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Teaching Effectiveness and SWOC analysis at a Greek Higher Education Institution

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"...if we teach today as we taught yesterday, we rob our children of tomorrow."

John Dewey

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Table of Contents

Title page

Acknowledgements

Abstract in English....6

Abstract in Italian....8

Introduction....10

Chapter One....13

1. Introduction....15
2. A complicating reality....16
3. Summary....17
4. Methodology....18

4.1 Design....18

4.2 Search strategy and source selection....20

4.2.1 Study inclusion and exclusion criteria....22

4.2.2 Quality appraisal....25

4.2.3 Collating, summarising and reporting the results....26

4.2.4 Limitations....26

5. Findings....26

5.1 How tools are used to conceptualise and assess teacher effectiveness in Higher Education?....33

5.2 What types of high-quality teaching style should higher education teachers use in the classroom in order to be effective?....36

5.2.1 Approaches to teaching in higher education....36

5.2.2 Conceptions of teaching in higher education....37

5.2.3 Beliefs and contexts versus intentions in teaching....39

6. Discussion....40

References....42

Chapter Two....48

1. Introduction....50
2. Literature Review....53

2.1 SWOC Analysis....53

2.1.2 Advantages and Limitations of SWOC Analysis....55

2.1.3 University of Piraeus....55

3. Methods....59

3.1 Data University System (secondary data)....60

3.2 Discussion group (primary data)....61

4. SWOC Analysis of the UniPi Education Model....61

5. Discussion 66
6. Conclusion 67
References 68
Appendix 1: the checklist 72
Chapter Three 76
1. Introduction 78
2. Literature Review 80
2.1 Teacher Effectiveness 80
2.2 Teaching Style 81
2.3 Course Difficulty 85
2.4 Student Engagement 87
3. Institutional Setting: The Greek Higher Education System 88
4. Research Methodology 93
4.1 Item Writing 94
4.2 Scale Construction and Content Validity 94
4.3 Collecting the Data 94
4.4 Evaluation of Construct Reliability and Validity 95
5. Results 96
5.1 Descriptive Statistics 97
5.2 EFA 97
5.3 CFA 100
6. Conclusions 102
References 105
Appendix 1: The Greek version of the TAGGED questionnaire 117
Appendix 2: The English version of the TAGGED questionnaire 119
Appendix 3: Statistical Information 121
Chapter Four 124
1. Introduction 126
2. Literature Review 127
2.1 Conceptualising vulnerability 128
2.2 The notion of being vulnerable 129
2.3 The student voice 130
2.4 Theoretical and Empirical Framework 131
3. Research Methodology 132
3.1 Methodological challenges associated with researching vulnerable students 132
3.1.1 Accessing the sample 132

3.1.2 The role of generative deception....133
3.2 Participants and Student Grouping....133
3.3 Measures of teaching style....135
3.4 Empirical strategy....136
4. Results....136
5. Conclusions and recommendations....139
6. Limitations....140
7. Future research....141
References....142
Appendix 1: Statistical Information....145
Conclusions....146

Abstract in English

This dissertation consists of four separate essays on sociology of education. The first essay, through a scoping review, aims to enhance understanding and further conceptualise teacher effectiveness in higher education from both practical and research-driven perspectives. This review represents an initial step forward in understanding evidence-based practice in the classroom.

The second essay introduces a new way of analysing universities by exploring the use of the SWOC analysis technique. To be more specific, the application of the SWOC analysis is carried out in the Greek Higher Education Institution. Results report that certain methodological and pragmatic weaknesses can be overcome (e.g., budget and process time, space constraints, course language in Greek), while other basic systematic limitations cannot without institutional reform (e.g., entrance of business practices into higher education). Similarly, certain challenges can be solved (e.g., limitations of infrastructure), while others cannot or can only be partially resolved, but there is a need for time, institutional and framework reforms and society preparation (e.g., necessity for external funds and increased self-funding).

The third essay sets out to understand the determinants of teacher effectiveness at a Greek Higher Education Institution by confirming the validity of a 21-item instrument entitled TAGGED, based on an exploration of its dimensionality among undergraduate students. It also aims to assess the perceived teaching quality offered at a Greek university by proposing a shorter (8-item) scale that is extremely accurate in measuring teacher effectiveness. Results reveal that TAGGED is a three-factor instrument consisting of the three dimensions: teaching style, course difficulty, and student engagement. As the first academic research that investigates the possibility of assessing a shorter questionnaire at Greek universities related to teacher effectiveness and thus student satisfaction, this study can help researchers conduct confident investigations using the adapted and validated teaching quality instrument within the Greek higher education system.

The fourth essay, exploring the concept of vulnerability, presents some preliminary results concerning the teaching style that vulnerable students at a Greek Higher Education Institution prefer. The essay has gone some way, in the limited context of the data, to make a strong case for locating vulnerability as a generative theoretical framework for exploring the lives of students at risk in Higher Education. Results reveal that although many students are facing some kind of vulnerability, they do not want to be self-defined as vulnerable in order not to be associated with labels and thus not to be discriminated or stigmatized. The analysis further identifies a lack of information to support vulnerable students in making choices about their futures, principally in relation to gaining information about pursuing Higher Education. Further investigation suggests that there must be a commitment on the part of Higher Education Institution to develop student support services and personal development planning must be embedded.

Keywords:
teacher effectiveness; SWOC analysis; student evaluation of teaching; teaching styles; vulnerable students

Abstract in Italian

Questa tesi di dottorato consiste in quattro saggi sulla sociologia dell'educazione. Il primo saggio, attraverso una rassegna approfondita, mira a migliorare la comprensione e a concettualizzare l'efficacia degli insegnanti nell'istruzione terziaria. Questa rassegna rappresenta un primo passo avanti nella comprensione della pratica didattica fondata sull'evidenza empirica.

Il secondo saggio introduce un nuovo modo di analizzare le università utilizzando la tecnica di analisi SWOC. Per essere più precisi, l'analisi SWOC viene applicata per la prima volta ad una università greca. I risultati mostrano che alcune debolezze metodologiche e pragmatiche dell'ateneo possono essere superate (ad esempio, budget e tempo di elaborazione, vincoli di spazio, lingua del corso in greco), mentre altri limiti sistematici emersi non possono essere superati senza una riforma istituzionale (ad esempio, l'ingresso di pratiche commerciali nell'istruzione superiore) implementata a livello centrale. Allo stesso modo, alcune sfide possono essere risolte (p. es., limitazioni delle infrastrutture), mentre altre non possono o possono essere risolte solo parzialmente, ma c'è bisogno di tempo, riforme istituzionali di tutto il sistema universitario e creazione di una cultura all'interno della società (p. es., necessità di fondi esterni e maggiore autonomia, auto-finanziamento).

Il terzo saggio si propone di comprendere le determinanti dell'efficacia dell'insegnante in una università greca, confermando la validità di una scala di 21 item in greco intitolata TAGGED. Mira anche alla creazione di una scala più breve (8 elementi) che possa essere utilizzata da qualsiasi università greca per valutare la qualità dell'insegnamento. I risultati rivelano che TAGGED è uno strumento a costituito da tre dimensioni: stile di insegnamento, difficoltà del corso e coinvolgimento degli studenti. Essendo la prima ricerca accademica che indaga la possibilità di utilizzare un questionario più breve presso le università greche per misurare l'efficacia degli insegnanti attraverso la soddisfazione espressa dagli studenti, questo studio può aiutare i ricercatori a condurre indagini accurate utilizzando la scala breve in una qualsiasi università greca.

Il quarto saggio, esplorando il concetto di vulnerabilità, presenta alcuni risultati preliminari riguardanti lo stile di insegnamento preferito dagli studenti vulnerabili di un istituto di istruzione superiore greco. Il saggio individua la vulnerabilità come quadro teorico generativo, e lo utilizza, pur con la limitatezza dei dati a disposizione, per esplorare le vite degli studenti a rischio di vulnerabilità nell'università. I risultati rivelano che, sebbene molti degli studenti intervistati si trovino ad affrontare un qualche tipo di vulnerabilità, la metà di essi non si auto-definisce "vulnerabili", probabilmente per non essere associati ad etichette e quindi per non essere discriminati o stigmatizzati. L'analisi inoltre analizza la percezione dell'efficacia dell'insegnamento da parte di questi studenti vulnerabili, mostrando come una valutazione negativa dell'efficacia di insegnamento emerga solo per gli studenti che si autodefiniscono vulnerabili, e per gli studenti che chiedono all'ateneo consulenza per la loro carriera. È troppo presto per trarre conclusioni, se non la necessità di ulteriori indagini e la necessità di un ulteriore impegno da parte dell'università per sviluppare opportuni servizi di sostegno agli studenti.

Parole chiavi:
efficacia dell'insegnante; analisi SWOC; opinione degli studenti; stili di insegnamento; studenti vulnerabili

Introduction

Investment in education not only raises the well-being of individuals and society, but it also raises their human capital and capacity to acquire means for the satisfaction of other basic needs. Education is also seen a mechanism of making other investments more productive for social and political development. Poor quality education could be a poor investment. Therefore, it is crucial that an education system should strive to provide quality education to the students. Quality education is elusive and evidenced by the number of countries lagging behind or declining in achieving it. Good quality education should fulfill the acquisition of all these qualities and can only be achieved through quality teaching and learning process. Therefore, any initiative to improve the quality of education need to be firmly focused on improving teaching and learning.

To be more specific, increasing attention is being given to the quality of teaching and learning at university level across the world and there is combined pressure both to guarantee effective teaching in universities and to be able to determine that effectiveness. Quality in higher education was for a long period related to pure educational and scientific principles and standards linked with teaching and research and it was understood an internal obligation and affair of higher education institution. This altered, during the last twenty years, due to the massification of higher education, the expansion of higher education institutions, the weakness of the state to sustain economically higher education systems from the state budgets and the introduction of tuition fees and client-oriented policies by the institutions. The institutions' demand for more independence and self-performance was accompanied by the introduction of steering and audit systems by the state, while the notion of accountability of higher education institutions towards society included the social partners and other stakeholders within the evaluation processes.

This thesis is composed of four essays in the field of sociology of education, each one corresponding to a self-contained paper, with a focus on estimating causal links between teacher effectiveness and higher education institution efficacy. Special focus on the Greek Higher Education context is given.

The first essay, “Toward Conceptual Clarity: A Scoping Review of Teacher Effectiveness in Higher Education”, being in line with the new educational and learning paradigm, aims to enhance understanding and further conceptualise teacher effectiveness in higher education from both practical and research-driven perspectives. The complex nature of teaching and learning, coupled with the relative youth of the wide-scale incorporation of co-teaching in teacher education, provides the rationale for this review. A broad descriptive overview of the extent, range and nature of the research on teacher effectiveness in higher education using a rigorous and systematic process is presented. Furthermore, a foundation for future research and practice, presenting the range of outcomes, clarifying conceptual boundaries, and offering suggestions to refine operational definitions of teacher effectiveness in higher education is provided.

The second essay, “SWOC analysis as the first stage in the process of strategic management of a Greek higher education institution”, pointing out the growing interest in the role of the university as a key stakeholder and agent in innovation and regional growth, introduces a new way of analysing universities by exploring the use of the SWOC analysis process. SWOC can be defined as a foundation for evaluating the internal potential and limitations and the possible/likely opportunities and threats from the external environment. So far, this strategic planning technique has mostly been used for designing and understanding the main logic of businesses in the private sector. Through the implementation of the SWOC analysis at a Greek higher education institution, it was underlined that certain methodological and pragmatic weaknesses can be overcome (e.g., budget and process time, space constraints), while basic systematic limitations of methodologies cannot without institutional reform (e.g., entrance of business practices into higher education). Likewise, certain challenges can be resolved (e.g., limitations of infrastructure), while others cannot or can only be partially resolved, but there is a need for time, institutional and framework reforms and society preparation (e.g., necessity for external funds and increased self-funding).

