Asian Journal of Education and Training
Vol. 12, No. 2, 13-18, 2026
ISSN(E) 2519-5387
DOI: 10.20448/edu.v12i2.8620

Impact of flipped classroom in developing students' communication, critical thinking and teamwork skills

Jaouad Elkhalladi[1,2]✉
Mohamed El Fahssi[2]
Hanane El Ghazouani[2]
Ahmed Ouaamr[2]
Rachid Lotfi[3]
Mohammed Bouchekourte[1]


(✉ Corresponding Author)

[1]*Faculty of Educational Sciences, Mohammed V University, Rabat, Morocco.*
[1,2]*Email: jaouadelkhalladi@gmail.com*
[1]*Email: m.bouchekourte@um5r.ac.ma*
[2]*Faculty of Medicine and Pharmacy, Mohammed V University, Rabat, Morocco.*
[2]*Email: elfahssi.mohamed@gmail.com*
[2]*Email: elghazouani.hanane@gmail.com*
[2]*Email: ad.bani82@gmail.com*
[3]*Semlalia Faculty, Caddi Ayyad University, Marrakech, Morocco.*
[3]*Email: r.lotfi@usms.ma*

Abstract

Soft skills represent a broad set of non-technical, interpersonal, and cognitive competencies that play a crucial role in professional performance, particularly in the fields of education and healthcare. This study examines the impact of the flipped classroom model on the development of communication, critical thinking, and teamwork skills among students. A quasi-experimental study with a single-group pretest–posttest design was conducted to evaluate the effects of the flipped classroom model on the development of students' soft skills. The study involved 39 radiology students from the Higher Institute of Nursing Professions and Health Techniques in Agadir, Morocco, and was conducted between January and March 2022. This study revealed that the flipped classroom significantly improved students' communication skills ($p < 0.001$), critical thinking ($p < 0.001$), and teamwork ($p < 0.001$). No significant gender-based differences were observed in these skills before or after implementing the flipped classroom approach. In conclusion, the flipped classroom positively enhances students' communication, critical thinking, and teamwork abilities. Further research, particularly experimental studies with larger samples across multiple institutions and involving students from other health disciplines such as medicine and pharmacy, would strengthen the reliability, validity, and generalizability of these findings.

Keywords: Active learning, Flipped classroom, Gender, Health education, Pedagogy, Radiographer, Soft skills.

Citation | Elkhalladi, J., Fahssi, M. E., Ghazouani, H. E., Ouaamr, A., Lotfi, R., & Bouchekourte, M. (2026). Impact of flipped classroom in developing students' communication, critical thinking and teamwork skills. *Asian Journal of Education and Training*, *12*(2), 13–18. 10.20448/edu.v12i2.8620
History:
Received: 23 February 2026
Revised: 22 April 2026
Accepted: 28 April 2026
Published: 8 May 2026

Publisher: Asian Online Journal Publishing Group

Funding: This study received no specific financial support.
Institutional Review Board Statement: This study was approved by the Institutional Review Board of the Mohammed V University, Rabat, Morocco, under protocol number [39/22], dated [09 May 2022]. Informed verbal consent was obtained from all participants and all data were anonymized to protect participants' confidentiality.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.
Disclosure of AI Use: The authors used OpenAI's ChatGPT to translate and verify the language of the manuscript. All outputs were reviewed and verified by the authors.

Contents

Contribution of this paper to the literature

This study is original in applying the flipped classroom model to radiology students in Morocco using a quasi-experimental design. It provides context-specific evidence on improving communication, critical thinking, and teamwork in health education, focusing on a population and setting that remain underexplored in existing literature.

