

الجامعة الإسلامية العالمية ماليزيا  
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA  
وَتَنْبِرِي سُنَّتِي بِإِسْلَامٍ وَأَنْبَارًا بِحَسْبِ مِلَّةِ سُنَّتِنَا



# Design and Development of E-Learning Contents and Online Activities

**By:**

**Dr Muhammad Sabri Sahrir  
(DALL, KIRKHS, IIUM)**

**Workshop material for CELPAD E-Learning Course  
11<sup>th</sup> NOVEMBER 2011**

# INTRODUCTION

1- *Introduction*

2- *Definitions*

a) *Design and Development*

b) *E-Learning Contents*

c) *Online Activities*

3- *Phases of Design and Development + Learning Contents + Activities (A model of D&D for the prototype in an online Arabic learning game). - PRACTICAL*

4- *Conclusions, discussions and suggestions.*

**THEORETICAL**



# Definitions

## 1- E-Learning ? Some definitions :

“E-Learning is the **delivery** of individualized, comprehensive, dynamic **learning content** in real time, aiding the development of communities of knowledge, **linking** learners and practitioners with experts.” – <http://www.linezine.com/elearning.htm>

“E-Learning refers to the **use of Internet technologies** to **deliver** a broad array of solutions that **enhance knowledge and performance**” - *J. Rosenberg*

“E-Learning is the **use of network technology** to design, deliver, select, administer, and **extend LEARNING**” – *Elliot Masie, The Masie Center*

“E-Learning is the **convergence** of learning and the Internet” – *Banc of America*

# Benefits and Design Models

## 1- *E-Learning ? Benefits:*

- a) *Flexibility, Accessibility, Convenience*
- b) *Cross platform*
- c) *Low delivery costs*
- d) *Ease of update*
- e) *Collaborative learning*
- f) *Scalability* can be delivered to a small or large number of learners with little effort (*Anuwar Ali, OUM*)

## 2- *Design models:*

- a) *Constructivist Model*
- b) *Mental Model*
- c) *Cognitive Apprenticeship Model* (*Joliffe, Ritter & Stevens, 2001*)

# Instructional Design

- 1- A **representation of a view** on how people learn. It is also the **guideline** by which an instructional designer **creates instruction**. Models help us **conceptualize** a process or system. They simplify the complexities of real situations into sets of generic steps that can be applied in many contexts (Gustafson and Branch, 2001).
- 2- It is considered to be both **a science and an art**. A science because it is rooted in **learning theories** and an art because the **designing of instructional materials** is a highly creative process. (Moore, Bates & Grundling, 2002, p.71).
- 3- It **synthesizes instructional practice, research, and theory** into a methodology for learning development that is systematic (inputs produce outputs which, in turn, become inputs) and **systemic** since the components have a symbiotic relationship (Edmonds, Branch, and Mukherjee, 1994, p.56).