The third essay, “Measuring Teaching Effectiveness at a Greek higher education institution”, taking into consideration that in Greece an established, common and compulsory instrument measuring students’ satisfaction with teachers and courses’ curricula is still lacking, proposes a rather short students’ evaluation questionnaire to be used in different Greek higher education institutions. More specifically, this study

sets out to understand the determinants of teacher effectiveness at a Greek HEI by confirming the factorial validity of a 21-item instrument, entitled "Teacher Effectiveness Questionnaire in Greek Higher Education (TAGGED)", based on an exploration of its among undergraduate students. It also aims to assess the perceived teaching quality offered at a Greek university by suggesting a shorter (8-item) scale that is exceptionally accurate in measuring teacher effectiveness. The results reveal that TAGGED is a three-factor instrument consisting of the three dimensions: teaching style, course difficulty, and student engagement. First, teaching style involves a complex mix of beliefs, attitudes, strategies, techniques, motivation, personality and control. Second, course difficulty indicates subjective student assessment of the requirements of a course. Finally, student engagement refers to student involvement in educationally purposeful activities. As the first academic research that considers the possibility of assessing a shorter questionnaire at Greek universities linked with teacher effectiveness and thus student satisfaction, this study can help researchers conduct reliant investigations using the adapted and validated teaching quality instrument within the Greek higher education system.

The fourth essay, "Vulnerable Students and their learning needs: a preliminary note", was strongly affected by the COVID-19 emergency, especially regarding the collection of the data and the adjustments of the instrument used. This essay commences by exploring the concept of vulnerability, drawing from the extant literature in other fields, and identifying critical approaches that have been used in these fields, which can potentially be used in HE. Based on the theoretical frameworks for exploring vulnerability, some preliminary results concerning the teaching style that vulnerable students prefer are presented. The study ends with emerging findings and early implications for strengthening processes, which might help in interrogating student vulnerabilities in higher education.

Chapter One[1]

Toward Conceptual Clarity: A Scoping Review of Teacher Effectiveness in Higher Education

[1] Parts of this chapter are used in two journal articles that resulted from this dissertation in order to submit it to international peer-reviewed journals. The first article, co-authored with Fotios Milienos, Christos Rentzios, Leen Catrysse, David Gijbels, Claudio Longobardi and Evangelia Karagiannopoulou, is titled: The contribution of learning and mental health variables in first-year students profiles. This article is already published in Frontiers journal (Milienos FS, Rentzios C, Catrysse L, Gijbels D, **Mastrokoukou S**, Longobardi C and Karagiannopoulou E (2021) The Contribution of Learning and Mental Health Variables in First-Year Students' Profiles. Front. Psychol. 12:627118. doi: 10.3389/fpsyg.2021.627118). The second article is co-authored with Andronikos Kaliris and Nikolaos Georgopoulos and is titled: Reinventing learning in university: A Scoping Review of Teacher Effectiveness in Higher Education. This article has a revise resubmit status with minor revisions.

Acronyms and Abbreviations

ATI	Approaches to Teaching Inventory
ENQA	European Association for Quality Assurance in Higher Education
HE	Higher Education
HEI	Higher Education Institution

1. Introduction

Increasing attention is being given to the quality of teaching and learning at university level across the world (Cardoso et al., 2015; Devlin, 2007; Henard & Roseveare, 2012), and there is combined pressure both to guarantee effective teaching in universities and to be able to determine that effectiveness. University teaching can be defined as a scholarly activity that requires extensive professional skills and practices and high levels of disciplinary and other contextual expertise. Understanding what it means to be an effective university teacher forms the basis of ensuring quality. Such an understanding and knowledge are crucial for individual teachers, teaching support staff, academic staff developers, academic leaders and institutions and, indeed, for the entire higher education sector, both nationally and internationally.

In this context, in the new teaching and learning paradigm, higher education has an important role in the development of human capital, entrepreneurial ventures, and innovation for sustainability of the knowledge economy (Dill & Van Vught, 2010). According to Altbach et al. (2009), an unparalleled transformation in the scope and diversity of higher education has taken place during the last 50 years. The challenging and forceful global marketplace and competitiveness require a responsive society with a proactive capability to develop, adapt and use knowledge as the foundation for national growth in services and manufacturing sectors (Zuñiga et al., 2010).

Therefore, the process of evaluating the effectiveness of teachers has altered over time, along with the definition of what effective teaching is. Effective teaching has been defined in many ways over the years (Campbell et al., 2004; Cheng & Tsui, 1999; Cruickshank & Haefele, 1990; Devlin & Samarawickrema, 2010; Muijs, 2006), and methods for teacher effectiveness have changed as definitions and beliefs about what is significant to measure have evolved. Although there is a consensus that good teaching matters and that it may be the single most important education-based factor in improving student achievement (Devlin & Samarawickrema, 2010; Ding & Sherman, 2006), measuring teacher effectiveness has remained elusive, in part because of ongoing debate about what an effective teacher is and does. In a discussion on research-based indicators of effective teaching, Cruickshank and Haefele (1990, p.34) pointed

out that “an enormous underlying problem with teacher evaluation relates to lack of agreement about what constitutes good or effective teaching”.

University faculty members are evaluated in many ways as a means of determining whether they should be promoted or rewarded, and to potentially improve their performance. A convenient measure of the research productivity of faculty members that is frequently employed is the number and quality of scientific papers and reports published. A similar metric for teaching effectiveness is not so readily available (McBean & Al-Nassri, 1982). To be more specific, apart from a lack of clear consensus on what an effective teacher is and does—or perhaps because of it—there is not a generally agreed method for evaluating teacher effectiveness. Commonly used methods include classroom observations designed to measure teacher practices against some standard of effective teaching and value-added models that set out to measure the contribution of individual teachers to their students’ achievement gains.

This scoping review aims to enhance understanding and further conceptualise teacher effectiveness in higher education from both practical and research-driven perspectives. The complex nature of teaching and learning, coupled with the relative youth of the wide-scale incorporation of co-teaching in teacher education, provides the rationale for this review. We offer a broad descriptive overview of the extent, range and nature of the research on teacher effectiveness in higher education using a rigorous and systematic process. Furthermore, we provide a foundation for future research and practice, presenting the range of outcomes, clarifying conceptual boundaries, and offering suggestions to refine operational definitions of teacher effectiveness in higher education.

2. A complicating reality

Teaching and learning present two sides of a coin. The most acknowledged criterion for measuring teaching effectiveness is the amount of student learning that occurs (Devlin & Samarawickrema, 2010; Marsh, 1984; Richardson, 2017; Vermunt & Donche, 2017). There are consistently high positive correlations between students’ ratings of the amount learned on the course and their overall ratings of the teacher and

the course: those who learn more give their teachers higher ratings (Cohen, 1981; Theall & Franklin, 2001).

The literature on teaching is crammed full of well researched ways in which teachers can present content and skills that will improve students' opportunities to learn. It is equally concentrated on forming suggestions on what not to do in the classroom. Nevertheless, there is no rule book on which teaching methods are more suitable and effective for whatever skills and/or content are being taught. Students frequently present little expertise in knowing if the method selected by an individual instructor was the best teaching method or simply the method with which the teacher was most comfortable (Bates & Poole, 2003; Pratt, 1998; Ramsden, 1991).

To be more specific, although research demonstrates that university teachers have the greatest impact on student achievement (Gibbs & Jenkins, 2014), shaping the characteristics that describe quality teachers and measuring the evidence that would capture effectiveness remain problematic in education (Partee, 2012). Researchers claim that although there are many noteworthy theories and ideas about evaluation, there is no single instrument that quickly and accurately identifies and assesses teacher effectiveness. There is a spoken need for teachers and stakeholders to cultivate a shared understanding of good practice (Leiber, 2018; Yorke, 2003).

3. Summary

There is a need to understand what teacher effectiveness is, and if and how it can be achieved. The current review was undertaken to examine research that has made use of observational data, because it was recognised that observation tools and frameworks represent an important method for understanding teacher effectiveness in practice. For the purposes of this study, the term 'tool' indicates any structured observation scale or organisational framework used to measure (or organise data on) aspects of teacher effectiveness in higher education. Moreover, the aims of this scoping review were two-fold and aligned with the following two research questions:

RQ1 How tools are used to conceptualise and assess teacher effectiveness in Higher Education?

RQ2 What types of high-quality teaching style should higher education teachers use in the classroom in order to be effective?

4. Methodology

4.1 Design

Given that the research questions were exploratory in nature, a scoping review methodology was employed. Scoping reviews are a relatively new approach for which there is not yet a universal study definition or definitive procedure (Anderson et al., 2008; Arksey & O'Malley, 2005; Davis et al., 2009; Daudt et al., 2013; Levac et al., 2010), especially in the field of education (Egan et al., 2017; Hariharasudan & Kot, 2018).

Scoping studies represent an approach to reviewing research evidence to contextualise knowledge in terms of:

- Examining the extent, range and nature of research activity
- Determining the value of undertaking a full systematic review
- Summarising and disseminating research findings
- Identifying research gaps in the existing literature (Arksey & O'Malley, 2005).

A scoping review is not a linear process (as typically dictated by the protocol for a systematic review), but a back-and-forth between early finds and new insights, with changes in search terms and even questions (Arksey & O'Malley, 2005).

Thus, guided by Arksey and O'Malley's framework for scoping reviews, the process undertaken was "iterative" (Arksey & O'Malley, 2005, p. 8): the search terms defined below were not set initially, but refined throughout, allowing for identification of all the relevant literature.

To be more specific, the scoping review method used in this study was initially guided by Arksey and O'Malley's (2005) five-stage framework but we decided to add an extra stage after taking into consideration Daudt et al. (2013), who proposed further recommendations (see Table 1 below).

Originally, stage six was to be an optional stage, whereby experts in areas connected with the research question are invited to review and comment on the stages of the study to ensure it is being effectively executed and progressing in an unbiased way. Both Daudt et al. (2013) and Levac et al. (2010) highly recommend that this stage be included in the process, and it will be retained for the present review.

Thus, we independently passed through the individual phases of the review process. Conflicts were cleared collaboratively after each step.

Table 1. *Six stages for a scoping study (Arksey & O'Malley, 2005) with recommendations from Daudt et al. (2013)*

Stage	Recommendation
1. Identifying the research question	1. Conduct considerable research into scoping studies to ensure the scoping methodology is fit for the particular research interest. The researcher should take into account the methodology's objectives and boundaries as well as the types of research that it can best support. 2. The purpose of the research should be tightly related with the research question and address recommendations with regard to clarifying concepts within the research question.
2. Identifying relevant studies	1. Remain flexible to modify the research question and/or search terms if such a need arises. 2. Build both a multidisciplinary and interprofessional team. Include someone experienced with scoping studies and suitable stakeholders if possible. 3. Timely completion of the study is of crucial importance. Thus, researchers should choose a small suitable research group from a larger team of qualified researchers and professionals with enough breadth of expertise.
3. Study selection	1. For large research teams, take a three-tiered approach to study selection. The entire team may be divided into smaller teams being responsible for processing equal portions of the selected studies. Ask each person to review his/her selected studies for inclusion or exclusion. Then, teams could compare their results. A third reviewer might be employed if there is disagreement. 2. Assess the quality of studies to be either included or excluded for charting. Validated instruments could be used for quality assessment.
4. Charting the data	1. A trial charting exercise could be implemented in collaboration with the group members in order to determine if adjustments should be made to the chart (variables being measured) as well as to ensure that the research team is charting consistently. 2. A comprehensive chart is an essential element of a sophisticated scoping review. To ensure richness, this should involve both high-level data and micro-level data.