1. Introduction

Soft skills are essential competencies in the training of radiographers (Ge, Chen, Yan, Chen, & Liu, 2020). As non-technical abilities, they facilitate effective interactions with patients and colleagues (Sancho-Cantus, Cubero-Plazas, Botella Navas, Castellano-Rioja, & Cañabate Ros, 2023), enhance collaboration and job satisfaction, and contribute to both individual and team performance (Song et al., 2024). Among these competencies, communication, critical thinking, and teamwork are particularly important for professional practice (Detlefs et al., 2022) as they enable radiographers to collaborate efficiently with healthcare professionals, ensure accurate radiological examinations, adapt imaging protocols when necessary, minimize risks, and improve patient safety.

However, the development of soft skills is not an easy task. Indeed, several factors make developing soft skills very difficult, such as the lack of reliable methods for their development, the lack of interest from educational institutions in soft skills training, the absence of a unified categorization of soft skills, and the lack of a common perception among students, workers, and recruiters regarding their usefulness and importance (Medvedeva, 2020). Furthermore, training can facilitate the enhancement of soft skills (Tsalikova & Pakhotina, 2019), particularly via interactive pedagogical approaches such as simulation (Sergeyeva, Festeu, Bronin, & Turlakova, 2021), serious games (Sutil-Martín & Otamendi, 2021), and flipped classrooms (Elkhalladi & Sefrioui, 2024a).

The flipped classroom is an interactive teaching strategy widely used in education, particularly in nursing education (Andargeery, Bahri, Alhalwani, Alahmedi, & Ali, 2024). In this model, learning materials such as videos and theoretical content are provided to students before class through digital platforms, allowing classroom time to focus on active learning activities like collaborative discussions, practical exercises, and case studies. The teacher is responsible for designing and organizing course materials and guiding students during in-class activities to enhance learning and skill development. Students' research and presentations also help improve important skills such as public speaking, communication, and confidence (Seau, Azman, & Noor, 2018), the ability to synthesize information, and the capacity to search for and use relevant knowledge.

Building on the recognized value of the flipped classroom and student presentations, this study explores how presenting in this context can help radiology students develop their communication, critical thinking, and teamwork skills, while also examining whether gender influences these competencies.

2. Literature Review

2.1. Flipped Classroom

The flipped classroom is an innovative teaching approach introduced by Bergmann and Sams (2012) to overcome some limitations of traditional teaching (Bergmann & Sams, 2012). In this model, students first review materials like videos or digital resources on their own. This way, students can learn at their own pace. They can come to class feeling more prepared and confident. When they arrive, they engage in interactive activities such as discussing what they learned and working on problems together. This helps students understand the material better and stay involved in their learning. They use class time for activities that promote comprehension, like discussions and problem-solving, with the videos and digital resources they have already reviewed (Li, Lund, & Nordsteien, 2023). This approach shifts learning from passive listening to active participation, making it easier for students to think critically, retain information, and feel more engaged. It also provides teachers with more opportunities to support students, answer questions, and guide them through difficult concepts in a meaningful way.

2.2. Soft Skills

Soft skills are non-technical abilities, also known as human or socio-emotional skills, that play an essential role in education, employability, and professional performance (Elkhalladi & Sefrioui, 2024b). They facilitate effective interaction, collaboration, and problem-solving for both students during their training and professionals in their workplace (Ten Cate et al., 2024). Key soft skills include problem-solving, communication, critical thinking, and teamwork, which support academic success and effective professional practice (Tang, 2020).

Communication is at the heart of a radiographer's daily work. They need to talk effectively with radiologists and other people who work in healthcare. They also need to talk to patients. This helps ensure that everything runs smoothly when they are doing imaging tests. It also makes the patients feel at ease. The radiographer is always trying to make sure the patients have a good experience. At the same time, strong teamwork and critical thinking are essential, as radiographers need to collaborate closely with others, adapt to each clinical situation, make informed decisions during examinations, and ensure patient safety, particularly by avoiding unnecessary exposure to radiation (Ofori-Manteaw et al., 2025).