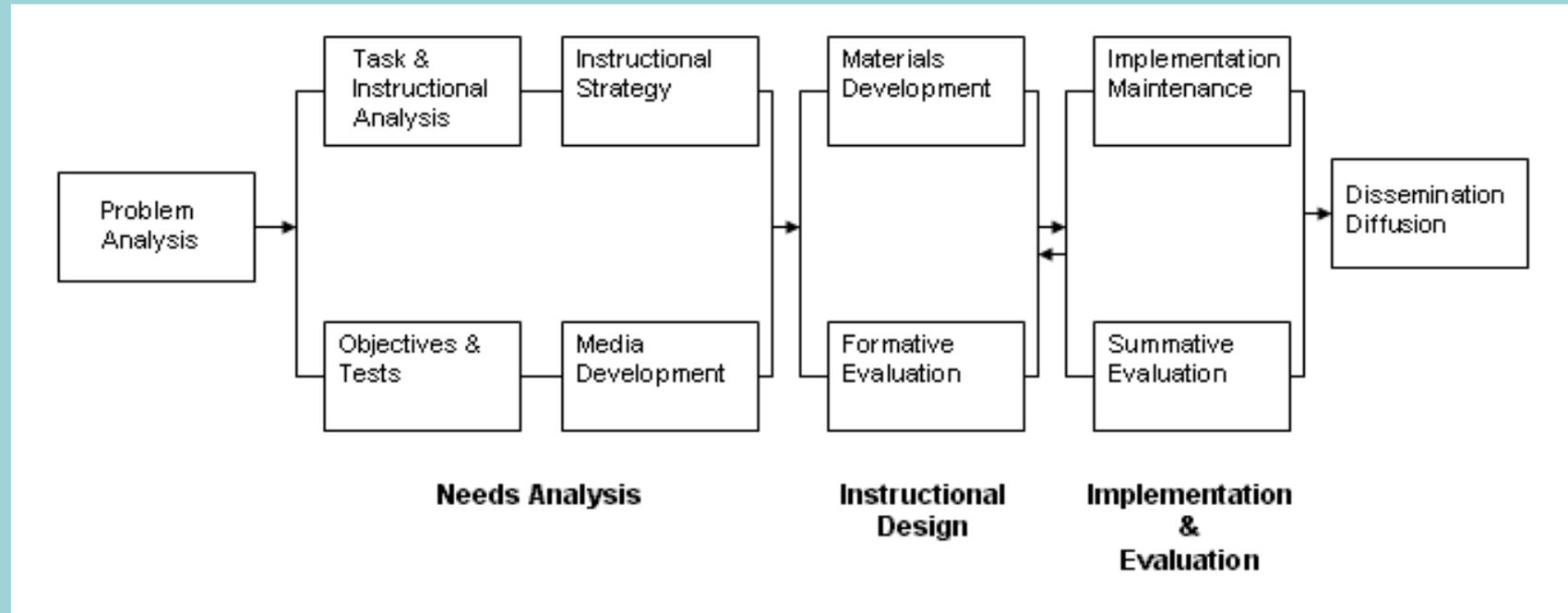
# Instructional Design Models

## 1- Morrison, Ross, and Kemp Model (Classroom-oriented) – Kemp, 1985



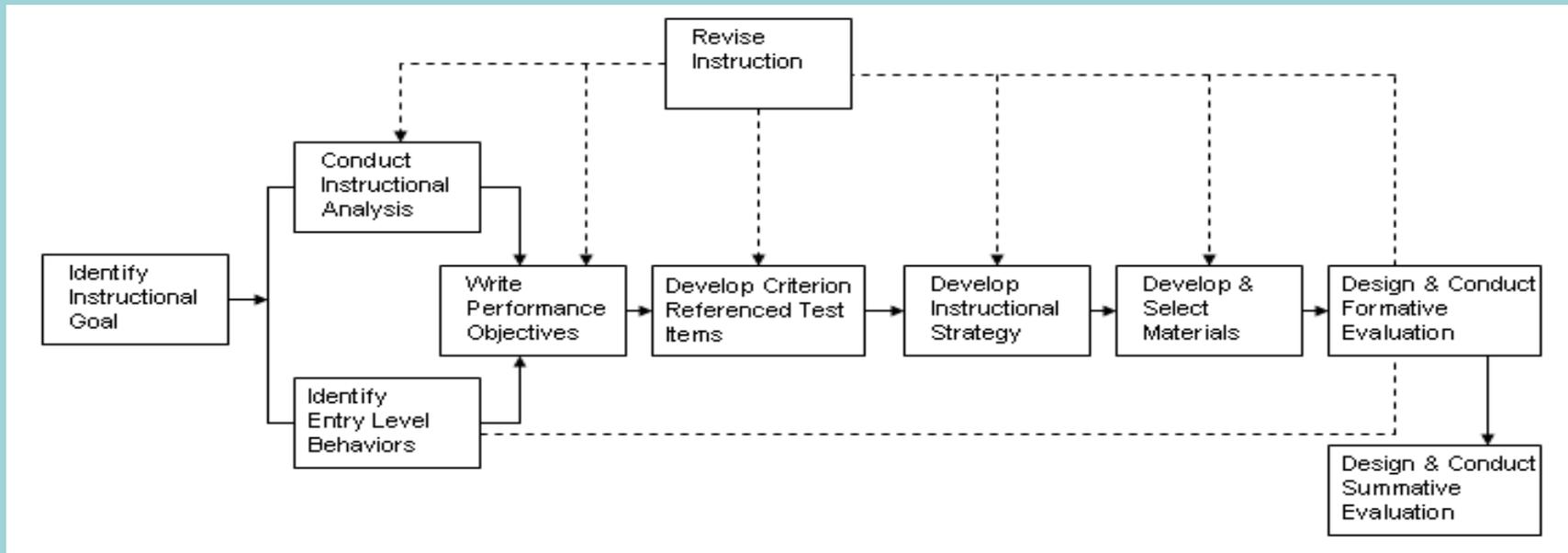
# Instructional Design Models

## 2- Seels and Glasgow Model (Product-oriented) – Seels & Glasgow, 1990



# Instructional Design Models

## 3- Dick and Carey Model (Systems-oriented) – Dick & Carey, 1990



This model is perhaps the **most well known of the systematic design models** and is the standard to which all other ID model (and alternative approaches to design and development of instruction) are compared. (Gustafson and Branch, 2002)

# Instructional Design Models

## 4- ADDIE model – Generic ID Model



**ADDIE** is an acronym for Analysis, Design, Development, Implementation, and Evaluation standing for a systematic approach to instructional development synonymous to instructional systems development (ISD) (Molenda, 2003). Dick and Carey (1996) are widely referred as the torchbearers of the ADDIE methodology through their book *The Systematic Design of Instruction* (Kruse, 2004).



# ID models vs ISD models ?

- 1- Instructional Design (ID) models **differ** from Instructional System Design (ISD) models in that ISD models have a broad scope and typically divide the instruction design process into five phases (van Merriënboer, 1997, pp 2-3):  
ANALYSIS – DESIGN – DEVELOPMENT- IMPLEMENTATION - EVALUATION
- 2- In addition, ISD models **uses formative evaluations** in all the phases and a summative evaluation at the end of the process.  
ADDIE Timeline : <http://www.nwlink.com/~donclark/hrd/learning/development.html>
- 3- Some researchers **are not differentiating** between ID and ISD. In general, all ID and ISD models consist of these 5 main phases of ADDIE. For example, Seels & Glasgow (1998) define Instructional Design (ID) or Instructional Systems Design (ISD) as “Models of visual or verbal representations of the instructional design process that are used to guide and complete design in many training and educational settings”.

# Issues in E-Learning Contents

- *Learning theory, pedagogical issues, etc.*
- *Learner's needs and background.*
- *Learning objectives, syllabus and outcomes.*
- *Learning environment, facilities and readiness.*
- *Issues of implementation : Roles of learning institutions, supports, teacher's training, etc.*
- *Costs of design, development, implementation, maintenance, updating learning content, etc.*
- *E-learning trainer, webmaster, personnel, etc.*
- *Integrating, sequencing, updating, maintaining, etc.*

# Online Learning Activities

- 1- **Synchronous** : commonly supported by media such as **videoconferencing and chat**, has the potential to support e-learners in the development of learning communities. Learners and teachers experience synchronous e-learning as more social and avoid frustration by asking and answering questions in **real time**
- 2- **Asynchronous** : commonly facilitated by media such as **e-mail and discussion boards**, supports work relations among learners and with teachers, even when participants **cannot be online at the same time**. Asynchronous e-learning makes it possible for learners to log on to an e-learning environment at any time and download documents or send messages to teachers or peers. Students may spend more time refining their contributions, which are generally considered more thoughtful compared to synchronous communication

