Comunitarios de Aprendizaje (Community Learning Centers, or CCA). These open courses are offered worldwide (although available only in Spanish) via the Internet at no cost. They are mainly aimed at low skilled workers and, more in general, at a very broad and general audience. Again, this is likely to be a unique feature in the context of Mexican higher education.

e)   The worldwide impact of the Phronesis Project, an open source software application for digital resources and library management, which has several improved versions freely available on the Internet.

STATE OF THE ART

Open contents use

8.   ITESM has not developed any particular institutional policy aimed at either fostering or limiting the use of open digital content in teaching so far. And there are no expectations for change in the near future.

9.   Accordingly, it is an almost impossible task to get accurate estimates of the actual use of open digital contents at ITESM since there is no particular institutional arrangement or instance dealing with this issue in place. None of the interviewees was able to name a single teacher using open content in her courses.

10.   Three reasons can help understand this status: one is related to the ITESM institutional policy on copyright issues, another to the ITESM approach to course internal accreditation, and the last one to ITESM ownership rights of teaching materials.

   1.   ITESM has developed, and strictly follows, a very restrictive institutional policy on the use of copyright material for teaching. Accordingly, ITESM has a special unit which reviews all contents and materials used by teachers in their courses and, if necessary, settles the copyright issues by buying as many copies of the materials or readings as needed or the required rights to use them. It is important to note that internal compliance with this policy is seen as the most appropriate way to assert that the use of ITESM copyrighted materials by other Mexican or foreign institutions should also follow the same principle. It is, in this respect, a policy designed to protect ITESM own copyrighted materials[2] by instilling the principle of mutual interest. In a way, this policy could have prevented teachers from using non-copyrighted materials –a typical OER area.

   2.   There is a very complex process of accrediting courses and teachers at ITESM. Course accreditation is a long process involving at least two academic years during which this particular course is designed and imparted at least twice, and the whole process and the results are assessed by ITESM. Once a course is accredited it can be adopted –and then used- by any other teacher in any other ITESM campus. But no course can be taught at any ITESM campus unless it is fully ITESM accredited. A similar process applies to teacher accreditation. The point with this process of accreditation is that it allows an institutional control of teaching quality and contents. But on the negative side, it avoids the kind of educational innovations and experiments so frequent in any other university setting that foster the use of OER.

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[2] Interestingly enough, there is a much quoted story regarding a visit that the ITESM rector paid to a particular institution in a foreign country. The hosting rector showed him how ITESM (copyrighted) materials were being currently used by this other institution. The point is that the hosting rector was proud of this usage, which he considered to be a proof of academic respect towards ITESM materials –since they were widely used at this institution. But this institution never did any effort either to settle the copyright issue with ITESM or to buy the corresponding rights.

3. In the process of a course accreditation the teacher has to sign a contract by which she recognises ITESM as the rights owner of all the resulting teaching materials. Teachers' salaries are considered to include a financial compensation covering teacher participation in the process of creating study materials, which in the end is a process involving also technical staff such as instructional designers or multimedia specialists.

11. ITESM has therefore developed a very particular policy regarding educational materials and contents which, in the long run, has been distilled into the institutional culture. This culture recognises and values others' intellectual rights while at the same time protecting ITESM's own interests for educational materials which are seen as part of the ITESM assets in the market of higher education. Indeed, a number of commercial agreements particularly with foreign institutional or governmental partners, especially in Latin America, suggest that selling educational materials is part of the business model of ITESM.

Open contents production

12. Open contents production at ITESM has to consider two different instances: first, the institutional policy regarding course contents production and whether it is aimed at a free distribution or not; and second, the particular initiative of free course delivery, known as CCA, initiated in 2001.

Course material development

13. As previously stated, course content development is considered to be one of the main tasks of teachers at ITESM. Up until now all contents and course materials produced are copyrighted by ITESM. According to Mexican legislation, there is a distinction between intellectual property rights and moral rights. While the former are related with the right to use and commercialise a product, the latter refer to the product's authorship. Accordingly, even if the intellectual property rights are transferred by the teacher to ITESM, as stated in her contract, the teacher always has the recognition of authorship.