2.3. Soft Skills in Radiology

In radiology, beyond technical competencies, radiographers are also required to develop a range of professional roles that rely strongly on soft skills. These include the role of professionals, which involves ethical commitment and responsibility; the role of communicator, through effective communication and patient education; the role of expert, through clinical reasoning and professional judgment; and the role of manager, through organization and quality improvement of professional practices. In addition, radiographers must act as learners and educators through reflective practice and continuous learning, as collaborators through teamwork and shared decision-making, and as health promoters by contributing to patient safety and the promotion of well-being. Soft skills such as communication, empathy, and teamwork are essential for radiology professionals, as they play a key role in

delivering holistic, patient-centered care. Beyond technical expertise, these skills improve patient outcomes, strengthen collaboration within healthcare teams, and contribute to a more effective and supportive clinical environment (Ofori-Manteaw et al., 2025).

2.4. Research Gap and Rationale for the Study

Although previous studies have demonstrated the benefits of the flipped classroom in higher education, most research has primarily focused on knowledge acquisition and student engagement, particularly in nursing education. Less attention has been paid to its role in developing key soft skills such as critical thinking, communication, and teamwork among radiography students, especially through student interactions (Andargeery et al., 2024; Bishop & Verleger, 2013). Therefore, this study aims to examine the impact of presentations within a flipped classroom on the development of these competencies and to explore the relationship between gender and these skills.

3. Materials and Methods

3.1. Type of Study

This quasi-experimental study employed a single-group pretest-posttest design to assess the impact of integrating flipped classroom pedagogy with student oral presentations on the development of communication, critical thinking, and teamwork skills among radiology students at the Higher Institute of Nursing Professions and Health Techniques in Agadir from January to March 2022.

3.2. Population and Sampling

The Higher Institute of Nursing Professions and Health Techniques (ISPITS) is part of Morocco's higher education system. However, unlike universities, it operates under the supervision of the Ministry of Health and Social Protection. The institute provides training for paramedical professionals through several programs, including nursing, midwifery, social work, physiotherapy, and health technology fields such as radiology. In this study, the population consisted of all first-semester radiology students (P = 39) at ISPITS in Agadir. An exhaustive sampling approach was adopted, resulting in a 100% response rate (n = 39).

3.3. Study Variables

The independent variable in this study is the instructional approach, which consists of two distinct methods: The classical method involves lectures and oral presentations. The flipped classroom strategy is combined with oral presentations. The dependent variables include communication, critical thinking, and teamwork, measured using a measurement scale.

3.4. Course Description

This is a 24-hour course available in the first semester for all nursing and health technician degrees. This module focuses on understanding communication principles, engaging with patients and their families impartially, adjusting language proficiency, explaining professional care, assimilating information and therapeutic education, and following communication protocols and procedures in a professional setting.

This course had an average of two two-hour sessions weekly, with the initial segment delivered using the classical method alongside oral presentations (12 hours), and the subsequent segment presented using the flipped classroom strategy in conjunction with oral presentations (12 hours).

3.5. Data Collection Instrument

This questionnaire, in addition to gender, includes a measurement scale developed and validated by Ponmalar, Yee, Che Husain, and Mat Noor (2018) to assess three competencies: communication (7 items), critical thinking and problem-solving (10 items), and teamwork (8 items). The responses were calculated using a five-point Likert scale (Ponmalar et al., 2018). This scale has demonstrated satisfactory reliability and validity for use in higher education.

Before using this scale in our study, it was verified by four professors (a statistician, a language professor, and two doctors in the pedagogy of nursing sciences and health techniques), and it was also tested with four students to detect any potential misunderstanding. This scale demonstrated very satisfactory reliability with an overall Cronbach's alpha of $\alpha = 0.95$ (communication $\alpha = 0.88$, critical thinking and problem-solving $\alpha = 0.88$, and teamwork $\alpha = 0.89$). We used this scale both after applying the classical method and after implementing the flipped classroom strategy.

3.6. Data Analysis

IBM SPSS was used for data analysis. After checking for normality, the Wilcoxon test and Mann-Whitney test were used to compare the means of variables.