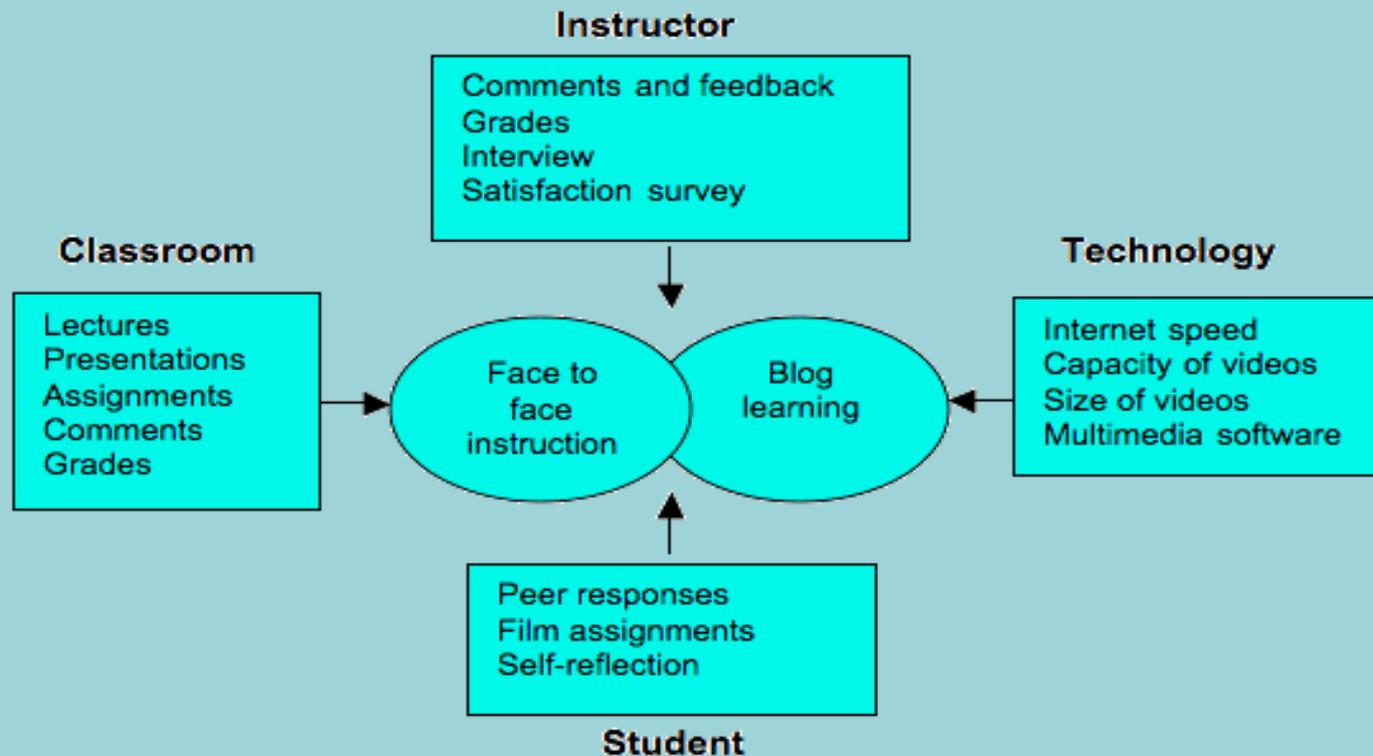
<http://www.educause.edu/EDUCAUSE+Quarterly/EDUCAUSEQuarterlyMagazineVolum/AsynchronousandSynchronousELEa/163445>

# Planning Learning Activities (Issues to be considered)

- 1- Synchronous and / or Asynchronous mode.
- 2- E-learning as main platform eg : MEDIU/OUM or supportive platform (LMS, teaching and learning aids, etc.)
- 3- Facilities available: PC ratio per staff, internet LAN & wireless networks, computer and multimedia lab, multimedia courseware, web-based or non web-based learning materials.
- 4- Computer skills, awareness, readiness and continuous training courses for staff and/or students, pedagogical issues in e-learning.
- 5- Organizational support, financial needs, staff in-charged, etc.
- 6- Planning of e-learning implementation : learning objectives, learning contents, learner's background, learning outcomes, etc.
- 7- Arrangement of weeks, lessons, learners, teachers, etc.
- 8- Traditional generation vs digital immigrants vs digital natives.