	3. Frequent meetings among the research group members are important in safeguarding effective communication about consistent charting. If necessary, additional longer meetings may be planned. 4. For large research teams, take a three-tiered approach to charting the data. The entire team may be divided into smaller teams being responsible for equal portions of the selected studies. Pick different team members from stage three. Ask each person to review their selected studies for inclusion or exclusion. Have each small team compare its results. Have one independent reviewer read and chart all studies. Have an independent reviewer compare his/her charting with the charting of all other team members. Discuss any discrepancies. 5. To facilitate data management and avoid confusion each study could be assigned a unique identifying number.
5. Collating, summarising and reporting the results	1. A small working group from the larger team could be given the assignment to make meaning out of the data and also make decisions about the data on which to focus.
6. Consultation exercise	1. If there are stakeholders (e.g., policymakers and allied researchers) who were not part of your research team, engage in a consultation process with them. However, consultation with stakeholders would be recommended only if the actual scoping study results seem to be relevant. 2. Recognise that the inability to share a scoping study's findings with stakeholders may indicate that future research -apart from the scoping review- must be conducted in order to make a meaningful contribution to professional practice. 3. Get involved with systematic collaboration with practitioners in established networks of interest, such as the European Association for Quality Assurance in Higher Education (ENQA).

4.2 Search strategy and source selection

In this systematic scoping review (Arksey & O'Malley, 2005; Daudt et al., 2013), a comprehensive search strategy was developed following an initial search of the topic area in collaboration with one information search expert.

Teacher effectiveness can be understood and defined in different ways. Usually the term relates to the 'how' of teaching (i.e., teaching style and/or learning environment, student course engagement) rather than the 'what' of teaching (i.e., curriculum content), although sometimes the term is used to refer to both (Gill & Singh, 2020). Following this distinction, we focused on the 'how of teaching (i.e., teaching style and/or learning environment, course difficulty, student engagement). We were primarily interested in exploring teaching and learning matters rather than focusing on a specific aspect of practice such as curriculum content or assessment.

Parameters were established for the study that influenced the extent of the search. Specifically, only studies published since 1990 based on the connection between teacher effectiveness and teaching evaluation were considered. Also, only studies available in English were considered, and only studies in peer-reviewed journals. A systematic search was conducted in the following electronic collections and databases; EBSCOhost Psychology and Behavioural Sciences Collection, ScienceDirect, Education Research Complete and Web of Science (Science and Social Science Index). Searches of titles, abstracts and keywords were also conducted using the types of search term indicated in Table 2. To be more specific, in this review, we cross-searched 'higher education' terms ('higher education' ti,ab., universit* ti,ab., college* ti,ab., postsecondary ti,ab.) with 'effectiveness' search terms ('teaching effectiv*' ti,ab., 'effective teaching' ti,ab., 'effective learning' ti,ab., 'effective instruction' ti,ab.).

Table 2. *Sample of search terms for the ERIC database*

Step	Search terms
1	To identify relevant research through title and full text in order to generate a wide range of responses: effectiv*(framework OR tool AND teach* OR higher education OR third level OR college OR postsecondary OR university OR tertiary)
2	effectiv*(approach* OR style AND teach* OR instruction OR learning OR third level OR college OR postsecondary OR university OR tertiary)
3	To identify relevant research through title and abstract in order to refine range of responses: effectiv*(framework OR tool OR style and learning OR approach* OR initiative AND develop* OR enhance* OR increas* OR third level OR college OR postsecondary OR university OR tertiary)

The literature on teacher effectiveness is large and fragmented. Scholars working in different fields theorise, conduct studies and publish articles in very different journals. Sometimes these findings do not build on or connect with findings in other areas. This can mean that knowledge is less cumulative than one might like. As Okoli (2019) points out, this means that reviews of research in such areas are related to the conceptual frameworks of the research. This review selected categories that were considered reasonable; nevertheless, scholars in other disciplines might have used different categories.

4.2.1 Study inclusion and exclusion criteria

The general approach to the identification and selection of articles for this review was to start with wide-ranging categories and many search terms and then gradually narrow the group of studies down to only those that met certain criteria. While stricter standards and criteria could have been applied, this review complies with Dynarski's statement (2008, p. 27): "Selective exclusion of research requires great caution, as selectivity can be interpreted as compromising scientific objectivity for purposes that educators cannot discern and may misinterpret". Therefore, rather than eliminate studies that might be informative for some purposes or audiences, this review elected not to use narrow criteria. Dynarski also stated:

> Certainly, it is possible that the findings from some studies are due to publication bias or arise from local conditions that are unusual or hard to replicate. But if syntheses review all the evidence and apply sound standards, educators can make up their own minds about whether the findings are credible or whether the implementation conditions are unrealistic and not useful to them. (p. 28)

A broad range of papers resulted from the breadth of the search terms outlined above. This first search process yielded more than 1,080 studies. In order to narrow the results, abstracts were reviewed to determine whether the studies met the following criteria (see Table 3):

Methodology of research. As the primary objective of this scoping review concerns the identification of frameworks for teaching effectiveness and their associated characteristics, both qualitative and quantitative research were considered.

Participants. The research must have been conducted in a higher education context with undergraduate students, either as part of a module or as a standalone module. We did not exclude studies based on specific subject area.

Location. Research was conducted internationally, with a special focus on Southern European countries and specifically Greece.

Relevance. Finally, to be considered eligible, the papers under review must state in their own words that the aim of the research was to enhance teachers' levels of effectiveness.

Table 3. *Inclusion and exclusion criteria*

Criterion	Inclusion	Exclusion
Date	1990–2019	Pre-1990
Language	English	Language other than English
Study focus	Predominantly focused on the educational experiences of undergraduate students	Slight reference to educational experience, but focus is elsewhere (e.g., administrative services); students are in institutions other than universities (e.g. schools).
Location	International	
Participants	Undergraduate students	Postgraduate students, PhD candidates (in general, outside the specific range)

Approximately 250 articles meeting these criteria were sent to the next stage. The remaining 250 articles were reviewed more closely for relevance and methodological rigour. Studies chosen for this research synthesis met the following additional criteria:

- They were empirical.
- They included a measure of teacher effectiveness or classroom practice.
- They included a student outcome measure or had implications for teacher effectiveness.
- They reported methods meeting accepted standards for quality research (e.g., reliable and validated instruments, appropriate study design, and necessary controls).

The resulting collection of studies was then evaluated, and additional exclusions were made when deeper reading of studies revealed they did not meet the purposes or the quality standards of this synthesis. Studies that were of poor quality, off topic, out of scope, focused on school education, or lacked descriptions of data and methods were excluded. The resulting synthesis includes 26 studies (Figure 1) that were thoroughly reviewed. Full-text versions of the articles were obtained, each article being reviewed and confirmed as appropriate by the authors. This process provided an opportunity to

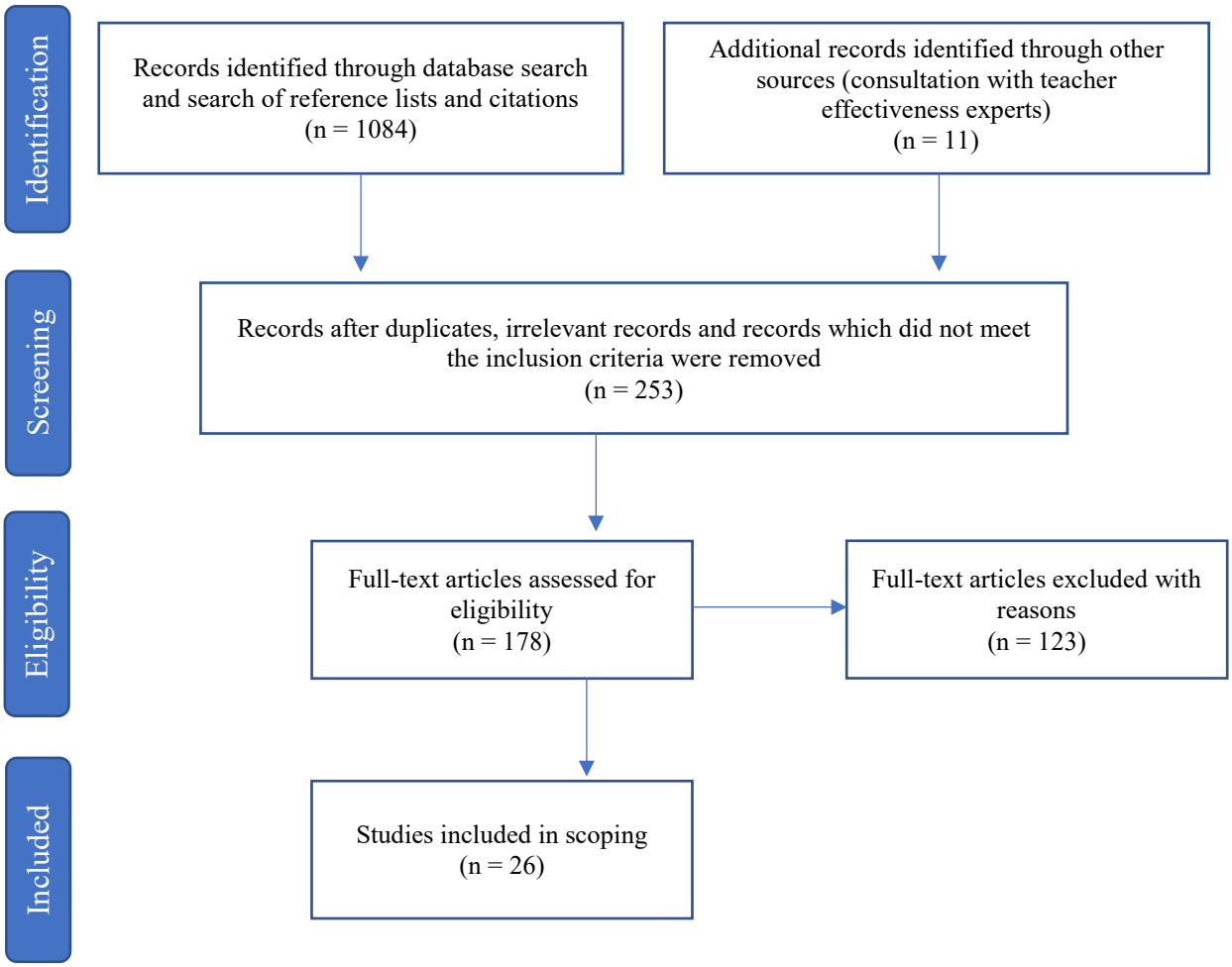
identify any further additional relevant literature from a review of the reference lists of each article. The process of article selection followed the Preferred Reporting of Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009).

As discussed, the search was narrowed by focusing on studies measuring classroom processes and outputs in the form of student outcomes, paying particular attention to studies measuring teacher effectiveness in terms of value-added student achievement and satisfaction measures.

The criteria were narrowed by only including processes occurring inside the classroom and student outcomes. This narrowing of scope was essential to ensure that the amount of literature to be reviewed and synthesised was manageable enough to be transformed into a usable and informative document. The research review mainly focuses on processes inside the classroom and student outcomes related to gains in student achievement, because these are topics that are prevalent in the current education policy landscape and are areas in which the Greek state has indicated a need for more information and assistance.

In addition, this review is limited to measuring teachers and does not address methods of measuring university effects, the effectiveness of curriculum or professional development implementations (unless they include measures specific to teachers), or other evaluations of educational interventions or programming. Though these are important and related topics, they are beyond the scope of this review.

Figure 1. *PRISMA flow diagram (adapted from Moher et al., 2009)*



4.2.2 Quality appraisal

All 29 studies identified were appraised for methodological quality using the Crombie model for critiquing qualitative or quantitative research (Glasper & Carpenter, 2021). Whilst not essential in a scoping study (Engel-Yeger et al., 2018), critical appraisal involved the use of a series of questions to act as a process or framework to judge studies for their trustworthiness, value and relevance in a particular context, culminating in a critique of the objective/s, method/s, result/s and conclusions of each research article (Glasper & Carpenter, 2021). Exclusion of three studies occurred due to lack of trustworthiness; this left 26 studies (see Table 4; five descriptive papers: 2, 6, 8, 16, 17; twelve qualitative studies: 1, 3, 5, 7, 10, 12, 13, 14, 19, 20, 23, 26; eight quantitative studies: 4, 9, 15, 21, 22, 24, 25 and one which used mixed methods: 11) to review and summarise.