3.7. Ethical Considerations

This study was authorized by the Higher Institute of Nursing and Health Technical Professions of Agadir (No. 195/21). Written informed consent was obtained from all participants before they took part in the study. The research was conducted in accordance with the principles of the Declaration of Helsinki, and the anonymity and confidentiality of the collected data were carefully respected throughout the study.

4. Results

The participants in this study were 14 male students and 25 female students.

Table 1. Communication, critical thinking, and teamwork scores.

Variables	Pretest	Posttest	Z	p-value
Communication	3.24 ± 1.05	4.28 ± 0.40	-4.843	p < 0.001*
Critical Thinking	2.97 ± 0.80	3.85 ± 0.68	-4.349	p < 0.001*
Teamwork	3.40 ± 0.98	4.19 ± 0.53	-3.687	p < 0.001*

Note: *p< 0.001.

According to Table 1, a significant increase in the means of communication ($p < 0.001$), critical thinking ($p < 0.001$), and teamwork ($p < 0.001$) was observed after the intervention.

Table 2. Gender relationship with communication, critical thinking, and teamwork.

Variables		Pretest			Posttest		
		Communication	Critical Thinking	Teamwork	Communication	Critical Thinking	Teamwork
		m ± Sd	m ± Sd	m ± Sd	m ± Sd	m ± Sd	m ± Sd
Gender	Male	3.11 ± 1.12	2.67 ± 0.73	3.14 ± 0.85	4.23 ± 0.41	3.90 ± 0.74	4.21 ± 0.48
	Female	3.32 ± 1.03	3.14 ± 0.80	3.55 ± 1.04	4.30 ± 0.40	3.82 ± 0.65	4.18 ± 0.56
p-value		0.355	0.069	0.101	0.616	0.883	0.941

Table 2 showed the absence of a significant relationship between gender and different skills, either before or after the intervention.

5. Discussion

The literature presents mixed findings about the impact of the flipped classroom on communication, critical thinking, and teamwork skills. This study aimed to clarify its influence on these competencies among undergraduate radiology students.

The participants in this study consisted of 35.9% male students and 64.1% female students. According to a study conducted in the United Arab Emirates with 91 radiography students, gender has very little influence on the development of communication skills, while students tend to value these skills more as they progress in their studies, highlighting the importance of structured communication training. The same study also indicated that communication is a key part of radiography practice, as it helps build patient trust, improves safety, and supports better care through empathy, clear information sharing, and effective interaction with both patients and healthcare teams (Rawashdeh et al., 2025).

This study revealed that the flipped classroom model significantly strengthens students' communication skills. When students learn at home before class, teachers can use class time for discussions and group work. This is important for students to feel comfortable speaking up, increasing verbal engagement, and sharing their thoughts (Montoya-Cantoral et al., 2023).

Additionally, the flipped classroom enhances cooperative learning by encouraging students to actively engage in group activities and work together to solve problems (Strayer, 2012). The flipped classroom model also helps students work together and learn from each other. Students like working in groups and solving problems together, which makes learning fun. When students are active in their learning, they feel more interested. If students prepare for class and think about questions they want to ask, they feel more in charge of their learning. In the flipped classroom, students do not just listen to the teacher; they participate in discussions and presentations. This helps them understand things better and remember them for longer. The flipped classroom model makes learning more meaningful for students, and it helps students retain knowledge longer, even if some students need extra help to stay focused on the flipped classroom model (Lin et al., 2021).

Our study revealed that the flipped classroom enhances critical thinking skills among radiology students. This aligns with research showing that nursing students in flipped classrooms demonstrated a significantly stronger disposition toward critical thinking compared to those in traditional courses (Dehghanzadeh & Jafaraghaee, 2018). Additionally, students perceive the flipped classroom positively, noting that it fosters independent learning and strengthens critical reading abilities (Yulian, 2021). Moreover, a quasi-experimental study conducted in China among medical students showed that students in the intervention group (flipped classroom combined with case-based learning) achieved scores that were 9% higher, reflecting better development of thinking and higher-order cognitive skills compared to those in the traditional teaching group (Yao et al., 2025). However, one study noted no significant difference in critical thinking outcomes with the flipped classroom, though nursing students still found the method more useful, effective, and dynamic than traditional lectures (Sezer & Esenay, 2022).