# Blended Learning Framework

*A blended learning model for an English Public Speaking course*



<http://www.ascilite.org.au/ajet/ajet26/shih.html>

# Blended Learning Framework

*A blended learning model adult learning*

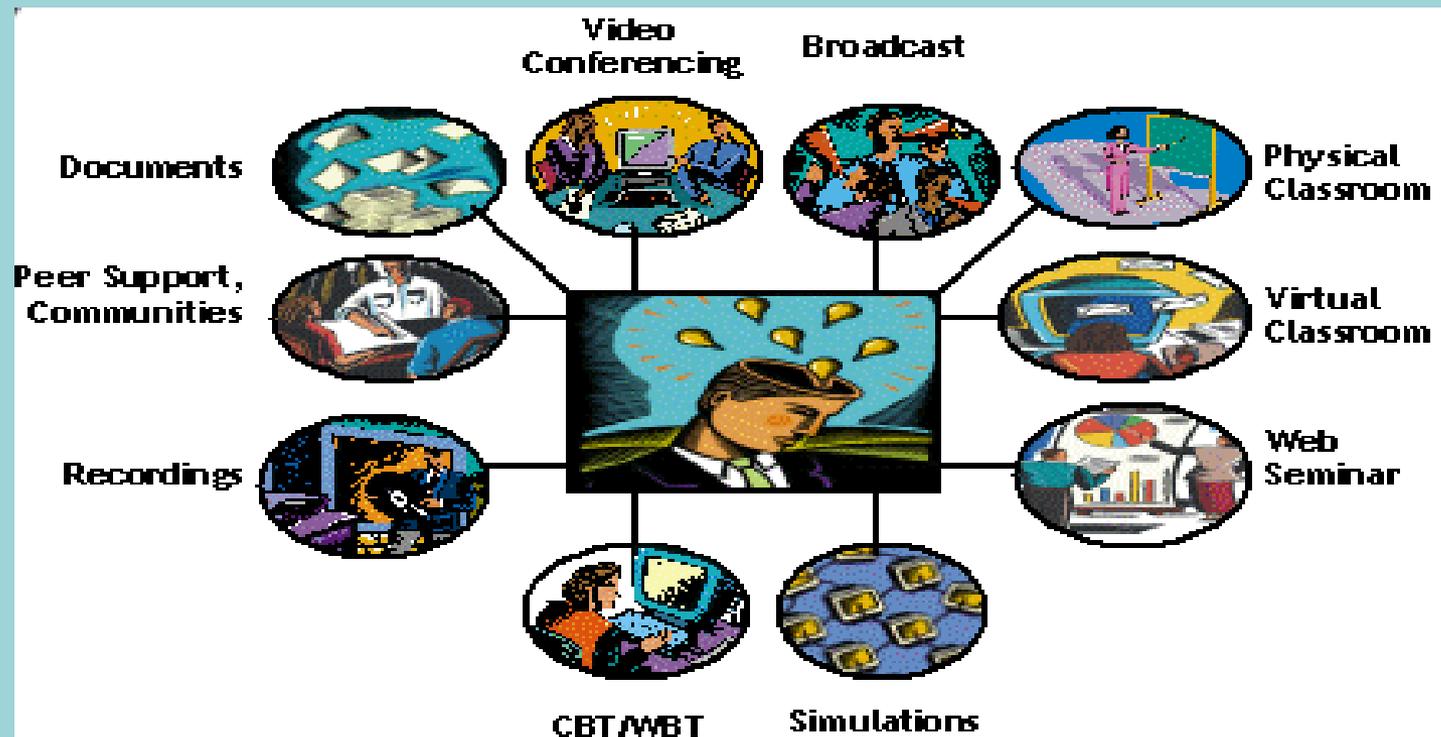


<http://www.teamcoach.com.my/images/method.html>



# Blended Learning Framework

*A framework of blended learning or hybrid learning*



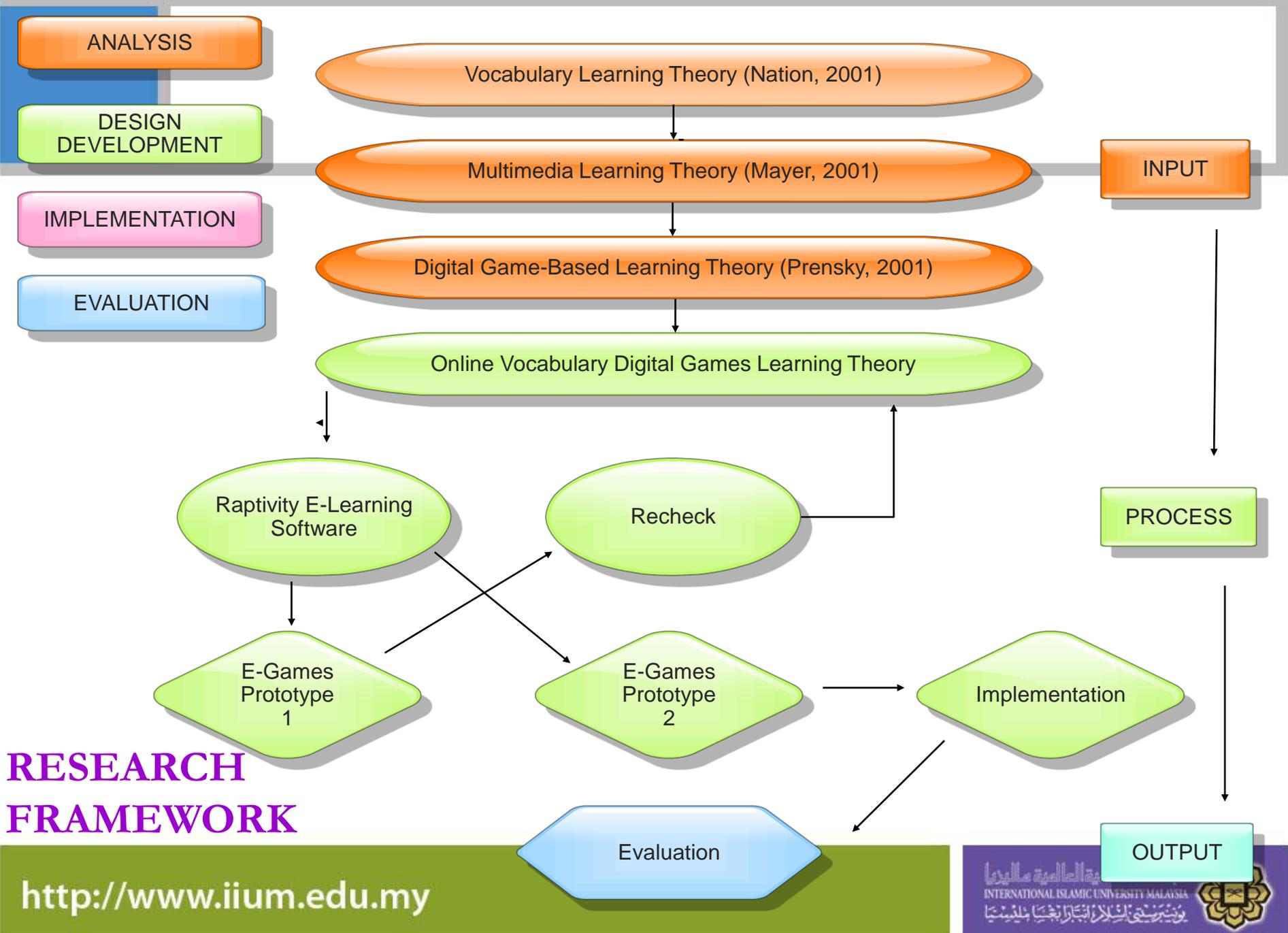
<http://www.cognitivedesignsolutions.com/ELearning/BlendedLearning.htm>



# *A model of D&D for the prototype in an online Arabic learning game*

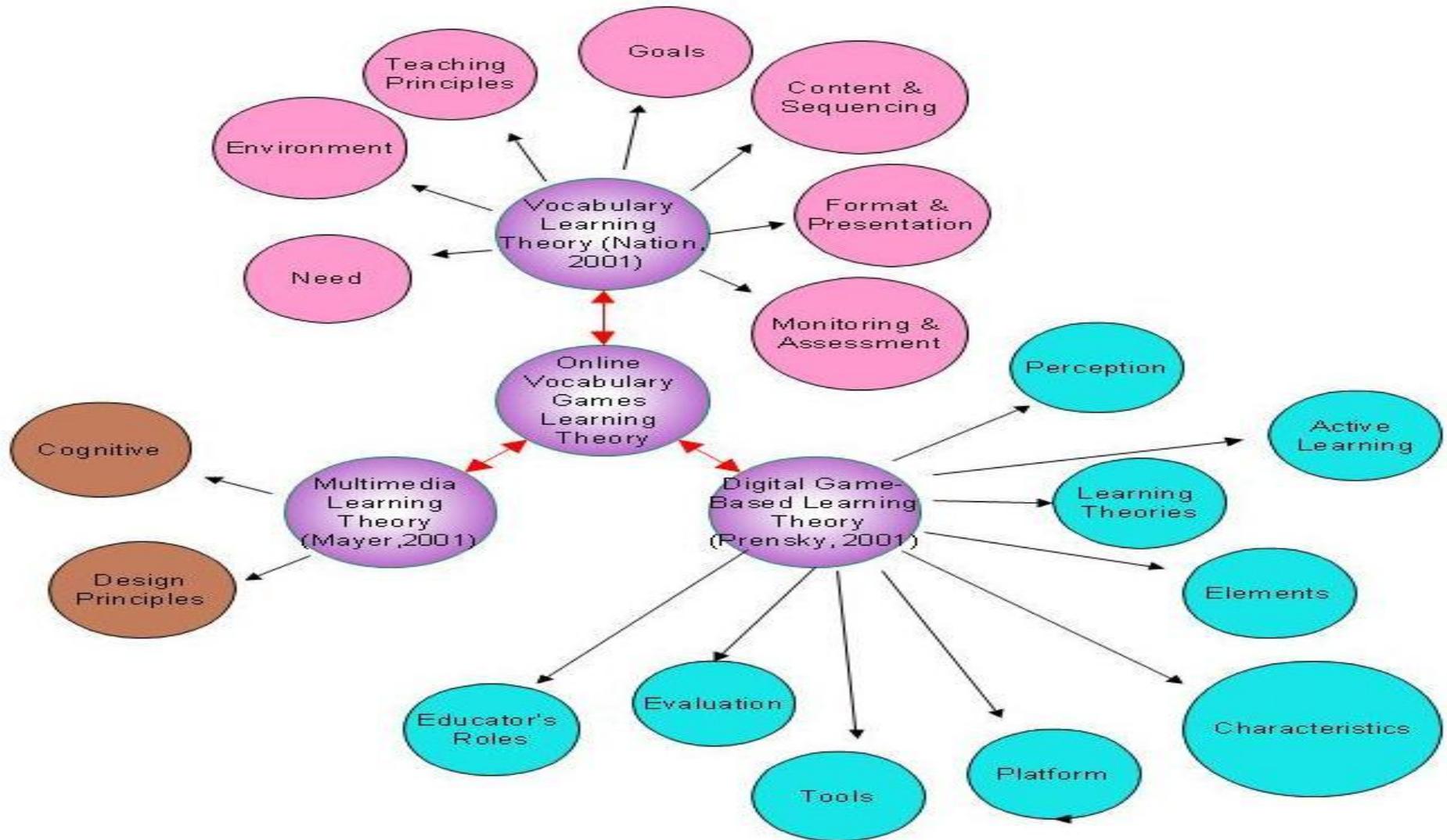
- General Research Framework
- Front-End Analysis Procedures
- Validations of Various Experts (ID & SME)
- Consultations from Various Experts (ID & SME) –
- Constructing ‘Design principles’ - Design
- Development of Initial Prototype
- Cyclic and iterative revisions of D&D – changes and improvement of prototype
- Formative evaluation of D&D – experts, lecturers, learners
- Final product – ready to be used





