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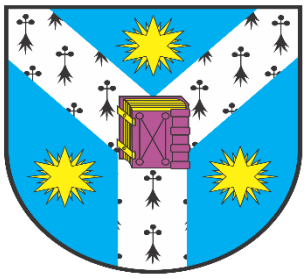

PhD. Thesis Summary

Using Flipped Classroom for Developing Teachers' Competences

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Argument

The rapid advancement of technology in the context of higher education has led to a growing interest in investigating the integration of digital resources with appropriate pedagogical strategies and methodologies that prioritize student-centered learning and active student engagement. This intersection between technology and education has opened up new possibilities for enhancing the learning experience and educational outcomes. The present scientific approach is located on the border between *blended learning* and several educational theories, aligning with recent trends in research through its extended implications both on a theoretical and practical level. Blended learning, which combines face-to-face instruction with online learning activities, has gained importance in educational settings due to its potential to foster personalized learning experiences and deeper student engagement. Exploring the potential benefits of the flipped methodology as a type of blended learning involves an organized and rigorous approach, even more necessary when considering the examination of some associated factors that impact the successful implementation of this methodology.

The flipped classroom, as an effective approach, has demonstrated significant benefits to education by changing the sequencing of learning and teaching activities and promoting a shift from traditional teacher-centered teaching methods to student-centered methods. The flipped methodology offers a highly adaptable and flexible model, allowing for a wide range of classroom role assignment options and preserving personal interaction for effective learning. It combines active learning, student effectiveness and engagement, blended design of teaching activities, and information broadcast. By flipping the traditional lecture-style instruction sequences, students can engage with the course material before coming to class, through pre-recorded video lectures or other digital resources. This allows classroom time to be utilized for more interactive activities, such as discussions, group work, and problem-solving exercises. Such active learning strategies have been shown to enhance student understanding and retention of the material.

The theoretical underpinning of the flipped approach draws from educational theories such as student-centered learning, self-directed learning, active learning, and constructivism. By encouraging students to take ownership of their learning, the flipped classroom promotes self-directed learning skills and fosters a deeper understanding of the subject matter. The flipped methodology has demonstrated positive impacts on academic achievement, engagement, and teachers' perceptions in using technology. However, there is still a lack of literature on the practical implementation of the flipped approach and the factors that predict teachers' perceptions, particularly in higher education.

Given the significance of the topic in higher education and the dearth of empirical data, the main objective of this research project is to investigate university teachers' perceptions of the flipped methodology and identify factors that influence their perceptions. By examining the attitudes towards innovation, the use of the flipped classroom, digital competence, and

pedagogical competence, the study aims to shed light on the complex interplay between these factors and the successful implementation of the flipped approach.

The present thesis also aims to contribute valuable insights and expand the existing empirical evidence by highlighting the crucial role of these factors in the implementation of the flipped approach. By understanding the factors that influence teachers' perceptions and their readiness to adopt and effectively utilize the flipped classroom, educational institutions can provide targeted support and professional development opportunities to facilitate its implementation. Therefore, this research also suggest a teacher training program for university lecturers in order to develop their teaching competences through using the flipped methodology.

Overall, this research project seeks to bridge the gap in the current literature and provide guidance for educational practitioners interested in implementing the flipped methodology. By exploring the perceptions and factors influencing teachers' adoption of the flipped approach, the study aims to contribute to the ongoing efforts to enhance teaching and learning practices in higher education to benefit students and improve educational outcomes.

Thesis Organization and Chapters' Overview

There are four major sections to this thesis including two empirical studies. In the first chapter, we provide a broad overview of the core concepts of our research and a comprehensive literature review organized around four themes: The flipped methodology: theories and teachers' perceptions of the flipped classroom in different educational levels; Teachers' competences: digital competence, pedagogical competence, and attitude towards innovation; Relation between research's concepts; Researcher perspectives on the theoretical framework.

The first theoretical direction, i.e., the flipped methodology, i.e., theories and teachers' perceptions of the flipped classroom, comprises a discussion of a wide range of learning theories related to the flipped classroom, including a description of each theory's specifics and an explanation of how each theory support the flipped classroom approach. We also discuss teachers' perceptions of the flipped methodology in pre-university and higher education settings. Next, the theoretical approach of the present research continues with an overview of the flipped methodology in Egyptian higher education, which contextualizes the empirical study.