Moreover, the flipped classroom contributes to the development of students' teamwork skills a finding supported by multiple studies in this field. The flipped classroom encourages students to talk to each other more during face-to-face sessions. Students can do things together in class, like group projects, structured discussions, peer feedback, and group problem-solving, because they review the basic material at home (Hsieh, Huang, & Wu, 2017). The flipped classroom method does not just get students more involved, but it also helps them learn how to work together. Using tools like interactive quizzes and online discussion boards encourages students to participate before and during class. The ability to learn at their own pace also helps students stay motivated and become more involved in learning activities (Zainuddin & Perera, 2019).

This approach helps students learn skills for working together, like critical thinking, cooperation, and problem-solving in groups, because the learning environment is interactive (Bösner, Pickert, & Stibane, 2015). A systematic review study suggests that the effectiveness of the flipped classroom in improving teamwork largely depends on how the activities are designed and implemented. When tasks are not clearly structured, and peer evaluation is not well organized, the potential benefits for teamwork may be limited (Akçayır & Akçayır, 2018).

Our results showed no significant relationship between gender and the development of communication skills, critical thinking, or teamwork either before or after the implementation of the flipped classroom model. This suggests that both male and female students benefited from this teaching approach, the flipped classroom method.

However, this gap in association may also be explained by the relatively small sample size, which could limit the ability to detect potential differences between groups, the male and female students.

A study conducted in the United Arab Emirates with 91 radiography students found that gender has little influence on the development of communication skills, while students tend to value these skills more as they progress in their studies, highlighting the importance of structured communication training. The same study also showed that communication is a part of radiography practice, as it helps build patient trust, improves safety, and supports better care through empathy, clear information, sharing, and effective interaction with both patients and healthcare teams (Rawashdeh et al., 2025). However, students in the human sciences often face difficulties and feel some apprehension about communication, particularly verbal communication, when using the flipped classroom method. In this context, female students have been reported to experience higher levels of anxiety than their male peers in both oral and written communication (Loureiro, Loureiro, & Silva, 2020).

A Portuguese study involving 382 students from three nursing schools found no relationship between gender and critical thinking abilities when using the flipped classroom method (Santos, Lopes, Imaginário, Silva, & Morais, 2025). This outcome indicates that both male and female students might acquire thinking skills at comparable levels during their education with the help of the flipped classroom method. Nonetheless, alternative studies have yielded different outcomes in the flipped classroom method. Fitriani, Asy'Ari, Zubaidah, and Mahanal (2018) identified a correlation between gender and critical thinking dispositions, revealing that female students exhibited superior scores when using the flipped classroom method. These divergent findings suggest that the influence of gender on thinking may fluctuate based on the educational context, the learning environment, and the characteristics of the study population (Fitriani et al., 2018).

In contrast to our findings, an African study of 142 radiography students found that gender can significantly influence how group work and cooperation are experienced when using the flipped classroom method (Menwe, Hazell, & Lawrence, 2024). Teamwork is essential in healthcare as it helps professionals work together smoothly and ensures high-quality care for patients. This highlights how perceptions, confidence, and self-belief can shape how students view their own skills in collaborative settings.

The flipped classroom strategy had a positive impact on students' ability to communicate and think critically. These results align with a study conducted in Morocco, which underscored the efficacy of this pedagogical method in fostering not only communication, collaboration, and critical thinking skills among radiology students but also creativity, adaptability, and lifelong learning competencies (Elkhalladi & Sefrioui, 2024b). The flipped classroom promotes increased student engagement, peer interaction, and autonomy in problem-solving by shifting from passive teaching methods to more active, learner-centered approaches. Preparing learning materials in advance, such as videos and quizzes, and dedicating class time to discussions and group activities, helps students stay motivated and develop essential skills.