**RESEARCH  
FRAMEWORK**

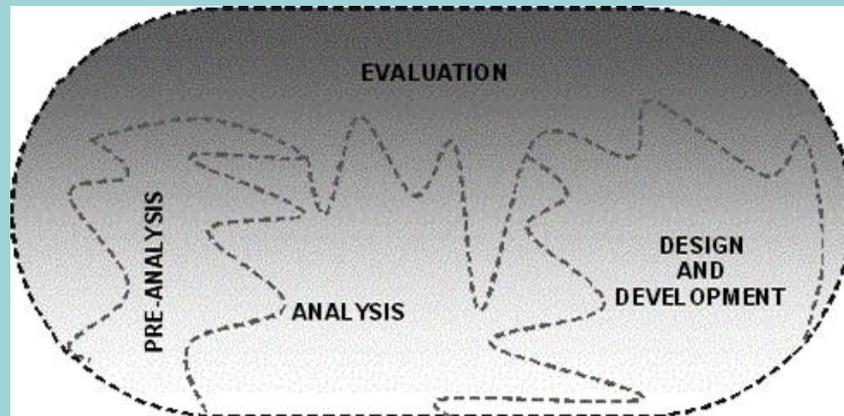
# THEORIES UNDERLYING THE DESIGN





# ID Model for DGBL

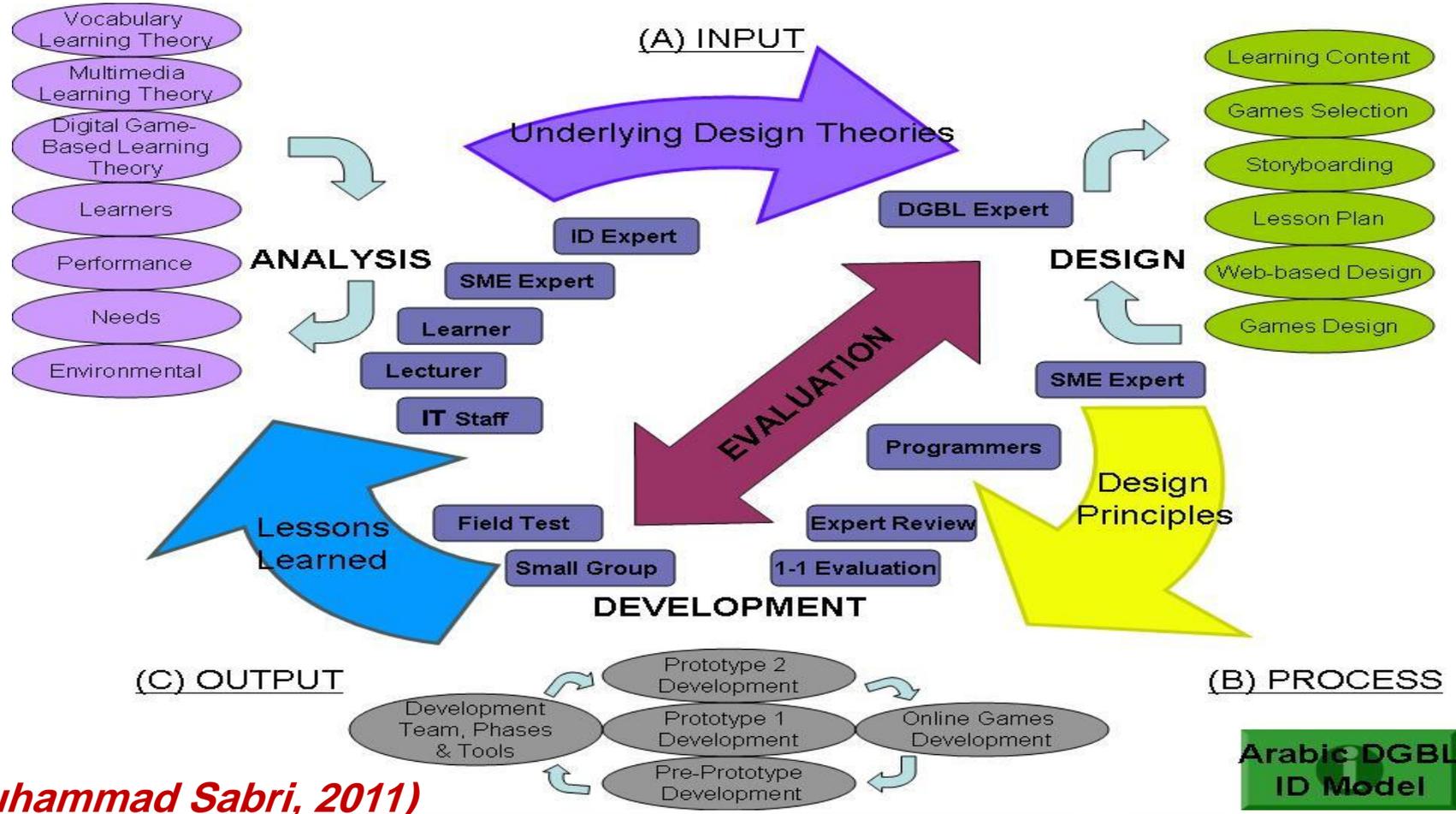
- 1- 'Fuzzified Instructional Design Development of Game-like Environments' or FID<sup>2</sup>GE model (Akilli, 2004)