The following theoretical directions discussed relate to different frameworks of teachers' digital and pedagogical competences as well as teachers' attitude toward innovation. Finally, we discuss the relation between teachers' perceptions of the flipped methodology and teachers' competences, the primary focus of this thesis.

The second chapter comprises the first empirical study- University teachers' perceptions of flipped classroom: Qualitative approach - aimed to (a) investigate how teachers perceive using the flipped methodology in higher education context (b) explore the significance of the flipped methodology in higher education. This study provides a wide perspective of experienced

university lecturers on the flipped classroom. The study involved 25 university teachers from various faculties at three public universities in Egypt, who previously employed the flipped classroom as a pedagogical approach or an instructional strategy in different disciplinary domains. Semi-structured interviews were conducted with the participants in order to collect the data, and transcripts were subsequently thematically analyzed. These perspectives were the basis for the development and structuring of the instruments used in the second empirical study, presented in the third chapter.

Chapter three includes the second empirical study - Digital competences, pedagogical competences and attitudes towards innovation as predictors of teachers' views of the flipped methodology in higher education- Quantitative study- aimed to (a) explore university teachers' perceptions of the flipped methodology (b) explore self-perceptions of digital competence, pedagogical competence and attitude towards innovation among university teachers (c) investigate differences in university teachers' perceptions of the flipped methodology according to gender, teaching experience and qualification (d) explore the impact of using the flipped classroom, digital competence, pedagogical competence, and attitude towards innovation on university teachers' perceptions of the flipped methodology (e) present a theoretical model of predictors that can explain the perceptions of university teachers towards the flipped methodology.

To carry out the study five structured questionnaires were used to investigate university teachers' perceptions on using the flipped classroom and identify the key factors predicting their perceptions, such as digital competence, pedagogical competence, and attitude towards innovation. We also examined demographics factors (gender, qualification, teaching experience).

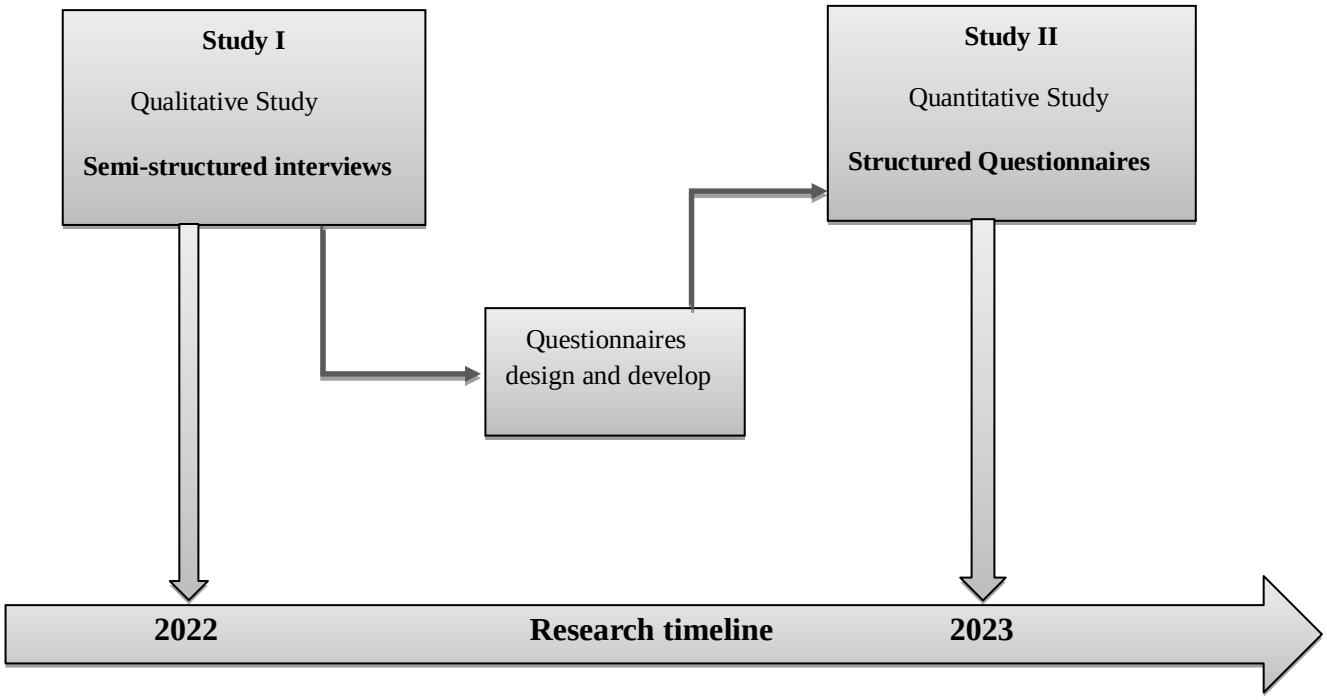
Based on the results of these two studies, the last chapter, i.e., chapter four, comprises conclusions, and recommendations for future research. This chapter focused on a suggested training program for university lecturers using the flipped methodology for developing their competences. The chapter also presents a brief overview on the proposed objectives and content of this training program. Moreover, this chapter provides a conceptual conclusion focusing on university lecturers' views of the flipped methodology and factors affecting their views. The chapter also addresses the theoretical and practical implications, research limitations along with mentioning the contribution to enriching knowledge in the field, and finally the direction for further research.