5.1. Recommendations

To make the most of the flipped classroom method, several recommendations can be considered. First, teachers should be trained to effectively design and implement flipped classroom activities. Educational institutions could also consider integrating this method regularly into their curricula to encourage more active learning with the help of the flipped classroom method. Providing students with instructions and well-structured collaborative tasks may further increase their engagement and improve learning outcomes when using the flipped classroom method. In addition, future studies could include samples and control groups to better understand the long-term effects of the flipped classroom method on the development of soft skills.

5.2. Strengths and Limitations

This study reports both strengths and limitations of the flipped classroom method. One of its strengths is that it uses an active and creative way of teaching to examine how radiology students can improve their soft skills with the help of the flipped classroom method. Additionally, all eligible students participated in the study, meaning that 100% of them responded, which reduces the risk of nonresponse bias when using the flipped classroom method.

Even though these results are true, there are some limitations that need to be recognized in the flipped classroom method. First, some sociodemographic data, like the participants' age, were not gathered, which makes it impossible to examine how they might have affected the results when using the flipped classroom method. Second, the sample size (n = 39) is relatively small, which may lower the power of the analysis and make it harder to detect smaller effects when using the flipped classroom method. Third, although the study used a scale that already existed, the measurement tool was not subjected to psychometric validation, which could make the data less accurate when using the flipped classroom method. Fourth, the study employed a single-group pretest-posttest design without a control group, complicating the derivation of robust causal inferences when using the flipped classroom method. Finally, since the study was conducted in a single institution, the findings may not be easily generalizable to other settings. These limitations suggest that the results should be interpreted with caution and highlight the need for future studies involving more diverse samples to better assess the effectiveness of the flipped classroom method.

6. Conclusion

The flipped classroom represents a promising pedagogical strategy, both in education in general and in radiology in particular. This study highlighted the significant impact of this strategy on the development of students' communication, teamwork, and critical thinking skills. Moreover, there is no significant correlation between the development of these skills and the participants' age. These are essential for building trust with patients, clearly explaining sometimes complex procedures, and fostering coordination and collaboration among various stakeholders involved, which translates into improved quality of care and patient satisfaction. Additional studies, particularly experimental studies conducted on large samples and in various institutions, will be greatly beneficial to enhance the validity and generalizability of the results.

References

Akçayır, G., & Akçayır, M. (2018). The flipped classroom: A review of its advantages and challenges. *Computers & Education, 126*, 334-345. https://doi.org/10.1016/j.compedu.2018.07.021

Andargeery, S. Y., Bahri, H. A., Alhalwani, R. A., Alahmedi, S. H., & Ali, W. H. (2024). Using a flipped teaching strategy in undergraduate nursing education: Students' perceptions and performance. *BMC Medical Education, 24*(1), 926. https://doi.org/10.1186/s12909-024-05749-9

Bergmann, J., & Sams, A. (2012). *Flip your classroom: Reach every student in every class every day*. Eugene, OR: International Society for Technology in Education.

Bishop, J. L., & Verleger, M. A. (2013). *The flipped classroom: A survey of the research*. Paper presented at the 2013 ASEE Annual Conference & Exposition.