14. For years there have been no indications of an institutional willingness or intention to liberate content, thus not following the pace set by some North American research universities which is a development well known at ITESM. Behind this strict copyright policy is the perception that there is, or used to be, a good deal of business opportunities in the field of course content transfer or selling to other educational institutions worldwide. To apply a strict copyright policy was considered then to be a prerequisite to leave these opportunities open for the future.

Community Learning Centres, CCA

15. The second instance is the highly successful offer of free Internet course delivery with additional support, if required, through the network of Community Learning Centres or CCA, an initiative created in 2001. The open offer includes a wide range of courses of short duration covering a number of areas essentially addressing the needs of disadvantaged populations or key professionals working in deprived areas.

16. Currently, more than 60 courses can be freely accessed. On the whole, they are meant to cover two main areas: general education and courses for change agents. Usually general education courses are made up of self-instructive packages intended to promote, for instance, adult literacy (in connection with

some governmental agencies), the basics of some indigenous languages such as maya, mixe and raramuri, or parental and health education. Courses for change agents are intended to cover the needs of key people with a potential for social change such as teachers, civil servants, journalists, entrepreneurs or latinos in the US. These courses charge often a small tuition fee of around USD 30 intended to cover the tutorial costs.

17.   All courses are available via the Internet under a variety of formats. Most of them are content-oriented and only a minority have true multimedia components. The majority expect the learner to complete the whole course in about 10 hours. The collection of virtual labs for maths, physics and chemistry education stands out as one of the most interactive domains. ITESM uses proprietary software (such as Macromedia Flash or the Microsoft office suite) to develop course content and its own e-learning platform (WebTec) to run these courses.

18.   Since these courses were aimed to respond to the needs of disadvantaged populations or deprived areas, facilitating Internet access was seen as a priority from the very beginning. To cope with this, ITESM designed the CCA concept as small facilities intended to offer basic technology equipment and user support. ITESM, in conjunction with the government's Secretariat for Social Development (SEDESOL), has promoted a number of agreements with local governments to set up a network of CCA all over the country. Currently there are 800 CCA, most of them in Mexico but also in the US. All of them share a basic structure which includes at least five computers with satellite Internet access and the presence of a manager (*promotor*). Local authorities normally pay for the running costs of CCA.

19.   ITESM role lies basically on the academic side. The design and development of the courses and, if applicable, the required tuition are the sole responsibility of ITESM. Regarding course design ITESM uses its own institutional capabilities, and the costs of development are generally covered by donors (including foundations like the Ford, Kellogg or Hewlett Foundations or the *Puentes al Futuro*, and firms such as Sun or Microsoft) or thanks to agreements with firms (such as Telmex, Banamex or JP Morgan), institutions or governmental agencies. Finally, regarding tutoring it is interesting to note that all tutors are ITESM students who use this activity as a way to comply with the legal requirement of four months of community social service that all Mexican university students have to fulfil.

20.   The CCA offer is limited in scope but has a huge impact. Currently it covers 16 areas with a total of more than sixty courses, eighteen study guides and more than two hundred additional resources. In terms of impact, however, the results are outstanding as Table 1 reflects: some 70.000 registered users and an estimate of some 600.000 unregistered users in 2005 (286.352 in 2004).

Table 1.   CCA registered users in 2005

general free courses	64.693
free courses for teachers	1.600
basic courses (incl. fee)	2.683
change agents courses (incl. fee)	1.943
Total	70.919

Source : ITESM, 2006.

21.   The CCA has not been profitable in financial terms –and it is not meant to be so. However, most if not all costs associated with course design and development have been covered by a range of governmental agencies or donors so far. There are a reduced number of courses that offer tuition, but in

these cases the additional costs have to be covered by course participants on a fee basis –or they need to have someone else to pay for them.