Results of empirical studies

The two empirical studies are written as scientific articles, the first study being accepted and currently in the process of publication, while the second study is in the submission phase. In addition, two book chapters capitalizing on specialized literature on the flipped methodology were published in a conference.

	Study I (Qualitative)	Study II (Quantitative)
Article title	University teachers' perceptions of flipped classroom	Digital competences, pedagogical competences, and attitudes towards innovation as predictors of teachers' views of the flipped methodology in higher education
Journal	Agathos: An International Review of the Humanities and Social Sciences (WOS)	Turkish online journal of distance education (WOS, Scopus)
Status	Accepted, publishing process ongoing	In the submission stage
Aims	1- Qualitative investigation into perceptions of the flipped classroom in higher education.	1- Quantitative investigation into perceptions of the flipped classroom in higher education. 2- Explore factors that predict university teachers' perceptions of the flipped classroom, such as (digital competence, pedagogical competence, attitude towards innovation, gender, qualification, and teaching experience).
Questions / Hypotheses	1. How do university teachers perceive the flipped methodology in higher education? 2. What is the significance of the flipped methodology in higher education from the teachers' perspective?	**H_1:** There will be statistically significant differences in university teachers' perceptions of the flipped methodology according to gender. **H_2:** There will be statistically significant differences in university teachers' perceptions of the flipped methodology according to teaching experience. **H_3:** There will be statistically significant differences in university teachers' perceptions of the flipped methodology according to qualification. **H_4:** University teachers' perceptions

		of the flipped methodology can be explained by their attitude towards innovation, use of flipped classroom, digital competence, and pedagogical competence.
Participants	25 Egyptian university teachers (52% women and 48% men) from three large public universities in Egypt, who previously implemented the flipped approach in their teaching practice	406 university teachers from various Egyptian public universities who have or don't have experience with flipped classroom model. Of these, 255 (55.4%) were female and 181 (44.6%) were male.
Tools	Semi- structured interviews	Five structured questionnaires
Data Analysis	Thematic analysis	Statistical analysis (descriptive and inferential statistical methods) t-test, ANOVA, Hierarchical multiple regression analysis



Chronical order of conducting the two empirical studies

Results summary of study 1

The main aims of this study were to explore university teachers' perceptions on using flipped classroom in the didactic context of higher education; investigate participants' general perception of educational practices and the potential impact of the flipped classroom on supporting teaching and learning in higher education, based on direct teaching experience. We used a qualitative approach in a sample of 25 Egyptian university teachers aged 27 to 60 *(M=41.16 years)*, while the years of teaching experience in higher education institutions ranged between 5 and 35 years *(M= 17.24 years)*, and the years of experience in using flipped classroom ranged between 3 and 11 years *(M= 7.56 years)*.