Bösner, S., Pickert, J., & Stibane, T. (2015). Teaching differential diagnosis in primary care using an inverted classroom approach: Student satisfaction and gain in skills and knowledge. *BMC Medical Education, 15*(1), 63. https://doi.org/10.1186/s12909-015-0346-x

Dehghanzadeh, S., & Jafaraghaee, F. (2018). Comparing the effects of traditional lecture and flipped classroom on nursing students' critical thinking disposition: A quasi-experimental study. *Nurse Education Today, 71*, 151-156. https://doi.org/10.1016/j.nedt.2018.09.027

Detlefs, S. E., Goffman, D., Buttle, R. A., Crump, C. M., Thornburg, L. L., Foley, M. R., & Deering, S. (2022). Correlation between medical management and teamwork in multidisciplinary high-fidelity obstetrics simulations. *American Journal of Obstetrics & Gynecology MFM, 4*(4), 100626. https://doi.org/10.1016/j.ajogmf.2022.100626

Elkhalladi, J., & Sefrioui, A. (2024a). Teachers' knowledge of soft skills and flipped classrooms: Nursing and health technologies. *Heliyon, 10*(16), e35668. https://doi.org/10.1016/j.heliyon.2024.e35668

Elkhalladi, J., & Sefrioui, A. (2024b). The impact of the flipped classroom on the development of radiology students' soft skills. *Journal of Radiology Nursing, 43*(2), 142-146. https://doi.org/10.1016/j.jradnu.2024.03.005

Fitriani, H., Asy'Ari, M., Zubaidah, S., & Mahanal, S. (2018). Critical thinking disposition of prospective science teachers at IKIP Mataram, Indonesia. *Journal of Physics: Conference Series, 1108*(1), 012091. https://doi.org/10.1088/1742-6596/1108/1/012091

Ge, L., Chen, Y., Yan, C., Chen, Z., & Liu, J. (2020). Effectiveness of flipped classroom vs traditional lectures in radiology education: A meta-analysis. *Medicine, 99*(40), e22430. https://doi.org/10.1097/MD.0000000000022430

Hsieh, J. S. C., Huang, Y.-M., & Wu, W.-C. V. (2017). Technological acceptance of LINE in flipped EFL oral training. *Computers in Human Behavior, 70*, 178-190. https://doi.org/10.1016/j.chb.2016.12.066

Li, R., Lund, A., & Nordsteien, A. (2023). The link between flipped and active learning: A scoping review. *Teaching in Higher Education, 28*(8), 1993-2027. https://doi.org/10.1080/13562517.2021.1943655

Lin, H., Zeng, X., Zhu, J., Hu, Z., Ying, Y., Huang, Y., & Wang, H. (2021). Application of the inverted classroom model for teaching pathophysiology to Chinese undergraduate medical students: Usability study. *JMIR Medical Education, 7*(2), e24358. https://doi.org/10.2196/24358

Loureiro, M., Loureiro, N., & Silva, R. (2020). Differences of gender in oral and written communication apprehension of university students. *Education Sciences, 10*(12), 379. https://doi.org/10.3390/educsci10120379

Medvedeva, O. (2020). *Monitoring of students' soft skills development within foreign language learning using online technologies*. Paper presented at the Proceedings of the International Scientific Conference-Digital Transformation on Manufacturing, Infrastructure and Service.

Menwe, K. P., Hazell, L., & Lawrence, H. A. (2024). Effectiveness of group work among the final radiography students of the national diploma. *Health SA Gesondheid, 29*(1), a2681. https://doi.org/10.4102/hsag.v29i0.2681

Montoya-Cantoral, E., Gomero-Talledo, A., García-Chauca, J. D., Niño-Cueva, M. R., Niño-Cueva, D. C., & Villalba-Condori, K. O. (2023). The inverted classroom in the development of student competences: A systematic review. *CISETC, 3691*, 175-183.

Ofori-Manteaw, B., Nelson, T., Barry, K., Al Mousa, D., Nabasenja, C., Frame, N., . . . Chau, M. (2025). Beyond technical proficiency: A scoping review of the role of soft skills in medical radiation science. *Radiography, 31*(3), 102924. https://doi.org/10.1016/j.radi.2025.102924

Ponmalar, P. N., Yee, W. M. T., Che Husain, F., & Mat Noor, N. A. (2018). *The development of a soft skill questionnaire for compulsory university courses based on blended learning*. Paper presented at the Association of Southeast Asian Institution of Higher Learning (ASAIHL) 2018, Soka University, Japan.

