



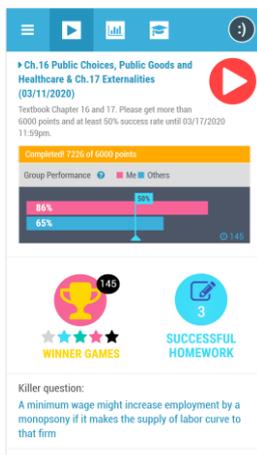
yeepa® Play – Measure – Learn

# Homework as a Game

## Gamification Case Report: National Taipei University, Taiwan

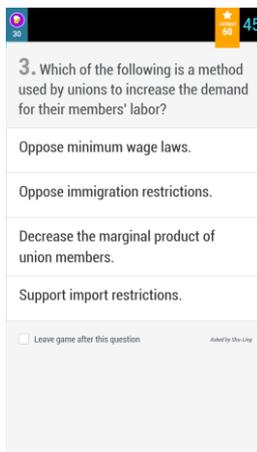
The College of Business of the National Taipei University (NTPU) digitizes the processing of student homework: for the introductory lecture "Principles of Economics" the game-based learning software yeepa is used instead of the usual handwritten homework. The students earn their points in weekly intervals and must achieve a minimum success rate of 50%. It is up to them to decide which strategy they use to achieve this

### Background



The introductory lecture "Principles of Economics" runs over two semesters, is held in English and is aimed at international students. As the material is rich in facts, multiple choice tests are traditionally used here. The methodological advantage of MC tests is that they can be used to handle large numbers of cases and provide an optimal comparison of learning performance. The homework combines MC and free-text tasks and is assigned after each weekly lecture and has to be completed until the following date. The evaluation is semi-automatic. The success of the homework requires a share for the course credits. Scenario is only moderately popular with students and teachers alike. This is exactly where the digital transformation comes in: the handling of homework should be easier for the university teacher and the learning scenario more motivating for the students.

### Idea: Homework as a Social Game Event



The solution approach of staging the homework as a playful competition was realized with the gaming server yeepa®. yeepa delivers multiplayer quiz games, in which the players compete against each other in real time with their smartphones or PCs via web app. Players can play alone or together with others. Due to the game's dramaturgy, the joint game enables higher scores (cooperation advantage, informal learning). Characteristic for the game is that the score is not only dependent on knowledge, but also on game strategy and random components.

With each lecture, a thematically corresponding quiz game with approx. 100 questions is activated. The players usually have one week to reach a score of 6000. In order to avoid that points are collected randomly, a minimum success

score of 50% is prescribed as a control criterion. In order to validate the effectiveness of the lecture event, 20-30% of the question collection of a game always addresses the subject matter of the upcoming lecture that is not yet known from a technical point of view. In total, about 1500 questions were used per semester.

## Didactics: Play - Measure - Learn

UID	NAME	#01	#02	#03	#04	#05
12	吳小偉	2213 (25%)	6168 (72%)	6013 (77%)	6637 (70%)	
13	Karen	5061 (58%)	6235 (62%)	6190 (59%)		
14	Patricia	4046 (70%)	8128 (12%)	14413 (50%)	6607 (30%)	
17	Sherry	2971 (70%)	6511 (67%)	6362 (62%)	6732 (70%)	
19	Montse Lam	2654 (71%)	6489 (72%)	6660 (51%)	6168 (61%)	
22	王瑋	2086 (13%)	6236 (61%)	2488 (13%)	8011 (52%)	
23	Fiji	2505 (29%)	6206 (66%)	6316 (53%)	6714 (51%)	
28	程潔潔	1875 (25%)	6684 (47%)		6280 (53%)	
36	Shasha	2085 (71%)	6024 (81%)	6882 (70%)	6430 (74%)	
38	黃菁	523 (57%)		7006 (58%)	7008 (67%)	
39	Amy	2042 (60%)	6114 (55%)	601 (44%)	2130 (60%)	
39	Poo	2041 (67%)	6007 (66%)	6035 (74%)	6145 (64%)	
39	Sodi	2040 (54%)		7223 (54%)	6122 (37%)	
34	JOJO	2192 (75%)	6190 (87%)	6056 (70%)	6241 (81%)	
38	L	2053 (70%)	6255 (92%)	6755 (83%)	6305 (81%)	
38	RUBY	2876 (44%)	6581 (70%)	12522 (59%)	6711 (76%)	
41	WIO	2235 (100%)	7999 (78%)	7348 (71%)	6012 (70%)	
42	程潔潔	2355 (58%)	325 (47%)	1644 (62%)	6080 (59%)	
42	WIT	2234 (100%)	6534 (61%)	6193 (74%)	6380 (85%)	
42	IT	2246 (60%)	6328 (46%)	6380 (72%)	6091 (72%)	
46	Jane Lee	2053 (67%)	6109 (72%)	6260 (75%)	6342 (63%)	
47	程潔	2343 (33%)	6169 (52%)	8024 (55%)	7777 (52%)	
48	Kady	2249 (67%)	6169 (72%)	6123 (72%)	6236 (78%)	
50	Vincent	2249 (67%)	2164 (57%)	6109 (64%)	6224 (53%)	
51	TYPIZT	4009 (100%)	7783 (64%)	6546 (51%)		
52	Lorena Ovar	2058 (100%)	6121 (77%)	6229 (60%)	6554 (67%)	
52	Pu-De Tsai	26 (20%)		123 (17%)		
52	Milan	6043 (48%)	951 (23%)			
57	U-han	8784 (88%)	8829 (84%)	2007 (92%)		
58	U-han	158 (87%)	459 (35%)			
58	Huan	6075 (74%)				
60	Charissa		11530 (63%)	6055 (75%)		

To improve game performance, the player receives individual learning tips and literature references. After each game, there may be a list of questions that the player is allowed to deal with in order to achieve a better result in the next game. The individual error questions are presented in the learning mode of the web app in form of a "stack of cards" and are automatically repeated according to the Leitner scheme. In addition to the superficial game performance in the form of the point value, the *yeepa-index* provides an objective measurement based on the statistically determined question difficulties, which allows the player to place himself in the group with his level of knowledge. The player is free to derive a learning need for himself. After completing the homework, the games are still available and can be played at any time, as often as desired, for final exam preparation.

## Method: Better Measurement through Repetition

During the games, questions are repeated randomly, so that guessing effects and knowledge can be separated more precisely, and knowledge developments can be measured over time. As a rule, the success rate of a question collection does not automatically represent the ability to solve it, unless the test has previously been statistically validated and items that are too easy, misleading or too difficult have been sorted out. For a valid test, an even distribution of questions across all difficulty areas is required. In principle, the test quality cannot be determined in advance. *yeepa* solves the problem by identifying characteristic questions for each level of performance on the basis of the played data

## Results

All participants of the lecture took part in the game. Any technical hurdle in using the web app was not reported. 92% of the students met the requirements regarding point value and success rate. More than one third of the participants played very intensively and tried to reach the top of the highscore. Compared to previous years with classic homework, the results in the intermediate and the final tests have improved by 10-12 percentage points.

### For further informationen please contact:

Dr. Frank Hoffmann  
 SNTL Publishing GmbH & Co KG  
 Hegelplatz 1  
 D - 10117 Berlin - GERMANY  
 Fon +49-30-209 127 82  
 Fax +49-30-209 127 81  
 E-Mail: FH@sntl-publishing.com  
<http://www.yeepa.de>  
<http://www.sntl-publishing.com>