4.2.3 Collating, summarising and reporting the results

Firstly, a narrative synthesis giving a basic numerical analysis of the extent, method and distribution of studies included was written. Secondly, a critical analysis of these articles was written and gaps in research were identified. These are reported in the Findings section.

4.2.4 Limitations

Scoping review studies have several limitations. Scoping studies identify the extent and nature of the literature that currently exists in the field of interest rather than appraising the quality of this evidence; consequently, they cannot determine whether particular studies provide robust or generalisable findings (Arksey & O'Malley, 2005). Furthermore, scoping studies do not seek to synthesise evidence or to combine findings from different studies (Arksey & O'Malley, 2005). In addition, this study only included articles written in English, which may have resulted in relevant articles not being included in the review. Further limitations of this study are that proxies for the term 'teacher effectiveness' such as 'teacher mastering' were not included in the key search terms. In addition, articles which did not include the key search terms in their title, abstract or keywords may have been missed in the search of electronic databases. Despite attempts to be as comprehensive as possible, this review may not have identified all of the studies around teaching effectiveness.

5. Findings

To enhance conceptual clarity and determine the nature and extent of the research on effectiveness in higher education, we first descriptively present the methodological characteristics of the studies. Secondly, we analyse the ways in which teacher effectiveness in higher education is defined and implemented, with a nuanced discussion of the outcomes and phenomena within those studies. We introduce notable trends and discuss the implications for teacher effectiveness and for future theoretical and empirical studies. Rather than statistically analyse or otherwise combine the full set of findings, we describe the characteristics that typify enactments of teacher effectiveness in higher education and the ways in which it has been researched to guide academic staff and researchers (Table 4).

Table 4. *Included studies from 1991 (in alphabetical order)*

(Study number) Author details	Year	Location	Study design and aim(s)/participant sample	Relevant/key findings
(1) Åkerlind	2004	Australia	*N*=28. Qualitative. University academics, all on teaching and research appointments at a traditional, research-intensive university in Australia. Within the university context, the academics interviewed were selected to represent as much variation in experience as possible. Thus, participating academics were from different disciplines, cultural backgrounds and gender, with varying levels of experience as an academic and with different conditions of appointment.	A key variation was shown in ways of experiencing teaching, within a spectrum ranging from a primarily teacher-focused to a primarily student-focused experience. As part of the most teacher-focused experience of being a university teacher found in this study is a view of students as passive recipients of knowledge or facts, and of teachers as providing knowledge that is transferred to students. Conversely, as part of the most student-focused experience of being a teacher is a view of students as active creators of their own learning.
(2) Berk	2005	USA	Descriptive paper proposing a unified conceptualisation of teaching effectiveness. Evidence is collected from a variety of sources to define the construct and to make decisions about its attainment. No qualitative or quantitative data.	Student rating is a necessary source of evidence of teaching effectiveness for both formative and summative decisions, but not a sufficient source for the latter. Yet, it is an essential component of any faculty evaluation system. Peer rating of teaching performance and materials is also of crucial importance, and it might be considered the most complementary source of evidence to student ratings. Student and peer ratings, viewed together, furnish a very comprehensive picture of teaching effectiveness for teaching improvement. Learning outcome measures should be employed with extreme caution as a source of evidence for faculty evaluation. It is safer to use learning outcome measures in conjunction with the direct data sources.
(3) Bidabadi et al.	2016	Iran	*N*=10 faculty members. Qualitative. Semi-structured interviews were conducted with the aim of investigating effective teaching in higher education in Iran.	Interviewees reached the conclusion that the best teaching approach is the mixed method (student-centred together with teacher-centred), plus educational planning and previous preparedness.
(4) Coffey and Gibbs	2002	UK	*N*=141 HE teachers. Quantitative. The data are drawn from HE teachers on initial training programmes at 19 universities in eight countries. Data were collected at two time points.	The data indicate that teachers' repertoire of methods remained stable over the course of one year, irrespective of whether they experienced training.

(5) Dall'Alba	1991	Australia	*N*=20. Qualitative. Teachers in four subject areas were interviewed about the teaching of their subject, five teachers being interviewed in each subject area.	The preliminary analysis of the data generated from pilot interviews pointed to the following conceptions of teaching in higher education: a. Teaching as presenting information. b. Teaching as transmitting information (from teacher to student). c. Teaching as illustrating the application of theory to practice. d. Teaching as developing concepts/ principles and their interrelations. e. Teaching as developing the capacity to be expert. f. Teaching as exploring ways of understanding from particular perspectives. g. Teaching as bringing about conceptual change.
(6) Devlin and Samarawickrema	2010	Australia	Descriptive paper outlining the notion of effective teaching as articulated in the Australian Learning and Teaching Council (ALTC) award system. No qualitative or quantitative data.	Effective teaching in higher education is also associated with technological changes. Approaches to teaching that influence, motivate and inspire students to learn might be usefully extended to include a broader notion of student engagement. Curricula that prepare students for employment might also be worth considering.
(7) Dunkin	1990	Australia	*N*=55. Qualitative. New lecturers at an Australian university focused on early experiences in the institution as well as attitudes and perceptions regarding teaching and student evaluations. Interview data were used to describe the induction perceived by the lecturers.	Help in learning about the institution and special consideration of workload were found to favour the more academically qualified. Help in solving problems favoured the less academically qualified, those without employment experience in the university, those appointed on probation, and those with less impressive publication records. Lecturers who were less self-assured about their teaching competence tended to report participation in development activities more than others.
(8) Entwistle and Walker	2002	UK	Descriptive paper examining how academic staff conceptualise teaching. No qualitative or quantitative data.	It is highlighted in this paper that effective teaching goes well beyond the listing of individual competencies. Rather, effective teaching is associated with a sophisticated conception of the relationship between learning and teaching. It also entails a commitment to encouraging students to reach higher epistemological levels and a

				deeper understanding of the discipline or professional area.
(9) Gow and Kember	1993	Hong Kong	*N*=3.372. Quantitative. Participants were the academic staff at two institutions in Hong Kong. The academic staff measured their students' approaches to learning using Biggs's (1987) Study Process Questionnaire.	In those departments where the main teaching orientation was towards knowledge transmission, students' use of a deep approach to learning tended to decline during their programme of study as did their perception regarding their teachers' effectiveness. In contrast, in departments where the main teaching orientation was towards learning facilitation, the students were much less likely to report the use of a surface approach to learning throughout.
(10) Kember and Kwan	2000	Australia	*N*=17 lecturers. Qualitative. This study aimed to characterise the alternative approaches to teaching of university lecturers. It also examined the relationship between lecturers' approaches to teaching and their conceptions of good teaching. Lecturers were interviewed individually about their conceptions of good teaching, motivational strategies and effective teaching.	The interview data analysis yielded the following core points as to academics' teaching approaches and their relationship with conceptions of good teaching:(a) Lecturers' approaches to teaching could be characterised with one motivation and five strategy dimensions; (b) the lecturers' conceptions of teaching were best described by two main orientations, transmissive and facilitative teaching; (c) lecturers who conceived teaching as transmitting knowledge were more likely to use content-centred approaches to teaching, while those who conceived teaching as facilitative tended to use learning-centred approaches. The core suggestion of the study was that fundamental changes to the quality of teaching and learning are unlikely to happen without changes to lecturers' conception of teaching.
(11) Mbalamula	2017	Tanzania	*N*=206. Qualitative and quantitative measures (mixed methods). The aim of the study is to investigate undergraduate students' learning styles and the extent lecture pedagogy complements students' learning needs in inclusive classes during lecture sessions.	The results show that the majority of undergraduate students were accommodators, preferring to experiment with their concrete experiences. Furthermore, results show significant differences across academic year, subject major, working experience and students' exceptionality. The study concludes that lecturing is only a part of teaching pedagogy, which has to be flexible to suit the prevailing

				contexts of inclusive teaching and learning to entail students' differences, including academic year, subject major, work experience and exceptionality characteristics of students in lecture theatres.
(12) Martin et al.	2000	UK	*N*=26. Qualitative. The participants constituted a subject or topic for their students to study. The study examined how they taught the subject and subsequently how their intentions and their practice were interrelated.	Data analysis revealed that when the context of teaching and learning is tightly defined there appears a clear link between a teacher's intention and their practice. In particular, university teachers who adopt more conceptual change and student-focused approaches to teaching constitute objects of study which are more relational and focus on the students' knowledge.
(13) McMillan	2007	South Africa	*N*=10 lecturers and 15 students. Qualitative. A case study approach was selected. Data were collected through semi-structured interviews and open-ended questionnaires.	Three thematic categories of potential staff development were identified. Roughly, they might be referred to as the 'what', 'how to', and 'why' categories. In the first category are suggestions from students about 'what' to do to teach better. The second category includes requests for skills development—the 'how to' of teaching—and deals with those skills that require some level of demonstration from someone with expertise. The final category suggests development with regard to the 'why' at the heart of any teaching philosophy.
(14) Murray and Macdonald	1997		*N*=39. Qualitative. Questionnaires were distributed to 80 staff members and were completed anonymously; 39 usable returns represented a 46% response. Ten per cent were completed by part-time staff. The questionnaire was piloted on four members of staff and this resulted in some refinement of the open-ended questions.	The main conceptions of teaching held by respondents describe the role of the lecturer as either imparting knowledge, providing student support, enthusing and motivating students, facilitating student learning, or some combination of these conceptions. The vast majority of the respondents consider themselves as either facilitators or student supporters.
(15) Norton et al.	2005	UK	*N*=638. Quantitative. A questionnaire measuring nine different aspects of teachers' beliefs and intentions concerning teaching in higher education was distributed to teachers at four institutions in the United Kingdom.	Teacher's intentions concerning teaching were more orientated towards knowledge transmission than their beliefs. Teachers' intentions concerning teaching represent a compromise between their conceptions of

				teaching and their academic and social context.
(16) Paulsen	2002	USA	Descriptive paper outlining comprehensive systems for the evaluation of faculty performance and guidelines for the development of such systems. No qualitative or quantitative data.	Evidence on teaching effectiveness can be utilised for both formative and summative assessment. The purpose of formative evaluation is to provide informative feedback to assist faculty in improving the effectiveness of their teaching. The purpose of summative evaluation is to provide useful information to assist department chairs, faculty committees and deans in making personnel decisions related to hiring, renewing or terminating faculty, as well as awarding tenure, promotion and merit pay increases.
(17) Qureshi and Ullah	2014	Pakistan	Descriptive paper examining the relationship between students' perceptions of their learning environment, their approaches to learning and the quality of learning outcomes. No qualitative or quantitative data.	The quality of the students' learning is determined by their approach to learning: the deep approach leads to better quality learning, and the surface approach to poor quality learning outcomes.
(18) Ramsden	1991	Australia	*N*=3.372. Quantitative (Secondary data). Students in final year undergraduate programmes in 13 higher education institutions testing the Course Experience Questionnaire (CEQ).	The CEQ offers a reliable, verifiable and useful means of determining the perceived teaching quality of academic units in systems of higher education that are based on British models.
(19) Samuelowicz and Bain	1992	Australia UK	*N*=13. The sample consisted of academic teachers. Qualitative. This study examines conceptions of teaching held by academic teachers in the fields of science and social science in two universities: a distance university in the UK and a traditional university in Australia.	A five-level classification of teaching conceptions (expected outcome of learning, knowledge gained or constructed by the student, student's existing conceptions, directionality of teaching, control of content) is proposed. It was strongly suggested that teaching conceptions are context-dependent.
(20) Samuelowicz and Bain	2001	Australia	*N*=39 academic teachers. Qualitative. This study examines conceptions of teaching held by academic teachers from three universities in Brisbane, Australia representing a range of disciplines: architecture (7), education (3), nursing (7), psychology (2), physiotherapy (7), engineering (3), chemistry (5), physiology (2) and entomology (1).	Fundamental differentiations were demonstrated between teaching-centred and learning-centred orientations to teaching and learning.