- 2- Several frameworks and models have been proposed by researchers in the field of game design (Tan, Ling & Ting, 2007).
- 3- This Arabic online vocabulary games were built based on 5 levels of games learning which Prensky (2001) refers to as: "How," "What," "Why," "Where," and "When/ Whether" levels at which video and computer games learning occurs (Pivec, Koubek & Dondi, 2004)



# Arabic DGBL ID Model



(Muhammad Sabri, 2011)

## 2 types of DR (Type 1 was selected)

	Product & Tool Research Or TYPE 1 of DR	Model Research Or TYPE 2 of DR
Emphasis	Study of specific product or program design, development, &/or evaluation project	Study of design, development, or evaluation processes, tools, or models
Product	Lessons learned from developing specific products and analyzing the conditions that facilitate their use	New design, development, and evaluation procedures &/or models and conditions that facilitate their use
	<b>CONTEXT-SPECIFIC CONCLUSION</b>	<b>GENERALIZED CONCLUSIONS</b>

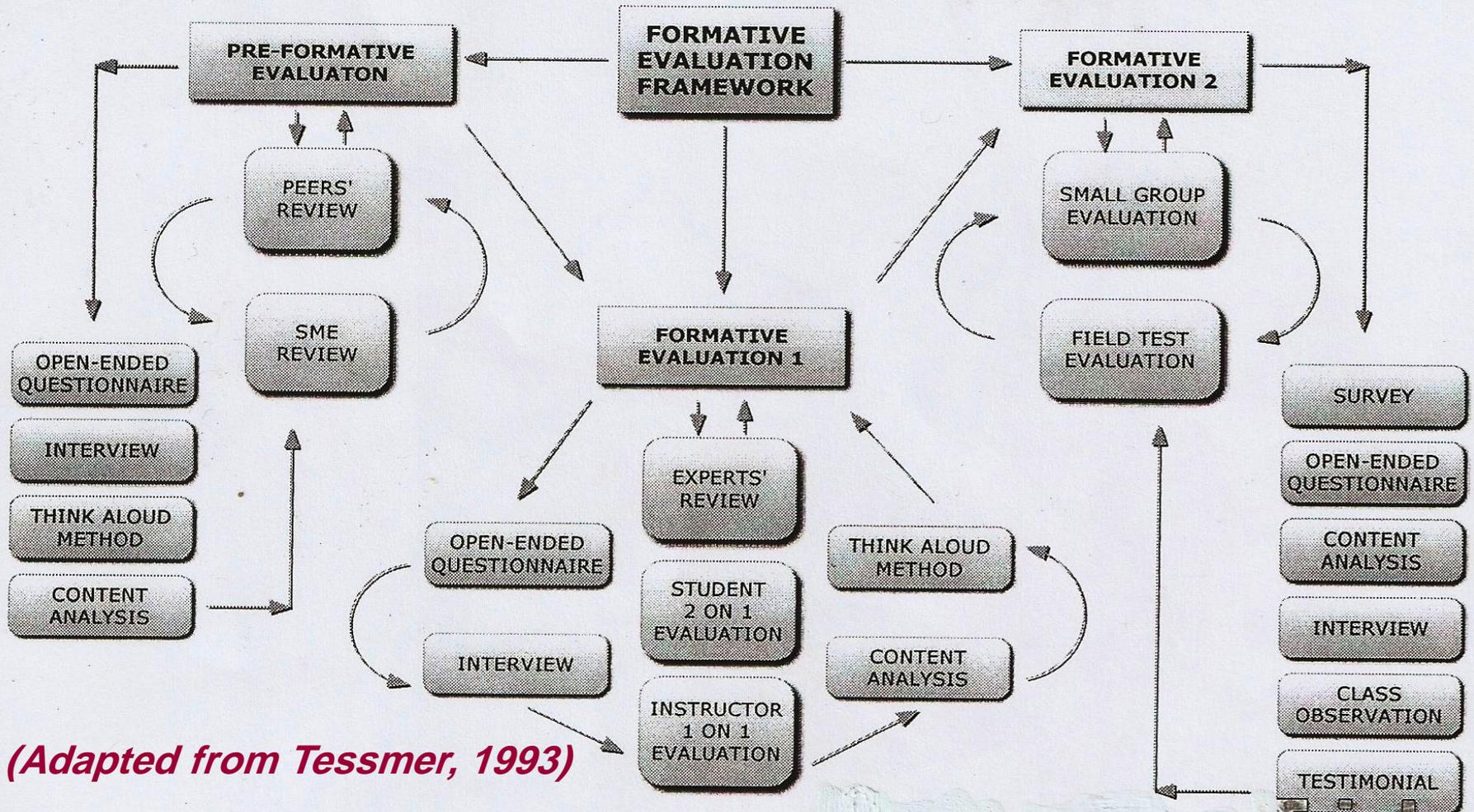
(Richey, Klein & Nelson, 2004)

# Formulation of Design Principles

- ✓ Selection of type and range of Arabic vocabulary.
- ✓ Integration strategy between game-based learning and learning objective and contents .
- ✓ Build in facilitative role of learners.
- ✓ Build in facilitative role of lecturers.
- ✓ Games language support through English translation.
- ✓ Employing 'Play' and 'Learn' concepts.
- ✓ Build in a cycle of a learning interaction.
- ✓ Learning support through the use of multimedia graphics and animations.
- ✓ Formative evaluation in game-based learning; eg. Vocabulary test games.
- ✓ Integration of Islamic values and virtue in game-based learning.
- ✓ Online supportive tools for searching vocabulary meanings.



# Formative Evaluation Framework



*(Adapted from Tessmer, 1993)*

# Characteristics of this Online Game Prototype

- Aimed at elementary Arabic learners in CFSIIUM
- A compendium of 34 games (variety of games, 7 levels of vocabulary difficulties, online supportive tools)
- Functions as a support for Arabic language learning in the classroom/multimedia lab.
  - The lecturer facilitates (facilitator)
  - Learners collaborate (collaborative learning)
  - Has the potential for self instruction (asynchronous)
  - Supportive learning tool for blended/hybrid learning
  - Can be used between 14 weeks of semester

# ITERATIVE FORMATIVE EVALUATION (DIFFERENT SESSIONS DURING D&D)



SMALL GROUP EVALUATION



FIELD TEST EVALUATION 1



FIELD TEST EVALUATION 2

# Screenshot 1

LINK : [www.arabic-games-iium.net](http://www.arabic-games-iium.net)



*International Islamic University Malaysia*  
Garden of Knowledge and Virtue

**ONLINE ARABIC VOCABULARY GAMES LEARNING WEBSITE**

موقع تعليم مفردات اللغة العربية عن طريق الألعاب الحاسوبية

**اللغوية السلام عليكم الألعاب**

أهلا وسهلا ومرحبا بكم

**INSTRUCTIONS FOR USERS :**

- ➔ The games were designed for Arabic elementary learners (LQM 1061), science-based learners at Centre for Foundation Studies (CFS), IIUM as an additional game-based learning aid for Arabic language.
- ➔ Please choose the games based on 7 levels of vocabulary learning : alphabet, word, synonym, antonym, grammar, phrase and sentence.
- ➔ The learners are required to learn the vocabularies in the textbook before playing the chosen games.
- ➔ The games are in single-player mode, but the player could play any one of the games collaboratively with their friends.
- ➔ The vocabulary test games below were prepared to evaluate learner's performance after playing all games in this website.

