

Technology and Learning

2022 Spring semester

Tuesday 14:20-15:10 & Friday 3:30-5:20 pm

Unit: Interdisciplinary Program of Education (3 credit hours)
Classroom: Nanda Campus, N201
Office hours: By appointment

Instructor: Dr. Chun-Min (Arthur) Wang
Office: N705 (Phone: 03-5715131 ext.73042)
Email: chunmin@mx.nthu.edu.tw

Course Description:

The course explores the relationship between education and technology, the theories and principles behind integrating technology into teaching and learning, and the applications in learning environments. Through lectures, group discussions, in-class activities, and online collaboration, students are expected to learn the concepts and gain hands-on experiences in learning technology and technology education. Additionally, to put theory into practice, students will write an observation essay and solve real problems by adopting the design thinking approach.

Course Objectives:

1. Explore the relationship between education and technology.
2. Understand the development and challenges of learning technology and technology education and explore their future directions.
3. Understand the applications of learning theories when integrating technology into teaching and learning.
4. Design and develop digital learning materials for a target audience.
5. Solve real problems by applying the design thinking approach.

Class Activities :

Lectures, group collaboration, presentations, discussions, workshops, and synchronous teaching.

Schedule:

Week	Date	Topic	Note
Foundation			
1	2.14	Course Introduction	
	2.17	What is Technology?	
2	2.21	What is Learning?	
	2.24	No class	梅竹賽
3	2.28	No class	228 和平紀念日
	3.03	Relationship between Technology & Learning	
4	3.07	Best practice I	
	3.10	Best practice II	掌握流量密碼：來自業界的線上課程攻略

Theoretical foundation			
5	3.14	Learning Theory I	
	3.17	Learning Theory II	
6	3.21	Instructional Design I	
	3.24	Instructional Design II	
7	3.28	Design Thinking	
	3.31	Observation essay presentation	*Assignment 1 due
Applications			
8	4.04	No class	清明連假
	4.07	Flipped classroom	
9	4.11	Micro-Learning	
	4.14	Online Learning I	
10	4.18	Online Learning II	
	4.21	Platform Economics	
11	4.25	Metaverse	
	4.28	AI in education I	
12	5.02	AI in education II	
	5.05	Technology Evaluation report	* Assignment 2 due
Reflection			
13	5.09	Evaluation	
	5.12	Social science research method	
14	5.16	Digital divide I	
	5.19	Digital divide II	
15	5.23	In-class activity	
	5.26	In-class activity	
16	5.30	Future Learning discussion I	
	6.02	Future Learning discussion II	
17	6.06	Project working week	
	6.09	Project working week	
18	6.13	Design Thinking project presentation	* Final project due
	6.16	Design Thinking project presentation	

Course Evaluation :

- (1) Participation and in-class performance: 20 %

Attendance rate, in-class assignments, and activity participation.

- (2) Assignment 1: Observation essay: 25%

Write a 2500-word essay that describes your observations, questions, and reflections regarding the relationship between Technology and Learning.

- (3) Assignment 2: Technology evaluation: 25%

Each student will select one product from the BETT show. Introduce the product and analyze its applications when applied in Taiwan.

(4) **Assignment 3: Design thinking project** 30%

Select one education-related topic/product/solution that could be improved. Each student must follow the design thinking procedure, record the whole process, design and develop the prototype, and report the testing results. The project will be evaluated by individual reflection, social responsibility, and innovation. The final presentation should include a 3-minute video, a 10-minute oral report, and a Microsoft Word document report (max ten pages). The instructor and the peers will do the grading.

References :

- 沈中偉&黃國禎 (2012)。 *科技與學習:理論與實務*。台北:心理出版社。
- J Macaulay, D. (2016). *The way things work now*. Clarion Books.
- NTU Alpha Team-Rookie's guide (<https://goo.gl/LUbQfz>)
- Smith, P. L. & Ragan, T. J. (2004). *Instructional Design*. John Wiley & Sons.
- Jan Van Dijk (2020). *The Jan Van Dijk (2020). The digital divide*. Cambridge: Polity.

Other articles will be provided in the class.