Our results suggested that Most participants were familiar with the flipped methodology and provided arguments and justifications for its implementation in higher education. As a general note, participants with longer experience in using the flipped approach provide more detailed insights and express their active interests in promoting associates practices among their fellows. Moreover, all interviewed university teachers have a positive perception towards the use of the flipped classroom, while stressing its potential in higher education, similarly with results reported in other studies (e.g., Shih and Tsai 2017; Kurt 2017). Results also indicate that all participants agree that the flipped methodology increases students engagement and academic motivation, and the idea is also supported by previous studies on students' outcomes when using the flipped approach (e.g., Wu et al. 2017; Karimi and Hamzavi 2017). The most participants argued for increased student performance and a more reasonable educational load. Therefore, all participants recommended the flipped pedagogical approach, based on their positive professional experiences, regardless their field of study. The university teachers reported that flipped classroom as an important pedagogical approach or an educational model, helps the integration of technology in teaching and learning. The results of the study also indicated that most interviewed university teachers agreed with the important role of flipped classrooms in assisting students to become (more) independent learners. In line with other studies (e.g., Hashemifardnia et al. 2018; Al-Zahrani 2015; Osgerby 2013), participants in the present study described students enjoying autonomous learning, but also in-class group and collaborative work, during which they develop critical thinking and communication skills. In the study's conclusions, we discuss the findings concerning theoretical and practical implication for university teachers' personal and educational perceptions on the flipped methodology.

Results summary of study 2

In this research, we aimed to explore factors (i.e., digital competence, pedagogical competence, attitude towards innovation, using the flipped classroom) that affect university teachers' perceptions of the flipped methodology. We also explored whether there are significant differences in teachers' perceptions according to series of demographic factors (i.e., gender, teaching years of experience, qualifications). The sample consisted of 406 Egyptian university teachers. Participants were aged as follows: less than 25 years (11.3%), 25-35 years (37.7 %), or

more than 35 years (51%). The majority of participants were lecturers (31.3%), assistant lecturer (21.4%), or professors (18%). The results indicate that there are statistically significant differences in teachers' perceptions of the flipped methodology related to gender. The female university teachers have more positive perceptions compared to male teachers.

Moreover, the results reveal statistically significant differences in university teachers' perceptions of the flipped methodology related to their qualification and teaching experience. University teachers with advanced qualifications and long teaching experience hold more positive perceptions of the flipped classroom.

Concerning the key factors that affecting university teachers' perceptions of the flipped methodology, the results contribute to identify four predictors statistically significant, namely attitude towards innovation, using flipped classroom, digital competence, and pedagogical competence. The results also indicate that the factor attitude towards innovation is a contribution to previous studies in the field and the most relevant predictor on university teachers' perceptions, followed by the factor using flipped classroom, then level of pedagogical competence, and finally the level of digital competence. These results differ from those presented in in other studies (e.g., Colombo Magaña et al., 2022), where the most significant predictor of perceptions was identified as the level of digital competence, and pedagogical competence (e.g., Sointu et al., 2022). Results are discussed accordance with the available literature and regarding their practical implications for the Egyptian higher education system.

Conclusions, and recommendations

The present doctoral thesis aimed to comprise theoretical and empirical data on using the flipped methodology in higher education. The theoretical information presented in the first chapter aimed to offer a detailed perspective on various fields of knowledge and practice related to the flipped methodology and teachers' competences. Moreover, the details offered within the theoretical part comprised the basis of the two empirical studies further presented in both second and third chapter (i.e., empirical evidence).

Through reviewing the relevant literature and empirical studies that were conducted in this research, it has come to our attention that a considerable focus has been placed on enhancing the competences and skills of teachers in higher education. Furthermore, there has been a concerted effort to design programs aimed at fostering the professional development of university teachers. Based on the collected empirical evidence and the factual conclusions emerging from this research, we propose a teacher training program using the flipped methodology for developing university teachers' competences.

The objective of the teacher training program can be to enhance university teachers’ competences. The teacher training program can be designed to be interactive, collaborative, and practice-oriented. The program will include a variety of online lectures, face-to-face discussions, hands-on activities, and peer-feedback sessions. The training program will also include

opportunities for university lecturers to engage in reflective practice, share their experiences, and learn from each other.

The following topics can be included in the teacher training program:

• Introduction to the flipped methodology and its potential benefits for learning and teaching process.

• Overview of the digital competences required for effective teaching, such as utilizing technological tools, designing digital resources and implementing online platforms.