**TECHNICAL REQUIREMENT :**

- ➔ Intel Pentium II Processor or higher
  - ➔ 64 MB RAM
  - ➔ 256-color monitor or better
- ➔ Internet Explorer 5.5 or above, Netscape 7.1 and 7.2, Firefox 1.0.2 or Safari
- ➔ Flash Player 8 or above. Click any of the following buttons to download.

Macromedia Flash Player Version 8  or  Adobe Flash Player

Arabic note Pictures, Images and

**ASSISTANCE TOOLS AND BUTTONS**

[Online Translator](#) [Games Glossary](#) [Online Dictionary](#) [Vocabulary Test 1](#) [Vocabulary Test 2](#)

**ألعاب الحروف**  
Alphabets Games  
لعبة 1  
لعبة 2  
لعبة 3  
لعبة 4

**ألعاب الكلمات**  
Words Games  
لعبة 1  
لعبة 2  
لعبة 3  
لعبة 4  
لعبة 5  
لعبة 6  
لعبة 7  
لعبة 8

**ألعاب المترادفات**  
Synonyms Games  
لعبة 1  
لعبة 2

**ألعاب المضادات**  
Antonyms Games  
لعبة 1  
لعبة 2

**ألعاب النحو**  
Grammar Games  
لعبة 1  
لعبة 2  
لعبة 3  
لعبة 4

**ألعاب التراكيب**  
Phrases Games  
لعبة 1  
لعبة 2  
لعبة 3  
لعبة 4  
لعبة 5  
لعبة 6

**ألعاب الجمل**  
Sentences Games  
لعبة 1  
لعبة 2  
لعبة 3  
لعبة 4  
لعبة 5  
لعبة 6

 CFS Website Link

© Copyright 2009 - 2010 by : [muhdeabri@iiu.edu.my](mailto:muhdeabri@iiu.edu.my)  
Dept. of Arabic Language & Literature, KIRKHS

IIUM Website Link 

# Screenshot 2

LINK : [www.arabic-games-iium.net](http://www.arabic-games-iium.net)



*International Islamic University Malaysia*  
Garden of Knowledge and Virtue

**ONLINE ARABIC VOCABULARY GAMES LEARNING WEBSITE**

موقع تعليم مفردات اللغة العربية عن طريق الألعاب الحاسوبية

**LEARNING OBJECTIVE**

To challenge learners in answering the different questions in a pictorial game environment.

**SENTENCES GAMES**

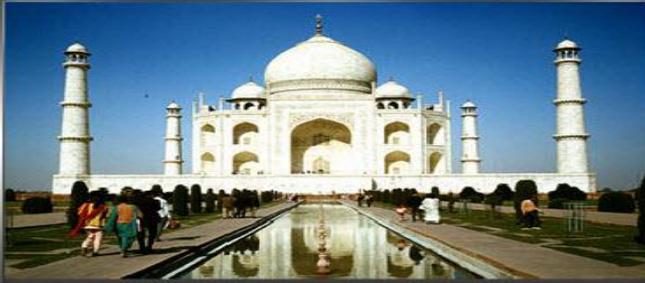
ألعاب الجمل

**HOW TO PLAY ?**

1- Click 'Start' to play.  
2- Answer the question based on shown picture and click 'Submit'.

أجب عن الأسئلة مستعينا بالصور

أين يقع هذا البناء المشهور ؟



01:48:05

في الهند  في ماليزيا  
 في أمريكا  في سنغافورة

Submit Give Up Restart درجة 0

انظر إلى الصور وأجب عن الأسئلة عنها

\*\*\* This game does not have 'exit' button inside the interface, please click 'recheck' or 'give-up' buttons to see the full answers or just choose other games buttons to play other games.

لعبة الجمل 1  
Sentences Game 1

لعبة الجمل 2  
Sentences Game 2

لعبة الجمل 3  
Sentences Game 3

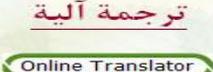
لعبة الجمل 4  
Sentences Game 4

لعبة الجمل 5  
Sentences Game 5

لعبة الجمل 6  
Sentences Game 6

  
BACK TO MAIN

  
قاموس آلي  
Online Dictionary

  
ترجمة آلية  
Online Translator

  
مسرد ألعاب  
Games Glossary

© Copyright 2009 - 2010 by : [muhdsabri@iiu.edu.my](mailto:muhdsabri@iiu.edu.my), Dept. of Arabic Language & Literature, KIRKHS

# Awards and Recognitions



- Silver medal award (Invention category – Student), in IID-SE 2010, UiTM.



# Awards and Recognitions



IIUM Research, Invention and Innovation Exhibition 2011  
IRIIE 2011



- Silver medal award (Social sciences and Humanities category), in IRIIE 2011, IIUM. (9 – 10 February 2011)



# Awards and Recognitions



- Bronze medal award (Open category),  
in I-Inova 2011, USIM. (14 – 16 October 2011)

# International Conferences

- 1- Muhammad Sabri, Sahrir & Mohd Feham, Md Ghalib, (2009). *Employing a Developmental research approach in the design and development of an online Arabic vocabulary games learning prototype in IIUM*. The 2nd International Conference of Arabic Language and Literature, hosted by Department of Arabic Language and Literature, KIRKHS, International Islamic University Malaysia (IIUM), Kuala Lumpur, 21-23 December.
- 2- Muhammad Sabri, Sahrir & Nor Aziah, Alias (2009). *A design and development approach to researching online Arabic vocabulary games learning in IIUM*. In Posiah Mohd Isa, et. al. (Eds.), 2009. International Conference on e-Learning 2009 e-Proceedings/ i-Learn Centre, UiTM. Electronic Form : 310 pages. Joint publisher : i-Learn Centre with University Publication Centre, UiTM. ISBN : 9789673054763.
- 3- Muhammad Sabri, Sahrir & Hussein, Mohd Gameil Ali (2011). *Employing online games in the teaching and learning Arabic language to non-Native speakers - A case study among elementary learners in International Islamic University Malaysia (In Arabic)*. International Conference On Arabic Studies 2011, hosted by Faculty of Arabic Language and Islamic Civilization, Universiti Islam Sultan Sharif Ali (UNISSA), Brunei Darussalam, 9-10 March. ISBN 99917-1-919-9