(21) Sander et al.	2000	UK	*N*=395. Quantitative. First-year university undergraduates at the start of their university life participated in this research. They were enrolled on a medical, business studies or psychology degree course at one of three British universities	The similarities in expectations and preferences between the three groups were greater than the differences. Specifically, the students expected to be taught through formal and interactive lectures but preferred to receive interactive lectures and participate in group-based activities. Their least favoured learning methods were formal lectures, role play and student presentations. Coursework assessment preferences were for essays, research projects and problems/exercises.
(22) Shao et al.	2007	USA	*N*=1.300 (in two research phases: May 2002, 501; May 2003, 799). Quantitative. An electronic questionnaire was subjected to detailed review by both academic administrators and faculty members from various business disciplines.	With regard to evaluating teaching effectiveness, respondents tend to believe that emphasis should be placed on currency in the field, peer evaluations, classroom visits, and professors' preparation. On the other hand, teaching awards and use of technology should not be given as much weight as they currently are.
(23) Trigwell and Prosser	1993	UK	*N*=24. Qualitative. An interview-based investigation of academic staff who were teaching first-year courses in chemistry and physics.	The interviewees discussed five different approaches to teaching that were differentiated in terms of their intentions and teaching strategies.
(24) Trigwell et al.	1999	Australia	*N*= 46 science teachers and 3.956 science students. Quantitative. The aim of the study is to investigate the relationship between a teacher's approach to teaching and the approaches to learning of the students in the class of that teacher.	According to the findings in the classes where teachers describe their approach to teaching as having a focus on what they do and on transmitting knowledge, students are more likely to report that they adopt a surface approach to the learning of that subject. They also highlight the importance, in attempts to improve the quality of student learning, of discouraging teacher-focused transmission teaching and encouraging higher quality, conceptual change/ student-focused approaches to teaching.
(25) Vulcano	2007	Canada	*N*=629. Quantitative. This study employed two samples of Canadian undergraduates (first sample: *N*= 373; second sample: *N*=260; in each sample two questionnaires were eliminated because of respondent errors) concerning their views of a 'perfect instructor'.	49.1% of the total responses (529) placed emphasis on the teacher's skills and attitudes, including: (a) knowledgeable, (b) enthusiastic about teaching, (c) interesting and creative lectures, (d) effective communicator, and (e) encourages student participation. The other 50.2% of the responses pointed out an almost equal emphasis on the student-teacher relationship.

(26) Willcoxson	1998	Australia	*N*=15 academic teachers and 23 students. Qualitative. Of the 15 academics interviewed, four were from engineering, four from mathematics, four from nursing and three from psychology. Seven students of engineering were interviewed, six students of mathematics, six students of psychology and four students of nursing. Students and academics were asked questions regarding the strategies they found most effective for their own learning and the characteristics of their best teacher(s).	Results suggest little enthusiasm for lectures as a teaching or learning method, but few attempts by academics to depart from the traditional lecture method, even amongst those with a personal preference for learning in groups. Marked contrasts were found between lecturer and student reports of the teaching strategies used in lectures, and lecturer and student reports of student activity in lectures.

5.1 How tools are used to conceptualise and assess teacher effectiveness in Higher Education?

Teacher effectiveness in higher education can be approached from three diverse but related angles: measurement of inputs, processes and outputs (Devlin & Samarawickrema, 2010). Input refers to what a teacher carries to his or her position, generally measured as the teacher's background, beliefs, expectations, experience, pedagogical and content knowledge, certification and licensure, and educational attainment. These measures are sometimes described in the literature as "teacher quality" (Qureshi & Ullah, 2014). Processes, on the other hand, refer to the interaction between teachers and students. This may also include a teacher's professional activities within the larger university community. Outputs are the results of classroom processes, such as the effects on students' accomplishment, graduation rates, student behaviour, engagement, attitudes, and social-emotional wellbeing. Other outcomes may include contributions to the university or community in the form of taking on leadership roles, or educating other teachers.

Taking into consideration the terms discussed, an argument can be made for a broader conceptualisation of teacher effectiveness, encompassing the many aspects that contribute to a teacher's success.

Abundant attempts have been made to classify the characteristics of teacher effectiveness, using a multiplicity of theoretical perspectives from qualitative and quantitative approaches, from various disciplinary standpoints (McMillan, 2007), and from the student point of view (Vulcano, 2007), but there is no commonly accepted

definition of effective university teaching (Johnson & Ryan, 2000; Paulsen, 2002; Trigwell, 2001).

Effective teaching has been broadly conceived as teaching that is oriented to and focused on students and their learning (Devlin & Samarawickrema, 2010; Qureshi & Ullah, 2014).

Clarifying the way teacher effectiveness is defined is essential for two main reasons. Foremost, what is measured is a reflection of what is valued, and therefore what is measured is valued (Goe et al., 2008). Definitions recommend and form what needs to be measured. If, for example, policy conversations revolve around scores from standardised tests, important outcomes can be reduced to those that can be measured by standardised test scores. On the other hand, when policy conversations concern the interactions between teachers and students, the focus moves to classrooms and documenting effective interactions among teachers and their students. Furthermore, different definitions lead to different policy solutions. When the conversation concentrates on teacher effectiveness, the discussion probably turns to refining teachers' scores on measures of knowledge or on signals of that knowledge, such as certification. When classroom processes are discussed, particular practices or approaches to teaching become the focus.

Given the importance of these distinctions, it is proposed to use the term teacher effectiveness but to do so with a much broader definition than is typically associated with that term in current policy conversations and the specific contexts that are going to be examined. In the remainder of this section, a more nuanced definition of teacher effectiveness is provided; this definition comprises the wide-ranging roles teachers play, as well as the diverse student outcomes education stakeholders value.

Progressively, policy conversations define teacher effectiveness as a teacher's ability to produce higher than expected gains in students' standardised test scores. This emphasis on attributing gains on standardised tests to teachers and measuring the result of teaching by averaging test score gains has a number of strengths. The definition does, however, present considerate limitations and has received several critiques.

The first limitation is related to the problem of assumptions of causality that motivate this approach. The approach necessitates establishing what part of an effectiveness score is attributable exclusively to the teacher. Making this determination is challenging not just for practical reasons, but also for logical reasons: assumptions are required that may be irrational. According to Fenstermacher and Richardson (2005, pp. 190–191), "[…] learning requires a combination of circumstances well beyond the actions of a teacher".

It is imperative to underline that measures of teacher effectiveness can be calculated without regard to what happens in classrooms if teacher effectiveness is narrowly defined as a certain teacher's impact on their students' learning as measured by standardised tests. By adopting this restricted definition, other important ways that teachers contribute to successful students, communities and schools are ignored.

Another criticism of this definition is that an excessively narrow focus on standardised test scores as the most important—and in some cases, only—student outcome measure is not associated with what the field agrees an effective teacher does (Bassey, 2019). Though current policy conversations and some research studies implicitly refer to teacher effectiveness as gains in student achievement, reviewing the literature on teacher evaluation revealed that definitions of teacher effectiveness provided by researchers have been more wide-ranging in scope. To be more specific, according to Campbell et al. (2004, p. 3), "teacher effectiveness is the impact that classroom factors, such as teaching methods, teacher expectations, classroom organisation, and use of classroom resources, have on students' performance". This definition describes what occurs in the classroom, but the measure of effectiveness is still the students' performance. However, many scholars contend that there are other important outcomes besides students' performance on standardised tests that define effective teachers (Atkins & Brown, 2002).

Student achievement gains should be a significant component in estimating teacher effectiveness; nevertheless, criticism of the achievement-focused view of teacher effectiveness is reasonable. The next section suggests a broader view of teacher effectiveness and claims that other features of teaching must be a part of the conversation.

Teaching effectiveness is a contested, value-laden concept with varying definitions. A worthwhile definition of teaching effectiveness, then, should be related to the specific context where teaching is evaluated (Devlin & Samarawickrema, 2010; Laurillard, 2002). Communities should openly classify the values and assumptions that support their understanding of what it means to be an effective teacher and that inform what they define as best practices (Fry et al., 2008). For instance, a definition might mirror a university's mission, the unique practices of an academic discipline, or the values that inform a certain teaching award.

Thus, there are three elements to take into consideration when evaluating teaching effectiveness within a particular context:

- **Criteria**: attributes of effective teaching.
- **Evidence**: documentation of teaching.
- **Standards**: expectations of quality and quantity.

5.2 What types of high-quality teaching style should higher education teachers use in the classroom in order to be effective?

Even when they are teaching similar courses, different teachers teach in dissimilar ways, and this may have an impact on their students' satisfaction, motivation and attainment (Theall & Franklin, 2001).

5.2.1 Approaches to teaching in higher education

Trigwell and Prosser (1993) conducted an interview-based investigation of 24 staff who were teaching first-year courses in chemistry and physics. They discovered five different approaches to teaching that were differentiated in terms of their intentions and teaching strategies. Some methods were teacher-focused and aimed at the transmission of information to the students, but other techniques "were student-focused and aimed at bringing about conceptual change in the students" (Prosser & Trigwell, 1999, pp. 153–154). Trigwell and Prosser also developed a quantitative instrument, the Approaches to Teaching Inventory (ATI), to measure approaches to teaching in larger numbers of teachers. This questionnaire "included 16 items measuring teachers' intentions and strategies concerning two fundamental approaches to teaching: a

conceptual-change or student-focused approach and an information-transmission or teacher-focused approach" (Prosser & Trigwell, 1999, pp. 154–157).

Accordingly, making use of this instrument, Coffey and Gibbs (2002) revealed that teachers who implemented a student-focused approach stated that they used a more stated repertoire of teaching methods than teachers who adopted a teacher-focused approach.

Furthermore, Trigwell et al. (1999) verified that students whose teachers adopted a student-focused approach according to their scores on the ATI were more likely to show a deep approach to learning and be characterised as effective, and were less likely to show a surface approach to learning than students whose teachers adopted a teacher-focused approach.

Sander et al. (2000) argued that students expected to be taught mainly through formal lectures but favoured more interactive and group-based activities, even characterising them as more effective.

Yet these studies do not elucidate why different teachers adopt different approaches to teaching in similar contexts. Some researchers have credited this to constitutional attributes of teachers themselves: to different styles of lecturing (Mbalamula, 2017), styles of thinking, or personality characteristics (Zhang & Sternberg, 2002). This is not wholly acceptable, because it leaves uncertainty as to why approaches to teaching should develop as the result of training (Gibbs & Coffey, 2004) or experience (Åkerlind, 2004). Other scholars have underlined that different approaches to teaching reflect different fundamental conceptions of teaching, and that approaches to teaching will be improved through the acquisition of more sophisticated conceptions (Bidabadi et al. 2016; Entwistle & Walker, 2002).

5.2.2 Conceptions of teaching in higher education

Interview-based investigations have acknowledged a number of different conceptions of teaching which also determine teaching effectiveness among teachers in higher education (Dall'Alba, 1991; Dunkin, 1990; Pratt, 1998; Samuelowicz & Bain, 1992, 2001; Willcoxson, 1998). Gow and Kember (1993) revealed the analytic categories

derived from their own interviews to construct a questionnaire on conceptions of teaching. The questionnaire included 46 items measuring nine subscales that were subsumed under two broad orientations to teaching.