• Overview of the pedagogical competences such as effective teaching methods, strategies for designing and developing contents and activities, practices for engaging and supporting students in learning environment, and finally assessment and evaluation methods.

Theoretical Implications

The present thesis contributes to the development of prior research on the flipped methodology by investigating the perceptions of university teachers and the factors explaining their perceptions of the flipped methodology. The results suggest that both the digital and pedagogical competence of teachers, as well as their attitude towards innovation, are important predictors of their perceptions of the flipped methodology. Moreover, the research highlights the role of gender, qualification, and teaching experience in shaping teachers' perceptions. The present research's theoretical implications suggest that teacher education programs should concentrate on enhancing teachers' pedagogical and digital competences, promoting a positive attitude towards innovation, and addressing the gender, qualification, and experience differences.

Practical Implications

This research has practical implications for teacher education and professional development programs in higher education. Based on the findings drawn from this research, there are many recommendations for policy makers and institutions of higher education in general, particularly for Egyptian universities.

Practical Implications for Higher Education Institutions

Implementing the flipped methodology can offer several benefits for Egyptian universities. By shifting the traditional lecture-based format to a flipped model, universities can promote active learning, critical thinking, and student engagement. This methodology allows for more interactive and collaborative classroom activities, such as discussions, problem-solving exercises, and hands-on experiments. This active learning environment can lead to improved student comprehension, better retention of knowledge, and improved overall academic performance.

The flipped methodology leads to rethinking assessment and feedback strategies allowing the universities to incorporate formative assessments and opportunities for ongoing feedback throughout the learning process. As a result, teachers and students can measure understanding, identify areas of improvement, and make necessary adjustments to enhance learning outcomes.

The use of learning analytics and data-driven insights can be leveraged to enhance the flipped classroom experience. Universities can collect and analyze data on student engagement, performance, and learning behaviors to gain valuable insights into the effectiveness of the flipped classroom approach. This data can inform instructional design decisions, identify areas for improvement, and provide personalized support to students.

Universities must be mindful of possible effect of factors such as teachers' competences, attitude towards innovation, gender, qualification, and experience on implementing the flipped classroom approach and take appropriate measures to address any disparities that may arise. While the flipped classroom approach has the potential to enhance the educational experience, its success relies on these factors. Therefore, Egyptian higher education institutions should consider the competences of their teaching staff, including their familiarity with technology and active pedagogical methods when implementing the flipped model. Adequate training and professional development opportunities should be provided to ensure that university lecturers are well-prepared to design and deliver effective experiences in the flipped classroom.

To effectively implement the flipped classroom approach, Egyptian higher education institutions need to ensure that their teaching staff possesses the necessary pedagogical and digital competences. Providing comprehensive training and support programs is crucial to equip instructors with the skills and knowledge needed to design, develop, and facilitate flipped learning experiences.

Pedagogical training should focus on the principles of instructional design, active learning strategies, assessment methods, and classroom management techniques specific to the flipped model. Digital competence training should cover the use of relevant technologies, learning management systems, multimedia creation tools, and online collaboration platforms. Offering ongoing support, resources, and opportunities for peer collaboration can further enhance teachers' proficiency in implementing the flipped classroom approach. By investing in training and support for university teachers, higher education institutions can ensure the successful implementation of the flipped model, resulting in improved learning outcomes and a more engaging educational experience for students.

Practical Implications for Policy Makers

Policy makers play a vital role in supporting the implementation of the flipped classroom approach in higher education. They should allocate the necessary financial resources to ensure that institutions have the infrastructure, technology, and materials required for a successful implementation. This includes providing funding for the development of digital learning

platforms, multimedia resources, and technological support systems. Policy makers should also consider providing grants or incentives to encourage institutions to adopt the flipped classroom model and invest in its implementation. Policy makers should prioritize the creation and implementation of comprehensive teacher training programs focused on developing the competences required for the flipped classroom approach. These programs should cover topics such as instructional design, active learning strategies, assessment methods, and effective use of technology in the flipped classroom context. By investing in these programs, Egyptian policy makers can ensure that university lecturers have the necessary skills and knowledge to effectively design and deliver relevant flipped classroom learning experiences.

