NTHU Learning Sciences and Technologies

學習領域之研究議題探討

(暫擬課綱)

Fall 2024, 3 credits, 中文授課

https://elearn.nthu.edu.tw/course/view.php?id=24677

Instructor: Su-Yen Chen, Professor (suychen@mx.nthu.edu.tw)

https://nthuilst.wixsite.com/suychen/projects

Time: Wednesday, 5, 6, 7   Location: Room 409, General Building II

Course Description

以心理學、教育學和社會學為多元視角，以課堂討論為方法，以高度被引用之論文及最新發展主題為媒介，此課程期待從研究社群觀點來探討學習及學習科技的重要議題。在這個版本課綱中，討論的議題包括:和 academic achievement 以及 learning engagement 相關因素、self-regulated learning、self-directed learning、game-based learning、Social robotics and Chatbot for learning、Generative AI and ChatGPT for learning 等；但這些只是暫擬提供參考的課程單元和論文選單，實際課堂內容所有權在課程成員，同學可以在開學第二周課程前提供自選論文，第三次課程老師將提供新版課綱，包括各週之單元、論文、報告同學等細節。每週以兩到三篇論文為原則，每篇論文導讀的時間配置，包括 2/3 的時間進行論文內容分享(presentation)以及 1/3 時間進行問題回應(response & leading discussion)。換言之，課堂其他成員會在上課前一天中午前提供隔日論文的瀏覽心得/提問，報告者得將這些提問/心得納入討論帶領之中。

Course Goals
1. 共同探索當代教育情境裡 學習和學習科技領域的重要議題
2. 建構探究自身研究興趣及同儕相互支持的學習社群
3. 協助發展在有興趣的研究領域中找到重要論文/作者作為起步的能力
4. 協助瞭解學術社群的運作機制

本課程鼓勵學生利用 AI 進行協作或互學，以提升本門課產出品質。根據清華大學公布之「大學教育場域 AI 協作、共學與素養培養指引」，本門課程採取有條件開放，以下說明如何使用生成式 AI 於課程產出：學生須於課堂作業或報告中的「標題頁註腳」或「引用文獻後」簡要說明如何使用生成式 AI 進行議題發想、文句潤飾或結構參考等使用方式。相對地，本門課授課教材或學習資料若有引用自生成式 AI，教師也將在投影片或口頭標注。

Tentative schedule, topic and readings

Week	Date	Topic
1	9/4	Introduction
2	9/11	Academic achievement & Learning engagement
3	9/18	Emergent technologies and Learning- Generative AI
4	9/25	Academic achievement
5	10/2	Learning engagement
6	10/9	Learning engagement
7	10/16	Self-regulated learning
8	10/23	Self-regulated learning
9	10/30	Self-directed learning
11	11/13	Game-based learning
12	11/20	Chatbot for learning
13	11/27	Generative AI and learning
14	12/4	ChatGPT and learning
15	12/11	Final Report Presentation
16	12/18	Final Report Presentation

Week 2 (9/11)

Academic achievement & Learning engagement

＊What are the psychological correlates of academic achievement?

＊What is learning engagement?

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin, 138*(2), 353–387. (cited by 4537)

Kahu, E.R. (2013). Framing student engagement in higher education. *Studies in Higher Education, 38 (5*), 758-773. (cited by 2629)

Week 3 (3/18)

Emergent technologies and Learning- Generative AI

＊How Generative AI (e.g. ChatGPT, Text2image models) might have impact on learning and education?

Week 4 (9/25)

Academic achievement

＊How researchers examine learning and academic achievement from the lens of psychology, sociology, teacher education, and neuroscience?

1. Park, H.; Buchmann, C.; Choi, J. and Merry, J. J. (2016). Learning beyond the school walls:

Trends and implications. *Annual Review of Sociology, 42*, 231-252. (cited by 250)

2. Kunter, M., Klusmann, U., Baumert, J., Richter, D., Voss, T., & Hachfeld, A. (2013). Professional competence of teachers: Effects on instructional quality and student development. *Journal of Educational Psychology, 105(*3), 805–820 (cited by 1982)

3. Thomas, M. S. C., Ansari, D., & Knowland, V. C. P. (2019). Annual research review: Educational neuroscience: Progress and prospects. *Journal of Child Psychology and Psychiatry, 60(*4), 477–492. (cited by 287)

4. Sortwell, A., Gkintoni, E., Zagarella, S., Granacher, U., Forte, P., Ferraz, R., ... & Jemni, M. (2023). Making neuroscience a priority in Initial Teacher Education curricula: a call for bridging the gap between research and future practices in the classroom. Neuroscience Research Notes, 6(4), 266-1. (cited by 24)

5. Mason, L., Zaccoletti, S., Scrimin, S., Tornatora, M. C., Florit, E., & Goetz, T. (2020). Reading with the eyes and under the skin: Comprehending conflicting digital texts. Journal of Computer Assisted Learning, 36(1), 89-101. (cited by 28)

Week 5 (10/2), Week 6 (10/9)

Learning engagement

＊What is learning engagement? How different teacher-related factors are contributing to learning achievement and to learning motivation? What is the difference between actual learning and feelings of learning? And how do we look at an example regarding huge gap between educational belief of teachers and empirical support from researchers?