Table 5. *Gow and Kember's (1993) orientations to teaching*

Learning facilitation	Knowledge transmission
Problem solving	Training for specific jobs
More interactive teaching	Greater use of media
Facilitative teaching	Imparting information
Pastoral interest	Knowledge of subject
Motivator of students	

Gow and Kember (1993) received responses to this questionnaire from 170 staff at two institutions in Hong Kong, and they measured the students' approaches to learning using Biggs's (1987) Study Process Questionnaire. In those departments where the main teaching orientation was towards knowledge transmission, students' use of a deep approach to learning tended to decline during their programme of study, and thus their perception of their teachers' effectiveness.

In contrast, in departments where the main teaching orientation was towards learning facilitation, the students were much less likely to report the use of a surface approach to learning throughout (Kember & Gow, 1994).

Afterwards, Kember (1997) revised the accumulating interview-based research on this topic. While observing that there were some variations in terminology, he argued that most studies adhered to five conceptions of teaching which could be located on a continuum from a totally teacher-centred, content-orientated conception of teaching to a totally student-centred and learning-orientated conception of teaching and teaching effectiveness, as follows (Kember, 1998):

- Teaching as imparting information.
- Teaching as transmitting structured knowledge.
- Teaching as an interaction between the teacher and the student.
- Teaching as facilitating understanding on the part of the student.

• Teaching as bringing about conceptual change and intellectual development in the student.

5.2.3 Beliefs and contexts versus intentions in teaching

There is an essential ambiguity in the notion of approaches to teaching and teaching effectiveness in higher education. On the one hand, a teacher's approach to teaching and teaching effectiveness might replicate the teaching behaviour that, other things being equal, the teacher finds the most agreeable, in which case it is likely to be closely aligned with the teacher's conception of teaching (Kember & Kwan, 2000). On the other hand, an approach to teaching and teaching effectiveness might reproduce behaviour that the teacher is constrained to adopt by the curriculum, the institution or the students themselves. In that case, it is likely to be more closely associated with the teacher's perception of the teaching environment than own conception of teaching: it embodies a specific response to a defined teaching situation that will be directly manifested in the teacher's classroom behaviour (Martin et al., 2002).

According to Pratt (1998), there is an internal consistency between different teachers' actions, intentions and beliefs and the specific contexts within which they operate. Correspondingly, Dunkin (1990) used the term 'orientations to teaching effectiveness' in a similar way. Although Gow and Kember (1993) used the term simply to refer to broad categories of conceptions, their questionnaire included items that might be related to teaching intentions rather than to beliefs about teaching.

Nevertheless, despite these assumptions of a fundamental consistency between teachers' beliefs and intentions, Samuelowicz and Bain (1992) identified suggestions from their interviews that teachers might have both 'ideal' conceptions and 'working' conceptions of teaching effectiveness:

> It seems, from the limited data available, that the aims of teaching expressed by academic teachers coincide with the 'ideal' conception of teaching whereas their teaching practices, including assessment, reflect their 'working' conception of teaching. If this is the case research might profitably be directed towards the factors (teacher, student, institution-related) which prevent academic teachers from acting according to their ideal conception of teaching and thus contribute to

> solving one of the mysteries of higher education—the disjunction between the stated aims (promotion of critical thinking) and educational practice (unimaginative coverage of content and testing of factual recall) so often referred to in the literature (Samuelowicz & Bain, 1992, p. 110).

Murray and Macdonald (1997) recognised variations between teachers' conceptions of teaching effectiveness and their reported teaching practices. This disjunction appeared to be more common in teachers whose conceptions of learning involved supporting students or their learning. Murray and Macdonald proposed three possible explanations for this phenomenon: teachers might be frustrated in their true aims by contextual constraints; teachers' true beliefs about teaching might be more accurately reflected in their actual practices than in their conceptions; and teachers might not have undergone adequate training or staff development to enable them to operationalise their conceptions of teaching in applicable teaching strategies.

6. Discussion

In this review, we have presented the findings of a systematic scoping review of the peer-reviewed published literature pertaining to teacher effectiveness in HE. Teacher effectiveness should essentially involve competence in four areas (teaching style, course organisation, student engagement and determining progress). This review represents an initial step forward in understanding evidence-based practice in the classroom.

It is important to note, however, that the synthesised themes of practice are not a comprehensive list of all possible teacher practices. Instead, the themes represent the most important practices relating to the implementation of teacher effectiveness.

While many of the tools promoted a comprehensive analysis of effectiveness, with multiple methods of data collection, many of the tools did not account for the context-dependent nature of teaching. Some of the tools promoted other data collection techniques to assess the overall quality of effectiveness to be used in conjunction with observation techniques.

However, additional research is needed to evaluate teacher effectiveness together with students' perceptions of effectiveness and assessments of an effective classroom climate. This way, researchers and education stakeholders can better understand effective teaching practices and how they correspond with the views of the primary consumers of higher education, the students.

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Chapter Two[2]

SWOC analysis as the first stage in the process of strategic management of a Greek higher education institution

[2] This chapter is transformed into a research article and has now a status revise-resubmit with minor revisions at an international peer-reviewed journal. The manuscript is titled: SWOC analysis of university internationalisation factors.

Acronyms and Abbreviations

B.Sc.	Bachelor of Science
COWS	Challenge, Opportunities, Weaknesses and Strengths
ECTS	European Credit Transfer System
EQF	European Qualification Framework
EU	European Union
HE	Higher Education
HEI	Higher Education Institution
HQAA	Hellenic Quality Assurance and Accreditation Agency in Higher Education
ICDT	Information, Communication, Distribution and Transaction
MBA	Master's in Business Administration
MODIP	Internal Quality Assurance Unit
MUN	Model United Nations
NGO	Non-Governmental Organisation
PEST	Political, Economic, Sociocultural and Technological
PhD	Doctor of Philosophy
QA	Quality Assurance
R&D	Research and Development
SMEs	Small and Medium-Sized Enterprises
STEM	Science, Technology, Engineering and Mathematics
SWOC	Strengths, Weaknesses Opportunities and Challenges
SWOT	Strengths, Weaknesses Opportunities and Threats
UniPi	University of Piraeus
UPRC	University of Piraeus Research Centre
YPEPTH	Greek Ministry of Education and Religious Affairs

1. Introduction

In recent decades, there has been growing interest in the role of the university as a key stakeholder and agent in innovation and regional growth (Velasco, 2014). Higher education in Europe is a vital element of the Bologna Agenda and the Lisbon Strategy, which aim at founding the world's most competitive knowledge (Psomas et al., 2013). A full understanding of the knowledge triangle between academic education, scientific research and innovation requires both new and creative models of governance and enriched management capacities (Panagiotakopoulos, 2012; Powell et al., 2012; Velasco, 2014).

Accordingly, together with the implementation of basic structural elements, such as the European Qualification Framework (EQF) and the European Credit Transfer System (ECTS), an unparalleled number of reforms affecting higher education over the last ten years have occurred in the sense of increasing institutional freedom and independence along with the development of a dense quality assurance (QA) system at the European level.

Thus, higher education institutions (HEIs) operate in an increasingly multifaceted and challenging environment. Competition has increased, and hitherto anticipated government funding has decreased (Dumond & Johnson, 2013; Psomas & Antony, 2017). This is apparent in many European countries and especially in Greece, where an economic recession and financial crisis still dominate (Psomas et al., 2013). In such conditions, HEIs must succeed in a financial sense or else they will go out of business (Juhl & Christensen, 2008). Living under competitive market pressures necessitates superior management, maximum flexibility and improved efficiency with a focus on detailed accountability and greater customer satisfaction regarding the delivered services (Manatos et al., 2017) (e.g., course organisation, teacher effectiveness, condition of facilities, utilities and equipment) (Riley et al., 2010; Vidalakis et al., 2013). Hence, driven by the struggle to survive, these institutions are seeking to meet and/or exceed their customers' expectations while also concentrating on cost decreases and increased efficiency (Dumond & Johnson, 2013).

Moreover, HEIs have to deal with the current competitive world by continuously ameliorating their processes and providing high-quality education (Oluwafemi & Laseinde, 2019; Venkatraman, 2007) and by demonstrating and promoting their sociocultural economic and technological impact (Bäckstrand & Halldórsson, 2019). Thus, HEIs need to have at their disposal an adequate analysis technique of their overall strategic position and their environment. In that way, they will be able to identify the strategies required to create a specific model that will best align their resources and capabilities to the requirements of the environment in which they operate. The process of strategic development involves the harmonisation of relations within the organisation (relations between the organisation's strengths and weaknesses) as well as harmonisation of relations between the organisation and its environment (relations between opportunities and challenges/threats) (Kotler, 1997).

A vast range of techniques are used to analyse individual characteristics or organisational effectiveness and strategies in a given environment (e.g., PEST analysis, ICDT model). These models offer an easy and methodical way of recognising and detecting several factors affecting individual/organisational systems and provide opportunities for further improvement. However, there is a need for a simple but systematic analysis technique for institution model analysis. For example, a model in business management is a simplified representation of an operation or a process in which only the basic aspects or the most important features of a typical problem under investigation are considered (Aithal & Kumar, 2016). Thus, the objective of an institution model has to be the same: to identify factors and the interrelationships that interact in a systematic manner such that the several elements composing the model result in a better understanding of the institution subsystem (Posselt et al., 2019). The reliability of the results obtained from a model describes the validity of the model representing the real system. Furthermore, it exemplifies core aspects of an institution, including purpose, target customers, strategies, infrastructure, organisational structures, operational processes and policies. Additionally, it should be able to take into consideration new formulations without alterations in its frame. The various elements in the frame should include all dimensions of the institution (Aithal & Kumar, 2016). A multitude of factors could be incorporated in a given frame (Terziev & Bogdanova, 2020). The causative variables should be limited in the analysis frame (Terziev, 2019).

The analysis of a potential problem should be conducted briefly and rapidly, but efficiently (Aithal & Kumar, 2015; Terziev & Bogdanova, 2020).

For this reason, this chapter introduces a new way of analysing universities by exploring the use of the SWOC analysis process and more specifically by attempting to automate and simplify the SWOC analysis process in the higher education field in order to make it faster and easier especially during data collection and analysis, based on quality assessment principles-criteria. SWOC can be defined as a foundation for evaluating the internal potential and limitations and the possible/likely opportunities and threats from the external environment (Aithal & Kumar, 2016). It gathers all positive and negative factors inside and outside the institution that affect its success. A constant study of the environment in which the institution operates aids in forecasting/predicting the changing trends and also helps in including them in the decision-making process of the organisation. So far, this strategic planning technique has mainly been used for designing and understanding the main logic of businesses in the private sector. In the case of companies, this technique, which operates by peeling back layers of the company, is designed for use in the preliminary stages of decision-making processes and can be used as a tool for evaluation of the strategic position of organisations (Noreen et al., 2020). Recently, researchers have recognised the broad usefulness of this technique as a comprehensive framework for the analysis and design of organisational mental models. Wilby and Kremer (2020) and Aithal and Kumar (2015, 2016), for instance, made the first attempts of transferring SWOC analysis used for private companies to the realm of universities.

The remainder of the chapter is structured as follows: in the first part, the literature is reviewed with regard to the SWOC analysis technique and the description of the context of the University of Piraeus (Greece). In the next part of the chapter, the methods used regarding the data collection and analysis are explained. Then in the third part, an emphasis is given in order to point out the application of the SWOC analysis carried out in the Greek HEI. This is followed by the data analysis and the results. Subsequently, the results are discussed and the final conclusions are presented.