22.   It is important to realise that the CCA offer is not competing with the already existing ITESM activities. Rather, part of its strategic value lies in the possibility that these courses may work as entry points to ITESM formal programmes for a wider audience. This is particularly the case in the domain of teacher training, where the free courses are in some cases adaptations or introductions to fully accredited ITESM courses. If the user likes the free offer, then she can easily transfer to the standard academic offer.

23.   However the relevance of this promotional goal, CCA are mainly seen as an institutional expression of commitment to social development. Accordingly, this initiative has to be seen in the light of the last ITESM mission statement which advocated for aiming at a higher impact on social development. ITESM involvement in CCA is an expression of this commitment to social development by means of helping the general public, and particularly populations with low socio-economic status, to access to world-class education.

24.   In this respect, these courses are considered by ITESM to be *open* with two very different meanings: one is that they are provided *at no cost*, and the other is that *everybody* can access to them with no particular academic requirements –provided that an internet connection is available. Academically speaking, ITESM uses the term *open* exactly with the same meaning associated with the creation of the UK Open University.

25.   However, the CCA courses cannot be seen as open educational resources in the most conventional way for the course materials hold the ITESM copyright (clearly seen in the bottom of each course page). Technically most of them could be downloaded and re-used but, since ITESM is clearly publicising its copyright statement, this would be illegal.

OSS use

26.   There is no institutional policy aimed at promoting the use of OS software or applications. On the contrary, the present policy is strongly reinforcing the use of proprietary software such as Microsoft Windows and the like.

27.   The main reasons to advocate for this policy are related to service and trust. It has to be taken into account that ITESM depends heavily on information and communication technologies not only for administrative purposes but also for teaching, both in-campus and particularly at a distance. Being applications so critical for the daily running of ITESM operations the IT managers consider crucial to use trustworthy, reliable and well-proven applications –for example, regarding the e-learning platform. Secondly, they also value that all these proprietary applications have a range of maintenance, development and support services than have proven to be efficient. In other words, the investment in software is so important that it has to be secured by all means. In this framework, shifting to OSS would involve a number of risks without having the security of achieving the same standards of quality service.

28.   This does not mean that OSS is not used at all at ITESM but in all (three) cases found it could be argued that the use is merely experimental: Internet2 videoconference applications, hypernews, wikis and the like, and OSS servers and e-learning platforms (Moodle). From the three OSS-related initiatives identified, only one can be said to have an external impact. This is the creation and maintenance of a portal devoted to support the communities using OSS applications. Most of these communities deal with the use of OSS in firms and SMEs, but some of them are intrinsically devoted to the use of OSS e-learning

platforms (Moodle, Dot-learn, and Claroline). No information is available on the actual impact of this initiative.

29.	Interestingly enough, for our correspondents at ITESM it was easy to identify the three teachers who were seen as the only internal references in this area –there was no disagreement or hesitation regarding this. These three teachers knew of each others' work and were absolutely sure about the inexistence of any others using OSS. Therefore, on the whole the level of OSS use can be said to be very residual, if not insignificant –less than 1 000 of the teaching body and no more than 500 students in total.

30.	This state of things has to be considered in the context of the spread of OSS in Mexico. The provisional results of a still ongoing survey initiated by the Department of Computing Sciences at ITESM show that 80% of the population don't know what OSS is and a vast majority uses pirated proprietary software.

OSS production

31.	The production of learning-related applications is part of the normal operation of ITESM. Mostly this activity has been aimed at the development of proprietary applications, but at least one project, widely known, fits into the category of OSS, Phronesis.

Applications development

32.	Although it is difficult to appraise the volume of this activity, ITESM has been engaged for years in the design and development of learning-related applications. Two of the most prominent areas have been academic management and learning platforms. The former is extremely crucial for an institution having, on one hand, the need for co-ordinating academic data and centralising management in such a decentralised university (with 33 campuses only in Mexico) and, on the other, a very active Virtual University created in 1989 which, by its very nature, is very demanding in this field. The latter has involved the development of a proprietary learning platform (WebTEC) designed to comply better with the educational requirements of ITESM than other available platforms do (such as Blackboard).