Rawashdeh, M., El-Sayed, M. Z., Kumar, P., Rooeintan, N., Shibu, A. A., & Ali, M. (2025). Insights into radiography students' perspectives on communication skills development in clinical training. *Radiography, 31*(1), 118-130. https://doi.org/10.1016/j.radi.2024.11.003

Sancho-Cantus, D., Cubero-Plazas, L., Botella Navas, M., Castellano-Rioja, E., & Cañabate Ros, M. (2023). Importance of soft skills in health sciences students and their repercussion after the COVID-19 epidemic: Scoping review. *International Journal of Environmental Research and Public Health, 20*(6), 4901. https://doi.org/10.3390/ijerph20064901

Santos, M. J. D. O., Lopes, J. P., Imaginário, C. I., Silva, H. S., & Morais, E. E. V. A. (2025). Influence of demographic and academic variables on Portuguese nursing undergraduate students' critical thinking. *Enfermería Global, 24*(1), 1-14.

Seau, L. S., Azman, H., & Noor, N. M. (2018). A responsive pedagogical initiative for multimodal oral presentation skills: An action research study. *3L: The Southeast Asian Journal of English Language Studies, 24*(2), 29–42. https://doi.org/10.17576/3L-2018-2402-03

Sergeyeva, T., Festeu, D., Bronin, S., & Turlakova, N. (2021). *Student-training environment interaction: Soft skills development within e-learning*. Paper presented at the IT&I.

Sezer, T. A., & Esenay, F. I. (2022). Impact of flipped classroom approach on undergraduate nursing student's critical thinking skills. *Journal of Professional Nursing, 42*, 201-208. https://doi.org/10.1016/j.profnurs.2022.07.002

Song, Y., Lafond, C. M., Vincent, C., Kim, M. J., Park, C. G., & McCreary, L. L. (2024). Critical soft skill competencies that clinical nurse educators consider important to evaluate in nurses. *Nursing Open, 11*(10), e70047. https://doi.org/10.1002/nop2.70047

Strayer, J. F. (2012). How learning in an inverted classroom influences cooperation, innovation and task orientation. *Learning Environments Research, 15*, 171-193. https://doi.org/10.1007/s10984-012-9108-4

Sutil-Martín, D. L., & Otamendi, F. J. (2021). Soft skills training program based on serious games. *Sustainability, 13*(15), 8582. https://doi.org/10.3390/su13158582

Tang, K. N. (2020). The importance of soft skills acquisition by teachers in higher education institutions. *Kasetsart Journal of Social Sciences, 41*(1), 22–27.

Ten Cate, O., Khursigara-Slattery, N., Cruess, R. L., Hamstra, S. J., Steinert, Y., & Sternszus, R. (2024). Medical competence as a multilayered construct. *Medical Education, 58*(1), 93-104. https://doi.org/10.1111/medu.15162

Tsalikova, I. K., & Pakhotina, S. V. (2019). Scientific research on the issue of soft skills development (review of the data in international databases of Scopus, Web of Science). *The Education and Science Journal, 21*(8), 187-207.

Yao, Q., Zhu, P., Zou, Z., Cheng, Y., Liang, Y., & Huang, W. (2025). Synergising flipped classroom and case-based learning in resource-intensive anatomy education in China: A quasi-experimental study. *BMJ Open, 15*(11), e102001. https://doi.org/10.1136/bmjopen-2025-102001

Yulian, R. (2021). The flipped classroom: Improving critical thinking for critical reading of EFL learners in higher education. *Studies in English Language and Education, 8*(2), 508-522. https://doi.org/10.24815/siele.v8i2.18366

Zainuddin, Z., & Perera, C. J. (2019). Exploring students' competence, autonomy and relatedness in the flipped classroom pedagogical model. *Journal of Further and Higher Education, 43*(1), 115-126. https://doi.org/10.1080/0309877X.2017.1356916