2. Literature Review

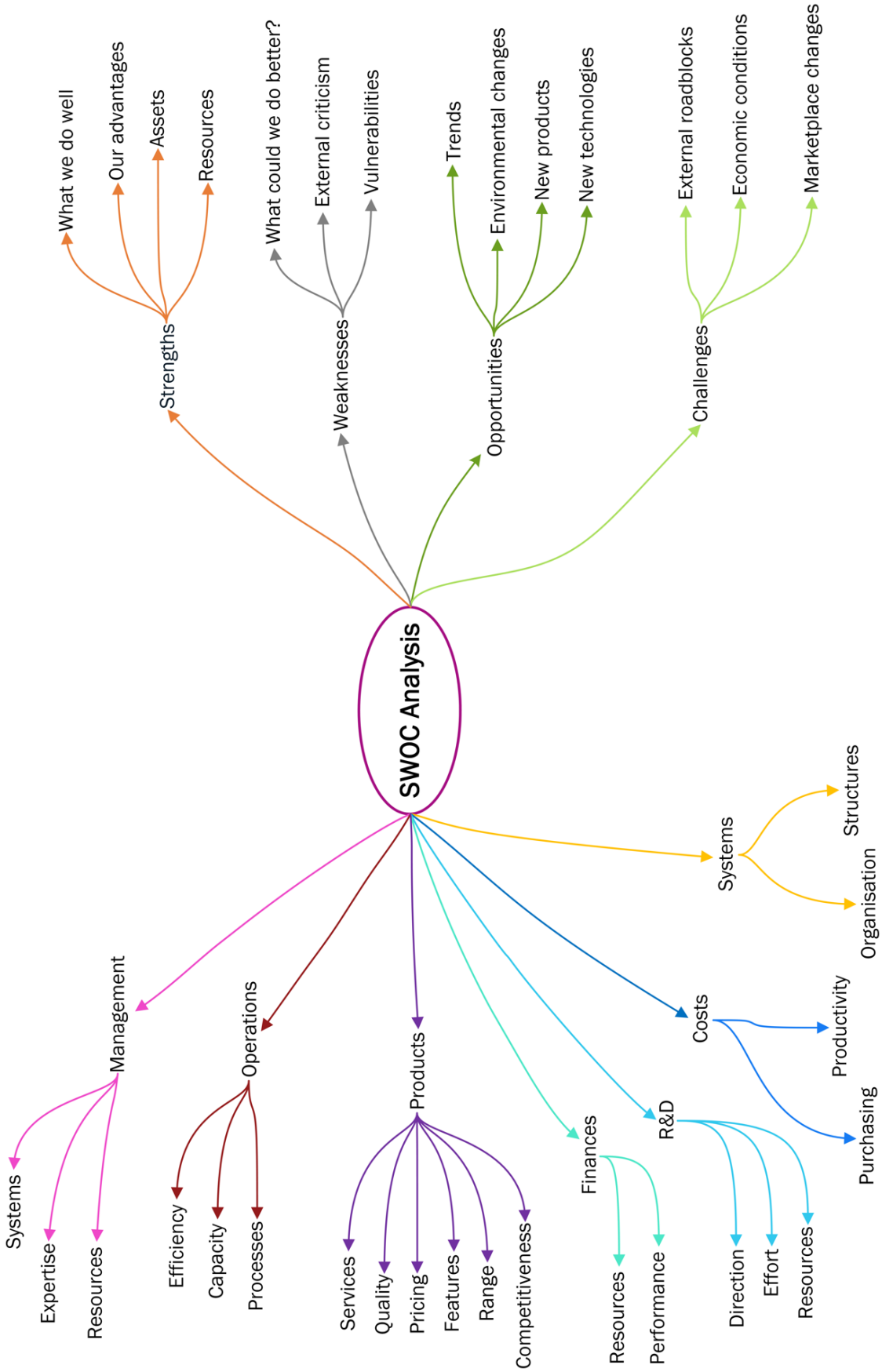
2.1 SWOC Analysis

This study is guided by SWOC analysis (Aithal & Kumar, 2015; Al-Naimi et al., 2020; Noreen et al., 2020; Virgana & Lapasau, 2019). This analysis strategy has a similar name, namely SWOT[3] (Strengths, Weaknesses, Opportunities and Threats) (Virgana & Lapasau, 2019). SWOC and SWOT were first developed for business but are now being used by all types of organisations and educational institutions (Nasreen & Afzal, 2020). SWOT examines strengths, weaknesses, opportunities and threats. SWOC focuses on challenges rather than threats. Challenges are similar to threats but have the chance of being overcome. Threats have the potential to damage a firm/organisation, although challenges often already exist and need to be handled properly (Sindhu et al., 2017). SWOC is a concept that defines the selection that lays down the essential issues for the future of the organisation. In choosing a strategy that fits to an organisation's profile, the organisation can be observed from the rank in which it currently stands. The organisation can establish strategies to be taken based on the Challenge, Opportunities, Weaknesses and Strengths (COWS) matrix, which is another term for SWOC (Virgana & Lapasau, 2019).

By definition, Strengths (S) and Weaknesses (W) are considered to be internal factors over which there is some measure of control. Additionally, by definition, Opportunities (O) and Challenges (C) (Figure 1) are considered to be external factors over which the organisation has essentially no control. SWOC analysis can be defined as the most prominent technique for audit and analysis of the overall strategic position of the business and its environment (Aithal & Kumar, 2015).

[3] Since the term "threat" originated from military strategy, using "C" to represent challenge or constraint is recommended by scholars (Aithal &Kumar, 2015; Wilby & Kremer, 2020) to create a more positive attitude.

Figure 1. *Strategic Planning – SWOC Mind Map*



2.1.2 Advantages and Limitations of SWOC Analysis

SWOC analysis is contributory to strategy formulation and selection. It is a strong and useful instrument, but comprises a substantial subjective element.

Thus, when carrying out a SWOT analysis it should be clarified what its advantages and limitations are. Among the former are that conducting a SWOT analysis is almost costless, and it focuses on the most significant factors affecting the investigated issue. However, a SWOT analysis cannot replace more in-depth research and analysis and its implementation becomes problematic if factors are uncertain or two-sided as regards the four factor types of strengths, weaknesses, opportunities and challenges. To be more specific, the boundaries between classes are often fluent, ambiguous or indistinct. Additional limitations are that a SWOC analysis may not prioritise issues (Leiber et al., 2018); may not be empirically validated; may use vague, imprecise and ambiguous terms and axioms; may not provide solutions or offer alternative decisions; may generate too many ideas but not help to choose the most appropriate. Furthermore, it may produce a lot of information not all of which is valuable or worthwhile. It may also lack associations to an implementation phase (Bell & Rochford, 2016; Panagiotou & van Wijnen, 2005).

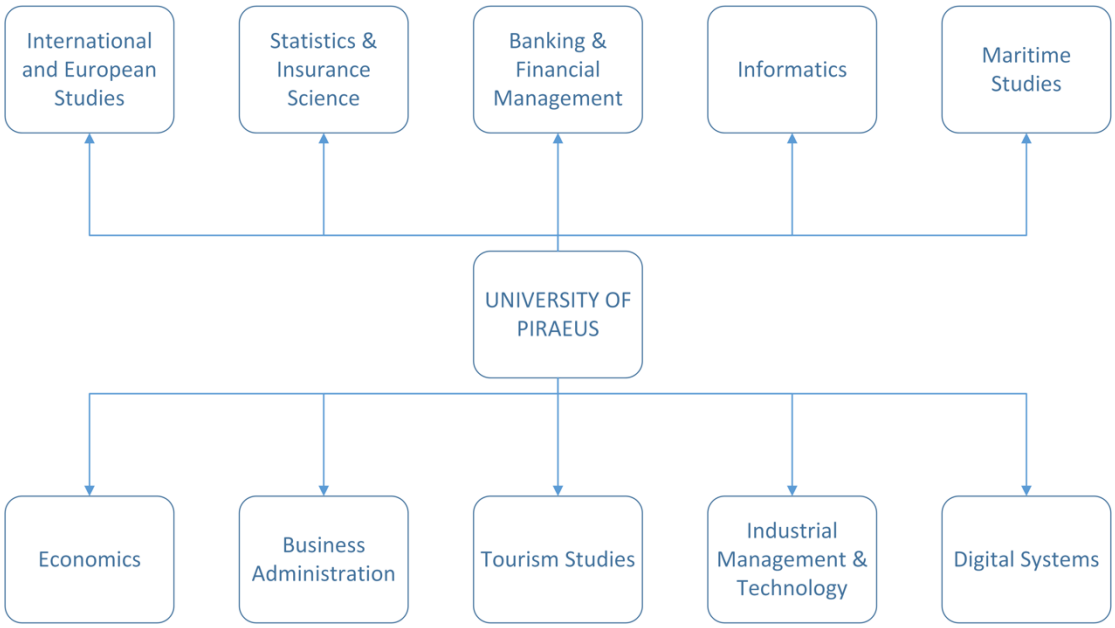
2.1.3 University of Piraeus

The University of Piraeus (UniPi; in Greek: Πανεπιστήμιο Πειραιώς, ΠαΠει), founded in 1938, is a Greek public university located in Piraeus, Greece, with a total of ten academic departments focused mainly on Business Management, Computer Science, Economics, Finance and Maritime Studies (Figure 2). Each of these ten departments offers undergraduate programmes with a corresponding four-year Bachelor of Science (B.Sc.) degree upon completion. Moreover, UniPi promotes specialised knowledge and training through the 23 postgraduate programmes it offers. The institution is one of the two public universities in Greece that offer an executive MBA programme.

Institutions usually establish and justify themselves by outlining a mission statement, which is then expounded through a set of goals, e.g., ideal statements in pursuit of that mission statement. These goals are in turn translated into a set of objectives, e.g., desirable outcomes that can be measured and interpreted as development towards the attainment of the institution's goals. Additionally, they in turn are defined in terms of

sets of strategies designed to advance and implement these objectives. UniPi was established with the vision of cultivating and promoting science, research and teaching in the disciplines represented by the schools and departments, and providing high-level scientific training to its students. It aims to become a university with international recognition and a reputation in conjunction with the labour market.

Figure 2. *Departments of the University of Piraeus*



The vision and mission of the institution are well publicised through its website, calendar, prospectus etc.

The institute also offers orientation programmes, guest lectures, study tours, video lectures, field practicums, internships, industrial exposures, student exchange programmes and international educational visits as supplements to the curriculum. Through its Supplementary Education Programme (E-Learning) of the Centre of Continuing Education and Lifelong Learning, a large number of certificate programmes of short duration are offered to promote skill development and enhance employability. These programmes are addressed to all age groups, from those who are just starting their professional careers to those who already work as business managers or who have a strong interest in any of the offered fields.

The institution is home to the University of Piraeus Research Centre (UPRC) which was founded in 1989. Through its research centre, UniPi supports research-based learning, exposure-based learning, experiential learning, event management learning, field work-based learning and laboratory-based learning.

Value addition is incorporated in teaching through adding extra sessions over and above the prescribed syllabus for insight development. Weak students and slow learners are supported through tutorials, counselling and mentoring.

In 2016, the Hellenic Quality Assurance and Accreditation Agency in Higher Education (HQAA), the external evaluation committee, awarded the University of Piraeus a positive evaluation.

In addition, many cooperation agreements under the Erasmus+ as well as other bilateral cooperation agreements and inter-university programmes provide exchanges of students and staff, exchanges of teaching and research material and the conduct of joint research projects and conferences. Moreover, the university is a member of international organisations such as the European University Association, International Association of Universities, etc.

Appraisal of faculty performance is conducted through comprehensive performance management systems and feedback is communicated to the students in an effort to establish cordial and open-door relations between students and faculty members.

An alumni association has been constituted to create a lifelong and worldwide community of alumni through increased opportunities for meaningful engagement in order to increase awareness, pride, participation, volunteer involvement and philanthropic commitment to the University of Piraeus. A student council offers the possibility for students to elect their student representatives and participate in forum activities, annual seminars, conferences, etc.

