



The IBS Foreman

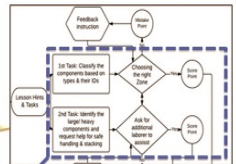
The IBS Foreman is a serious game application invention developed using the method and system for translating a conventional training curriculum into a serious game training application. The 14 design principles were embedded during the development of the application flowchart for safety and skill knowledge capability training of selected industrialized construction technology.

APPROACH

- **14 design principles** merging engagement factors with effective learning criteria to create serious game training programme.
- **Standard design and development process** for gamifying instructional training manual (LY2015001805).
- **Adaptable application flowchart** based on curriculum objectives of the selected industrialised construction training (LY2015001804).
- **A system for labourers' competency training** in construction industry (UI 201570458).

BENEFITS/ADVANTAGES

- **Local contextualization** of content for training complex subject matter to local construction workforce
- **Improve safety (+92%) and skill (+60%) knowledge** to construction workforce.
- **Improve accuracy (+82%)** for reducing rework on site for same training duration.
- **100% training completion** due to high usability characteristics



UPM Learner Performance Analysis				
Comparative Performance Analysis for Low-Skilled Workforces				
Description	In-Person	Serious Game	Performance Change	
	Mean (SD)	Mean (SD)		
Total Time	1:16:53 (0:07:56)	1:07:21 (0:13:48)	-8%	
Total Material	12:27 (12:48)P	0:47 (2:08)P	-92%	
Note: Valid N=15, *p<0.001 (Two-tailed t-test)				
Learner's Performance External Validation				
Hypothesis	Outcome	%	External Validation	
H1	Usability	Completion %	100%	✓
H2	Speed	Finishing Time	-1%	✓ (Negligible)
H3	Accuracy	# Mistakes	+82%	✓

UPM Learner Performance Analysis					
Comparative Accuracy Analysis for Low-Skilled Workforces					
Description	In-Person	Mean (SD)	Serious Game	Mean (SD)	Performance Change
	Mean (SD)	Mean (SD)			
S1: Trade Tools & PPE	0.73 (0.179)	0.47 (0.35)	0.53 (0.91)	0.27 (0.45)	27%
S2: Material Storage	0.73 (0.88)	0.33 (0.88)	0.53 (0.64)	0.33 (0.48)	27%
S3: Assembly Taping	2.66 (0.83)	3.33 (0.15)	1.27 (0.88)	0.73 (0.48)	77%
S4: Assembly Execution	4.80 (2.93)	11.27 (6.13)	2.40 (0.98)	0.60 (0.73)	88%
Total	11.87 (3.94)	22.40 (18.64)	4.73 (3.71)*	1.93 (1.45)*	+82%

TARGET MARKET

Global game-based learning market for tertiary education estimated at **40.1% by 2019**; **corporate, central and local government agencies** as buyers are expected to grow above **20% per annum** over the period; and **packaged edugames** are anticipated **\$4.2bn globally by 2019** (Source: Ambient Insight, 2014-2019)

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Project Leader : Prof. Dr. Rahinah Ibrahim
 Co-Researchers : Assoc. Prof. Dr. Normahdiah Syeik Said, Prof. Dr. Mohd Shahwahid Othman and Dr. Ali Rashidi
 Faculty : Design and Architecture
 Email : rahinah@upm.edu.my
 Tel : 03-89464038/ 019-2208468
 Expertise : Sustainable Design Informatics, Construction Informatics, IBS, Edugames