6. Deslauriers L, McCarty LS, Miller K, Callaghan K, & Kestin G. (2019). Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom. *Proceeding of the National Academy of Science of the United State of America, 116(*39), 19251-19257. (cited by 1219)

7. Hamre, B. K., Pianta, R. C., Downer, J. T., DeCoster, J., Mashburn, A. J., Jones, S. M., ... & Brackett, M. A. (2013). Teaching through interactions: Testing a developmental framework of teacher effectiveness in over 4,000 classrooms. *The Elementary School Journal, 113(*4), 461-487. (cited by 960)

8. Anderson, J., & Taner, G. (2023). Building the expert teacher prototype: A metasummary of teacher expertise studies in primary and secondary education. Educational Research Review, 38, 100485. (cited by 35)

9. Seligman, M. E. P.; Ernst, R. M.; Gillham, J.; Reivich, K.; & Linkins, M. (2009). Positive education: Positive psychology and classroom interventions. *Oxford Review of Education, 35(*3) p293-311. (cited by 3245)

10. 楊孟麗(Meng-Li Yang)(2005).教育成就的價值與青少年的心理健康.中華心理衛生學刊, 18(2), 2005

11. Wang, M.; Eccles, J. S. (2012). Social support matters: Longitudinal effects of social support

on three dimensions of school engagement from middle to high School. *Child Development 83(*3), 877-895. (cited by 1518)

12. Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning Styles: Concepts and Evidence. *Psychological Science in the Public Interest*, *9*(3), 105–119. (cited by 3919)

13. Geller, J., Toftness, A. R., Armstrong, P. I., Carpenter, S. K., Manz, C. L., Coffman, C. R., & Lamm, M. H. (2018). Study strategies and beliefs about learning as a function of academic achievement and achievement goals. Memory, 26(5), 683-690. (cited by 118)

14. Dirkx, K. J. H., Camp, G., Kester, L., & Kirschner, P. A. (2019). Do secondary school students make use of effective study strategies when they study on their own? Applied Cognitive Psychology, 33(5), 952-957. (cited by 66)

Week 7 (10/16), Week 8 (10/23)

<div align="center">

Self-regulated learning

</div>

＊How different approaches look at learning autonomy and effective learning? How to support self-regulated learning?

15. Panadero, E. (2017). A review of self-regulated learning: Six models and four directions for research. *Frontiers in Psychology, 8*, 422. (cited by 2433)

16. Bjork, R.A., Dunlosky, J., & Kornell, N. (2013). Self-regulated learning: beliefs, techniques, and illusions. *Annual Review of Psychology, 64*, 417-44. (cited by 1819)

17. Dignath, C., & Veenman, M. V. (2021). The role of direct strategy instruction and indirect activation of self-regulated learning—Evidence from classroom observation studies. Educational Psychology Review, 33(2), 489-533. (cited by 206)

18. Wong, J., Baars, M., Davis, D., Van Der Zee, T., Houben, G. J., & Paas, F. (2019). Supporting self-regulated learning in online learning environments and MOOCs: A systematic review. *International Journal of Human–Computer Interaction, 35(*4-5), 356-373. (cited by 669)

19. Kizilcec, R. F., Pérez-Sanagustín, M., & Maldonado, J. J. (2017). Self-regulated learning strategies predict learner behavior and goal attainment in Massive Open Online Courses. *Computers & Education, 104,* 18–33. (cited by 1101)

20. Pino-Pasternak, D., & Whitebread, D. (2010). The role of parenting in children's self-regulated learning. Educational Research Review, 5(3), 220-242. (cited by 206)

21. Žerak, U., Juriševič, M., & Pečjak, S. (2023). Parenting and teaching styles in relation to student characteristics and self-regulated learning. European Journal of Psychology of Education, 1-25.

Week 9 (10/30)

<div align="center">

Self-directed learning

</div>

＊What is the difference between self-regulated learning and self-directed learning? How to

support self-directed learning?

22. Grow, G. O. (1991). Teaching learners to be self-directed. *Adult education quarterly, 41(*3), 125-149. (cited by 2337)

23. Beckers, J., Dolmans, D., & Van Merriënboer, J. (2016). e-Portfolios enhancing students' self-directed learning: A systematic review of influencing factors. *Australasian Journal of Educational Technology, 32(*2), 32-46. (cited by 199)

24. Chen, C. H., Chen, K. Z., & Tsai, H. F. (2022). Did Self-Directed Learning Curriculum Guidelines Change Taiwanese High-School Students' Self-Directed Learning Readiness? *The Asia-Pacific Education Researcher, 31(*4), 409-426. (cited by 32)

25. Lemmetty, S., & Collin, K. (2020). Self-directed learning as a practice of workplace learning: Interpretative repertoires of self-directed learning in ICT work. Vocations and Learning, 13(1), 47-70. (cited by 166)

Week 11 (11/13)