Moreover, they should also provide ongoing support to enhance the quality and effectiveness of teacher training programs. This includes allocating resources to continually update the content of the training programs to align with emerging trends, research, and best practices in flipped learning. The programs should also incorporate opportunities for practical application and reflection, allowing lecturers to gain experience and receive feedback on their flipped classroom implementation. Additionally, policy makers should consider extending the duration of these training programs to allow for a more in-depth exploration of pedagogical strategies and technology integration within the flipped classroom context.

Policy makers can develop guidelines and standards to ensure consistency and quality in the implementation of the flipped classroom approach across higher education institutions. These guidelines can cover aspects such as the minimum requirements for pre-recorded materials, recommended in-class activities, assessment methods, and student support services. By providing clear guidelines, policy makers can promote best practices and facilitate the adoption of the flipped classroom model. In addition, collaboration and knowledge sharing among higher education institutions in Egypt that have implemented or are planning to implement the flipped classroom approach can be encouraged. This can be achieved through the establishment of networks, conferences, and workshops where educators and administrators can exchange ideas, share success stories, and discuss challenges. By fostering collaboration, collective learning and continuous improvement of flipped classroom practices can be facilitated.

Policy makers should allocate resources to support research and evaluation on the effectiveness of the flipped approach in higher education. This can involve funding research projects, providing grants for evaluation studies, and supporting collaborations between researchers and institutions. By promoting evidence-based practices, policy makers can ensure informed decision-making and continuous improvement in the implementation of the flipped classroom.

By focusing on these practical implications, policy makers in Egypt can foster the successful adoption and implementation of the flipped approach in higher education. Providing support and resources, creating robust teacher training programs, and continuously improving

and expanding these initiatives will contribute to the overall enhancement of the educational experience and outcomes for both teachers and students.

Research Contribution in the Field

This research makes several important contributions to existing knowledge on the flipped approach and its potential benefits for developing university teachers' competences.

Firstly, the research provides empirical evidence of the positive perceptions of university lecturers towards the flipped classroom and identifies key factors that predict these views, as reflected in the literature (Li & Li ,2022; Haghighi, et al., 2019; Wang & Zhu, 2019; Colombo Magaña et al., 2022; Sointu et al., 2022)

Secondly, the research provides insights into the importance of teachers' digital and pedagogical competences in employing the flipped methodology in education, also reflected in previous literature (Aidoo et al., 2022; Van Leeuwen, 2019; Pilgrim et al., 2018; Maycock et al., 2018; Rasheed & Abdullah, 2020; O'Flaherty & Phillips, 2015).

Thirdly, this research is the first of a kind that contributes to presenting the relationship between the flipped methodology and teachers' attitude towards innovation in higher education context.

Finally, this research identifies significant differences in teachers' perceptions according to gender, qualification, and experience.

Future Directions of Research

Research limitations should be addressed in future research. Moreover, future studies should extend the research results to other settings. Specifically, future studies should employ larger sample sizes and more varied sample structures, use experimental designs to establish causality, and include universities and diverse educational backgrounds to increase the generalizability of findings.

Secondly, future studies should explore the flipped methodology's effect on students academic achievement and examine potential challenges and barriers to employing the flipped methodology in various educational settings.

Thirdly, future research could examine the impact of other variables such as culture and discipline on university teachers' perceptions of the flipped approach.

Finally, future studies could evaluate effectiveness of teacher training programs in enhancing university teachers' competences in flipped classroom setting.

Overall Conclusion

A general conclusion, the present thesis emphasizes highlights the potential benefits of the flipped methodology in enhancing learning outcomes in higher education. Additionally, empirical evidence for potential benefits of the flipped methodology for developing university teachers' competences are demonstrated by this research. The study's findings reveal that university lecturers express positive perceptions of the flipped methodology, and their digital and pedagogical competences are important predictors of their perceptions. According to these results, this research highlights the implications for teacher training and professional development programs in higher education through suggesting a teacher training program using the flipped methodology. This approach can help to enhance teaching quality at universities, and better prepare teachers to address the evolving requirements of students in current digital age.

Though in need of further research – using more extensive and diverse samples of participants, the results of the present studies may contribute to further discussions and the enhancement of innovative and effective teaching methods in higher education and open significant novel research pathways that would help us understand the importance of the flipped methodology in academic settings.

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