# Research Exhibitions

- 1- *IIUM Research, Invention and Innovation Exhibition - IRIIE (IRIIE 2010)*
- 2- *IIUM Research, Invention and Innovation Exhibition - IRIIE (IRIIE 2011)*
- 3- *Karnival Inovasi Islam 2010, Putrajaya*
- 4- *Invention, Innovation and Design – Special Edition (IID-SE, 2010), UiTM*
- 5- *Catalogued in the National Grassroot Innovation Databank of Yayasan Inovasi Malaysia (No. 94)*
- 6- *Islamic Innovation Expo (I-INOVA 2011), organised by USIM and MOHE.*

# Conclusions, Discussions & Suggestions

## COLLABORATIVE RESEARCH

Design &  
Development



E-Learning  
Content



Planning Activities



**IIUM TOWARDS RESEARCH UNIVERSITY STATUS**

<http://www.slideshare.net/sabriqld/design-and-development-of-e-learning-contents-and-online-activities>

<http://www.iium.edu.my>

**End of Presentation**

*Thanks for your kind*

***ATTENTION***

***Q & A session***



# References

- ADDIE Timeline, [http://www.nwlink.com/~donclark/history\\_isd/addie.html#extend](http://www.nwlink.com/~donclark/history_isd/addie.html#extend)
- Akilli, G.K. (2004). *A proposal of instructional design/development model for game-like learning environments: The FID2GE model*. Master thesis, the Middle East Technical University, Turkey. Retrieved on December 15, 2008 from <http://simge.metu.edu.tr/master/index.pdf>
- Prof. Tan Sri Datuk Dr Anuwar Ali. *Issues and challenges in implementing e-learning in Malaysia*. President, Open University Malaysia. <http://asiapacific-odl.oum.edu.my/C33/F80.pdf>
- College Station (2001). *ADDIE instructional design model*. Texas Copyright 2001 © LOT All rights reserved. Published on January 23, 2001. Retrieved from [http://htms\training\handouts\pf\\_files\addie.doc](http://htms\training\handouts\pf_files\addie.doc)
- Conole, G., & Oliver, M. (2007). *Contemporary perspective in e-learning research*. Great Britain : Routledge Taylor & Francis Group.
- Dabbagh, N. (2006). The instructional design knowledge base. (Online) Retrieved 27 July, 2011 from <http://classweb.gmu.edu/ndabbagh/Resources/Resources2/FrontEnd.htm> Nada Dabbagh's Homepage, George Mason University, Instructional TechnologyProgram.
- Dick, W., & Carey, L. (1996). *The systematic design of instruction* (4<sup>th</sup> ed.). New York: Haper Collins College Publishers.
- Gibson, D., Aldrich C., & Prensky, M. (2007). *Games and simulations in online learning, research and development framework*. United States and United Kingdom : Information Science Publishing.

# References (cont.)

- Gustafson, K.L., & Branch, R.M. (2002). What is instructional design ? In R.A. Reiser, and J.V. Dempsey (Ed.), *Trends and issues in instructional design and technology* (pp. 16-25). New Jersey: Pearson Education.
- Joliffe, A., Ritter, J., & Stevens, D. (2001). *The Online Learning Handbook, Developing And Using Web-Based Learning*. (1<sup>st</sup> ed.), London, UK : Kogan Page Limited.
- Kruse, K. (2004). *Introduction to instructional design and the ADDIE model*. An online article. Retrieved from [http://www.e-learningguru.com/articles/art2\\_1.htm](http://www.e-learningguru.com/articles/art2_1.htm) on December 15, 2008.
- Mayer, R.E. (2001). *Multimedia learning*. (9<sup>th</sup> ed.), 2007. New York, USA: Cambridge University Press.
- Molenda, M. (2003). *In search of the elusive ADDIE model*. An article published in slightly amended form in *Performance Improvement*, May/June 2003, Indiana University. Retrieved on December 15, 2008 from [www.indiana.edu/~molpage/In%20Search%20of%20Elusive%20ADDIE.pdf](http://www.indiana.edu/~molpage/In%20Search%20of%20Elusive%20ADDIE.pdf)
- Muhammad Sabri, Sahrir (2011). *Formative evaluation of an Arabic online vocabulary learning games prototype : Lessons from a Malaysian hgher learning institution experience*. In Alias, N. & Hashim, S. (Eds.). *Instructional Technology Research, Design and Development: Lessons From the Field*. IGI Global, Hershey, PA, United States. ISBN 9781613501986 (In Press by November 2011, indexed in IDEA Group).

# References (cont.)

- Muhammad Sabri, Sahrir & Nor Aziah, Alias (2011). ***A study on Malaysian language learners' perception towards learning Arabic via online games.*** GEMA Online Journal of Language Studies, volume 11(3), pp. 129-145, September 2011 (Indexed in SCOPUS)
- Muhammad Sabri, Sahrir (2011). ***Analysis, design and development of an online vocabulary game for Arabic elementary learners.*** Unpublished PhD thesis, Faculty of Education, Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia.
- Nation, I.S.P. (2001) ***Learning vocabulary in another language.*** (4<sup>th</sup> ed., 2003). United Kingdom: University Press, Cambridge.
- Prensky, M. (2001). ***Digital game-based learning.*** (2007 ed.), USA: Paragon House.
- Richey, R. C., Klein, J. D., & Nelson, W. A., (2004). Developmental research: Studies of instructional design and development. In D. H. Jonassen (Ed.), ***Handbook of Research on Educational Communications and Technology*** (2<sup>nd</sup> ed.). Lawrence Erlbaum. Retrieved on March 31, 2009 from <http://www.aect.org/edtech/41.pdf>
- Seels, B. & Glasgow, Z. (1998). ***Making Instructional Design Decisions*** (2nd. ed.). OH: Columbus. Prentice Hall.
- Tan, P-H., Ling, S-W., & Ting, C-Y. (2007, May). ***Adaptive digital game-based learning framework.*** ACM International Conference Proceeding Series; Vol. 274. *Proceedings of the 2nd international conference on Digital Interactive Media in Entertainment and Arts.* Retrieved from <http://portal.acm.org/> on May 20, 2009.
- Tessmer, M. (1993). ***Planning and conducting formative evaluations, improving the quality of education and training.*** (© Martin Tessmer, 1993). London : Kogan Page Limited.