Game-based learning

＊Game-based learning as an effective tool

26. Jan L. Plass, Bruce D. Homer & Charles K. Kinzer (2015) Foundations of game-based learning. *Educational Psychologist, 50(*4), 258-283 (cited by 1723)

27. Qian, M., & Clark, K. R. (2016). Game-based Learning and 21st century skills: A review of recent research. *Computers in Human Behavior, 63,* 50–58. (cited by 1315)

28. Krath, J.; Schürmann, L.; von Korflesch, H.F. (2021). Revealing the theoretical basis of gamification: A systematic review and analysis of theory in research on gamification, serious games and game-based learning. *Computers in Human Behavior, 125*, 106963 (cited by 503)

29. Mao, W., Cui, Y., Chiu, M. M., & Lei, H. (2022). Effects of game-based learning on students' critical thinking: A meta-analysis. Journal of Educational Computing Research, 59(8), 1682-1708. (cited by 86)

30. Hassan, A., Pinkwart, N., & Shafi, M. (2021). Serious games to improve social and emotional intelligence in children with autism. *Entertainment computing, 38,* 100417. (cited by 58)

Week 12 (11/20)

Chatbot for learning

＊Chatbot as emergent technologies for learning

31. Tlili, A., Lin, V., Chen, N.-S., Huang, R., & Kinshuk. (2020). A Systematic Review on Robot-Assisted Special Education from the Activity Theory Perspective. Educational Technology & Society, 23 (3), 95-109. (cited by 30)

32. Fryer, L. K., Ainley, M., Thompson, A., Gibson, A., & Sherlock, Z. (2017). Stimulating and

sustaining interest in a language course: An experimental comparison of Chatbot and Human task partners. Computers in Human Behavior, 75, 461–468. (Cited by 342)

33. Fryer, L. K., Nakao, K., & Thompson, A. (2019). Chatbot learning partners: Connecting learning experiences, interest and competence. Computers in Human Behavior, 93, 279–289. (cited by 364)

34. Jeon, J., Lee, S., & Choe, H. (2023). Beyond ChatGPT: A conceptual framework and systematic review of speech-recognition chatbots for language learning. Computers & Education, 104898. (cited by 40)

Week 13 (11/27), Week 14 (12/4)

ChatGPT and learning

35. Chen, L., Chen, X., Wu, S., Yang, Y., Chang, M., & Zhu, H. (2023). The future of chatgpt-enabled labor market: A preliminary study. arXiv preprint arXiv:2304.09823. (cited by 17)

36. Cao, Y., Zhou, L., Lee, S., Cabello, L., Chen, M., & Hershcovich, D. (2023). Assessing cross-cultural alignment between chatgpt and human societies: An empirical study. arXiv preprint 303.17466 (cited by 71)

37. Ivcevic, Z., & Grandinetti, M. (2024). Artificial intelligence as a tool for creativity. Journal of Creativity, 100079. (cited by 4)

38. Sohail, S. S., Farhat, F., Himeur, Y., Nadeem, M., Madsen, D. Ø., Singh, Y., ... & Mansoor, W. (2023). The future of gpt: A taxonomy of existing chatgpt research, current challenges, and possible future directions. Current Challenges, and Possible Future Directions. (cited by 46)

39. Grassini, S. (2023). Shaping the future of education: exploring the potential and consequences of AI and ChatGPT in educational settings. (cited by 275)

40. Lo, C. K. (2023). What is the impact of ChatGPT on education? A rapid review of the literature. Education Sciences, 13(4), 410. (cited by 653)

41. Wu, T. T., Lee, H. Y., Li, P. H., Huang, C. N., & Huang, Y. M. (2024). Promoting self-regulation progress and knowledge construction in blended learning via ChatGPT-based learning aid. Journal of Educational Computing Research, 61(8), 3-31. (cited by 21)

42. Esiyok, E., Gokcearslan, S., & Kucukergin, K. G. (2024). Acceptance of Educational Use of AI Chatbots in the Context of Self-Directed Learning with Technology and ICT Self-Efficacy of Undergraduate Students. International Journal of Human–Computer Interaction, 1-10. (cited by 2)

Week 15 (12/11), Week 16 (12/17)

Final report Presentation

Evaluation

1. Presentation and Leading Discussion 45 %

   Everyone must select three articles from the above class reading list and conduct three paper presentations and leading discussions. When it's your turn to be the leader, please read through reflection notes posted by classmates on eLearn before the class and incorporate those ideas into your presentations and discussions. Since this course will be largely discussion-based, a traditional "seminar-like" paper presentation will not be the preference. Instead, please prepare it in a way that allows the class to participate and exchange ideas with a high engagement rate.

   (Self-selected articles are welcomed, class reading list and time schedule might be adjusted based on class discussion, and final syllabus provided at the third week.)

2. Reflection notes and classroom participation 20% (at least 10 posts)

   Everyone must post reflection notes about the assigned reading articles of that week on eLearn 24 hours before the next class. It's not necessary to be very insightful or creative; however, it must manifest that you have read the paper and done the hard work necessary.

3. Final project: literature review or research proposal 35%