33.	In both cases, however, the tools used and the resulting applications do not fit into the category of OSS since they are not either freely available nor written using open code.

Phronesis

34.	There is only one development regarding OSS production: the successful and widely acclaimed Phronesis, now in use in the United States as well as in six Latin American countries. Phronesis is an open source application, running on servers, designed to manage digital resources and, in more general ways, libraries. Its development lasted more than three years during which a number of successive versions and updates have been posted for free download. For the most part, Phronesis was developed thanks to governmental research subsidies and internal ITESM grants. OEA and UNESCO have greatly contributed to the dissemination of this application.

35.	The developers are currently designing a personal version of Phronesis aimed at letting individual users to create their own digital repositories and even to share them on the Internet, thus having an

important social dimension. This new application will also run on pocket devices such as Palms and the like. Initial contacts have been developed to start a partnership with Virginia Tech and the MIT for this development. The latter seems to be interested in using this product to further exploit the possibilities of its D-Space initiative.

36.   There is not any indication of other similar projects being under way. But again, Phronesis developers strongly believe that the current mission statement could certainly be referred to as a fresh approach to ITESM involvement in OER use and production.

THE FUTURE OF OER AT ITESM

37.   A number of indications suggest that ITESM might reconsider its OER policy in the near future. These indications come from the coincident analysis that different interviewees made from the new mission statement issued this year (2006) and expected to guide ITESM activities and developments until year 2015. In this mission statement two elements are seen as eventually opening the door to a policy shift regarding both open contents and applications:

- An increasing commitment to social development, meaning by this to actively engage in the dissemination of the benefits of education to wider strata of population; and

- A growing confidence in the role that information and communications technologies can play in improving access to education.

38.   Most interviewees agreed that these two principles could lead ITESM to a complete shift in policy regarding freeing course contents and openly advocating for the use and production of open software and learning applications. There are no strong movements yet, but the particular governance system at ITESM would make such a policy shift easily turn into a practice if the governing bodies agreed to follow along these lines. At some point in the near future, ITESM will need to clarify its position in the context of emerging initiatives in the OER arena and see whether its mission expects the whole institution to joint this movement or not.

CONCLUDING REMARKS

39.   ITESM is likely to represent a very unique institution in the higher education arena in Mexico for the way in which it conceptualises its mission and transforms it into actual practices. This uniqueness can be helpful in understanding the past and in forecasting the future regarding OER at ITESM.

40.   First, its highly managerial approach to higher education has been a constraint in the recent past. Not many universities can be said to put such a big emphasis on a standardised didactic methodology as the ITESM, and the same applies to the role assigned to course materials. The particular approach to course content development at ITESM, extremely pervaded by a business model which sees in contents a commercial opportunity, could not be favourable to liberate contents and had do its best to develop and implement a strict copyright policy.

41.   Second, ITESM's strong dependence on information and communication technologies for the whole operation of the university, but particularly for teaching both using blended methodologies and e-learning, required a high level of confidence on the applications being used and on the quality of service providers around them. The institutional option in favour of proprietary applications was taken in a moment were no other alternatives could be envisaged. Now, this strong technological dependence urges a high degree of prudence so, to some extent, the shift towards OSS might not be a realistic option in the short run.

42.   Having said this, the future remains very open. The new mission statement admits an interpretation which could easily lead to a complete transformation of current ITESM policies regarding OER. The circumstances for the internal debate do not exist yet, but the natural trend to look north could bring in the future a growing concern inside the academic community. One thing is clear: should the conclusion of this likely debate urge the need for a policy shift regarding OER, ITESM could easily transform itself into a very strong advocate and one of the most solid practitioners. There is a window of opportunity, but time is passing quickly.

ANNEXES

List of interviewees

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Useful links

- ITESM, www.itesm.mx

- ITESM mission statement for year 2015, www.itesm.mx/2015

- CCA initiative, www.cca.org.mx

- Phronesis project, copernico.mty.itesm.mx/phronesis/software/Default.html

- The ITESM portal for communities of practice in information technologies (OSS), http://redhat.mty.itesm.mx/comunidades.htm