A Psycho-Pedagogical Approach to M-Learning in a Developing-World Context

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Introducing Mobile Learning to a country: Goal → IRAN

- Existing E-Learning Environments?
  - Potential users
    - Formal
      - Schools & Universities
    - Non-formal
      - Job training
    - Informal
      - Everyday activity

- Preferred Pedagogical Models?
- Wireless Technology
  - Mobile Comm.
    - Existing development?
  - Handheld Devices
    - Preferred Devices?
Mobile Communication in Iran

Main policy maker ➔ Telecommunication Company of Iran (TCI)

Status Now:

✓ Annual growth rate of mobile telephone subscribers = 130%
✓ Mobile communication is extended to all cities and 4,155 villages

Status at 2010:

➢ 40 million cellular telephones
Iran has 4 mobile operators:

Main mobile company of Iran (MCI):
GSM 900/1800 from 1994

2nd = Irancell + South African telco MTN
50% of the mobile population
July 2006

3rd = Telecommunication Kish Company (TKC)
6,000 subscribers, from 2000

4th = Mobile Telecommunications Company of Esfahan
pre-paid SIM, from June 2002

• 4 SMS centres, 5 other to come.
• GPRS services from summer 2006

http://www.coveragemaps.com/
Growth of E-learning as an alternative to traditional classrooms:

Distance Learning: 1987 “Payame Noor University” ➔ Now 50% of students

E-Learning: 2001 “University of Tehran” ➔ Now most major universities

• Ministry of ICT ➔
$ 12 million budget for e-learning
Mobile Learning applied in formal education in Iran:

181 students participated in our research.

105 girls and 76 boys between the ages of 15-18.
Students' Ownership of Devices

- Flash Memory: 93.5% (no), 6.5% (yes)
- MP3 Player: 71.1% (no), 28.9% (yes)
- MP4 Player: 95.6% (no), 4.4% (yes)
- Digital Camera: 33.4% (no), 66.6% (yes)
- Personal Computer: 84.6% (no), 15.4% (yes)
- Laptop: 96.7% (no), 3.3% (yes)
- PDA: 96.7% (no), 3.3% (yes)
- Digital Dictionary: 95.6% (no), 4.4% (yes)

Students' Mobile Phone Ownership

- Mostly WAP 1 Devices: 51.3%
- Mostly WAP 2 Devices: 6.5%
- Do not own: 42.2%
Students' featured considered in buying mobile phone

- Price: 50.4% no, 49.6% yes
- Additional features: 74.1% no, 25.9% yes
- Size and weight: 62.6% no, 37.4% yes
- Shape and color: 68.7% no, 31.3% yes
- Size of display area: 61.1% no, 38.9% yes

Students' frequency of using SMS

- Few times per day: 21.1%
- Few times per week: 7.1%
- Few times per month: 0.9%
- Never: 0.9%
- 1.1% Other

70% never used email or chat services via PCs

Students' practice of internet functions via PC

- Search: 32.6% no, 67.4% yes
- Email: 70.8% no, 29.2% yes
- Chat: 61.4% no, 38.6% yes
- Web-log: 82.4% no, 17.6% yes
- None: 82.9% no, 17.1% yes

98% use SMS in weekly bases, especially for group work or projects.

Willing to receive school news and multiple choice questions via SMS
Majority of students use their phone’s digital camera. 67% use it as an educational tool on a weekly basis. 

- Taking photographs of important maths formulae
- Recording lab sessions

The frequency of use of mobile games is low, relative to the number of phones capable of playing them.

More children in primary schools play with games.
Students' willingness to E-Learning

- Yes: 47.3%
- No: 52.7%

Students' willingness to M-Learning as an extension of traditional classrooms.

- Yes: 81.1%
- No: 18.9%

Students' willingness to M-Learning as a sole mode of education

- Yes: 15%
- No: 85%
Mobile Learning applied in non-formal education in Iran:

113 government employees participated in our research.

- Owned fewer PCs but higher ownership of mobile phones
- Mostly WAP 1 devices, price important
- Use of SMS lower than students
- Didn’t exploit the additional capabilities
Willingness to M-Learning

87%

13%

yes

no

Willingness to e-learning

67%

33%

Yes

No

Mobile phones as a means of pedagogy for employees is the right choice

Main problem with traditional classes:
family responsibility, timing and distance

good

better

Willingness to e-learning

Willingness to M-Learning
Mobile Learning applied in informal education in Iran:

100 people from 5 villages participated in our research.

Illiterate people in rural areas nomadic pattern of living

The only mode of technology available to them is Mobile Telephony.
Formal learning in rural areas
• time consuming
• no visible effect on their life and economy.

They are the only group that own mobile phone more than computers and their computer literacy is very poor.
Most underprivileged members of society

RURAL WOMEN

- Their literacy very poor
- Their rest time very little
- Their social communication very limited

Using Pictorial language in WAP portals. MMS messages using PUSH technology. Phone Calls.

Willingness to M-Commerce
- Yes: 5%
- No: 95%

Willingness to informal M-Learning
- Yes: 91%
- No: 9%
M-agriculture = M-learning + E-agriculture

Farmers' willingness to m-agriculture

- Yes: 93.8%
- No: 6.2%
Learning content is designed

Information unconditioned at the beginning

Connection is made between learner and information

Applied over time
Applied encoded

Practice
(An operation must happen on information)

Feedback

Positive
↑F of practice

Negative
↓F of practice

Learning objective achieved

- Admin. (SMS)
- Adult illiterates (MMS and PUSH technology)

-Multiple choice qns
For students (SMS or J2ME)
**Constructivism:** Construction of knowledge by the learner

Individual Constructivism:

- **Implicit**
  - Learning according to learners experience
- **Explicit**
  - Learning when learner actually constructs something

- Professionals
- Farmers
**Social Constructivism:** Learning not a separate entity from the world around.

**Contextualism:** Learning not a separate entity from the world around.

**Community**
- Time
- Place
- Activity

**Situated Constructivism:**
- Real Place: Help of GPS and Bluetooth
  - Illiterate Adults

**Virtual Place**
- Case-based studies for professionals
- Simulation for students
Conclusion:

Iran’s Pedagogical model to implement mlearning

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