Additionally, the UniPi hosts more than ten students' associations and societies, such as AIESEC[4] UniPi, the second local committee of AIESEC in Greece, which facilitates youth leadership activities as well as volunteering experiences; University of Piraeus MUN Society, which is an inter-university student club aimed at broadening the mindset of its members as well as developing abilities such as speaking, debating and negotiating through participation in Model United Nations (MUN) conferences around the globe.

The frame-law 1268/1982 for Greek universities and thus, for the University of Piraeus, specifies four distinct levels of academic structure inside the university: institution, school, department and division. Each academic unit has its own leadership and decision-making structure. Rectors and vice-rectors comprise the leadership in UniPi. There is a hierarchical relation between the four levels of academic structure concerning leadership and decision-making, with the institution at the top and the division at the base (Table 1). The final authority for setting up new academic units and for renaming, merging, splitting or closing down existing academic units belongs to the Greek Ministry of Education and Religious Affairs (YPEPTH) (Papadimitriou, 2011).

Table 1. *The Structure of Leadership and Decision-Making in the University of Piraeus*

	Academic level			
Authority	Institution	School	Department	Division
Governance leadership	Rector (+vice-rectors)	Dean (+deputy head)	Head	Director
Decision-making (superior/major)	Senate	General assembly	General assembly	Assembly
Decision-making (inferior/minor)	Rector's board	Dean's board	Governing council	
Executive	Rectorate council	Dean's board	Governing council	

[4] AIESEC was originally a French acronym for Association internationale des étudiants en sciences économiques et commerciales (English: International Association of Students in Economics and Business). The full name is no longer officially used, as members can now be graduate and undergraduate from any university background.

3. Methods

As far as we know, efforts to build a SWOC analysis system in the education domain are limited. Therefore, this study seems to be one of the first attempts in simplifying the SWOC analysis process, especially in the Greek educational environment, providing a solid theory based on the HQA eight principles-criteria System of Evaluation (see Table 2).

Table 2. *HQA eight principles-criteria System of Evaluation*

Principle-criterion	Description
1	Compliance with the laws and regulations that govern the Institution
2	Organisation of Services, Development & Maintenance of infrastructure
3	Provision & Management of the Necessary Resources for the operation of the Institution
4	Institution's Leadership, Departments & other Organizational Units, Individual Staff Members & Students Units/Associations
5	Development & Allocation of Human Resources
6	Continuous Improvement of Learning & Teaching, Research & Innovation
7	Integrity of Academic Principles & Ethics
8	Quality assurance of the programs and their alignment with the relevant HQA Standards

Alternatively, we can claim that through this research we try to build a cognitive map, identifying the important factors that influence and determine the situation under study.

In the works (Aithal & Kumar, 2015; Dyson, 2004; El-Awaisi et al., 2017) devoted to the use of models based on cognitive maps for the study of semi-structured object four approaches are usually used to construct maps:

1. Identification of factors and relationships through content analysis of documents;
2. Identification of factors and relationships based on conceptual schemes (SWOC analysis).
3. Identification of factors and relationships through the analysis of expert knowledge;
4. Identification of factors and relationships through the analysis of quantitative data, for example, regression analysis or time series of semi-structured parameters.

In this study, approaches 1-3 were taken into consideration.

Having regard to the gaps in the literature, the objective of this research is to conduct and report on the findings of a SWOC analysis of a Greek HEI. Accordingly, the research questions are:

RQ1. What are the strengths, weaknesses, opportunities and challenges for the University of Piraeus in terms of physical infrastructure, services, leadership, teaching, research and development?

RQ2. What are the implications of these strengths, weaknesses, opportunities and challenges for the students and the academic and administrative staff of the University of Piraeus?

In this regard, the research population and sample comprise the ten departments of the University of Piraeus: International and European Studies, Statistics and Insurance Science, Banking and Financial management, Informatics, Digital Systems, Economics, Business Administration, Tourism Studies, Industrial Management and Technology and Maritime Studies.

3.1 Data University System (secondary data)

On the first place, the analyses are based on administrative data assembled as part of the annual report of the Internal Quality Assurance Unit (MODIP) of the University of Piraeus in the academic year 2018-2019. According to the quality data of MODIP, 24.613 students enrolled in formal undergraduate academic studies. Besides, 2.964 students registered in masters' degrees and 377 were PhD candidates. The UniPi had more than 300 faculties of various titles (emeritus faculty, professors, and specialists above scale, non-tenure full-time or part-time level positions, lecturers, etc.).

The administrative data from the UniPi included an applicant file, which contained records of all enrollees. The file included for all candidates' basic demographic information (including services provided and participation in students' societies), test scores, academic performance, enrollment status, and graduation date.

Since the collection and processing of administrative data are defined by administrative rules and may therefore not be identical to those required by this study, the usability

of the data sources needed to be thoroughly studied prior to its use (Sandholtz & Scribner, 2006). For this purpose, a checklist was developed (see Appendix 1: the checklist).

3.2 Discussion group (primary data)

Data obtained were also based on a discussion group. In this regard, we asked each member of the MODIP Steering Committee[5] to complete a SWOC sheet detailing what they believe constitute the strengths, weaknesses, opportunities and challenges in their department/unit/office and in their institution in general.

A group discussion session followed where the ideas for each category were shared, decisioned and documented. The discussion was first held about the mission and characteristics of the University of Piraeus to set the context for the SWOC analysis. Then, the Committee went into idea generating mode first addressing opportunities and then following that with strengths, weaknesses and challenges. The approach agreed was for each topic to be discussed in smaller groupings of two or three people seated together. Following the informal discussion each individual was asked in turn to contribute. This led to a variety of factors being proposed and avoided potentially dominant views of some participants biasing the outcomes (see Table 3).

4. SWOC Analysis of the UniPi Education Model

The objective of this study is to evaluate the strengths, weaknesses, opportunities and challenges of the University of Piraeus (UniPi), Greece. This SWOC analysis (Table 3) enables us to identify good aspects of the institution and areas which need improvement. This analysis will also guide the institution to overcome weaknesses and challenges.

[5] The MODIP Steering Committee is composed of the Vice Rector of Administrative Affairs, Academic Affairs & Student Affairs, five senior academic staff, two representative of the teaching assistants, one representative of the laboratory assistants, one Senior Officer, one representative of undergraduate students, one representative of postgraduate students and one representative of the PhD candidates.

Table 3. *Strengths, Weaknesses, Opportunities and Challenges (SWOC) Analysis of Trends Affecting the University of Piraeus*

Strengths	Weaknesses
Social impact: Essential source for a society's talent and innovativeness ▪ Institutionalised public service with a societal mission ▪ Important provider of knowledge and innovation	Substantial delay in entrance of business practices into higher education: ▪ Tradition of being public service financed and protected by the state
Vision: UniPi envisages horizontal and vertical integration across all realms of knowledge. Curricula: UniPi promotes STEM education combined with an international spectrum. Pedagogy: In addition to classroom-based learning, the pedagogy incorporates field-based learning, project-based learning, lab-based learning, technology-based learning, activity-based learning, experiential learning etc., combining aids such as teaching plans, study materials, web-based and online supplements. Faculty: The HEI has qualified, experienced and competent faculty with dedication and commitment. Research: The high quality of research and consulting work carried out to-date by the UPRC has led to a large volume of collaborations either in international frameworks (e.g., EU-funded projects) or undertaken on behalf of large domestic companies, institutions and Ministries. Location: UniPi is located in the small city of Piraeus (population range of 50,000–249,999 inhabitants), Attica, eight kilometres (5 miles) southwest of Athens' city centre, along the east coast of the Saronic Gulf. Being a developed and populated area, there are enough facilities for boarding and accommodation. Geography: Piraeus is situated in the southwest part of the central plain of Attica, also widely known as the Athens or Attica Basin, across which the Athens urban area (or agglomeration) sprawls. UniPi	Space constraints for expansion: Despite the fact that UniPi is located next to Athens, it suffers from genuine space constraints for expansion. Constraint on autonomy: Many improvements which could be done in curriculum revision, assessment, examination, evaluation, structure of courses, nature of courses and type of courses are limited due to a lack of autonomy for the institution. Course language: Not all UniPi departments offer their courses in English. There is no B.Sc. in English. Only some Master's courses are exclusively taught in English.

has an advantage in attracting students with different backgrounds and thus, provides a multi-cultural environment, which favours student growth. Since Piraeus port is one of the Mediterranean's and Europe's busiest ports, UniPi can easily attract international students.

Collaborations and synergies: The university engages in active cooperation with equal or equivalent universities and higher institutions in Europe, the Balkans and Black Sea countries, Russia, the USA, Canada, Australia, the Middle and Far East. The agreements relate to many disciplines, benefiting the scientific staff, students and the institutions participating in them.

Certificate programmes: UniPi provides distance education programmes that link theoretical and academic knowledge to the practical and applied skills required in the respective professional fields.

Field visits and extension programmes: This is an important component of the institution's activities promoting neighbourhood–community networks, contributing to good citizenship and service orientation achievement through working closely with NGOs and SMEs in service sectors and outreach
activities through student forums.

Alumni association: UniPi alumni provide help in experience sharing, providing assistance for project work and securing placements.

Student societies: UniPi societies, in recent years, have garnered real prominence within business school education. They all help shape the business school experience and can be seen as a prospect for students to improve their professional and personal growth.

Learning organisation: Academic staff are busy with improving pedagogy, devising new teaching techniques, creating new models in teaching, guiding research, examination and evaluation while students are busy learning, performing, correcting, improving and excelling all together to

transform UniPi into a learning organization.

Futuristic outlook: The institute looks ahead to future changes where there will be a radical transformation in teaching and learning and use of technology as well as new initiatives in addressing challenges.

Quality assurance policy: All undergraduate, postgraduate and doctoral programmes of the departments of the University of Piraeus correspond to the academic level declared and the qualification awarded. This assertion may be supported by: (a) reports of the external evaluators; (b) detailed information on objectives set and learning results, as they are reflected in the study guides of the departments; (c) full alignment with European and International Standards (ECTS system); (d) standard acceptance of UniPi graduates in postgraduate and doctoral studies not only in Greece but also abroad; and finally (e) graduates' professional successes and social advancement wherever they finally reside.

Student achievements: UniPi maintains a track record of student achievement on all fronts such as curricular, placement, cultural and extracurricular activities so that they become allrounders in life.

Industry–institution interface: UniPi has started to form close links with industry in curriculum planning, design, execution, enrichment, feedback and improvement through orientation visits to industries, regular industry field practicums, business case studies, guest lectures from industry experts, industry projects, summer placements, mentorship by industry managers, experience sharing of successful entrepreneurs, job fairs and placement assistance.

National driver and global ambassador:

- Higher education as a domestic resource, engine of growth and economic recovery
- International expansion and global knowledge dissemination

Medium responsiveness to changes within the corporate and international world:

- More adaptation of programmes and curricula to recruiters' needs and job expectations

Opportunities

Challenges

Fast-evolving higher education environment through information and communications technology (ICT):

- Development of new markets, potential productivity gains and branding possibilities
- Advancement of both general knowledge and network society

Continuous decrease in public funding:

- Necessity for external fundraising and increased self-financing

Rapid transformation encouraged by sociodemographics:

- Millennials seeking an augmented educational experience
- Growing and changing student population

Increasingly competitive environment:

- Domestic deregulation leading to new market entrants
- Globalisation broadening competition to an international scale

Developing new student-oriented and inclusive pedagogy: UniPi can try to introduce more inclusive learning teaching methods which would evoke and retain student interest in learning.

Developing and introducing new and demanding courses: UniPi has to be dynamic regarding the changing needs of society by introducing new courses which have greater need and demand from the national and international student community.

Enhancing rewards for staff: This would enhance staff job satisfaction and motivate contributions to the institution.

Expanding research and consultancy: The industry as well as community are looking for services, which could be extended by the institution.

Courses with a flexible time schedule: The rigidity with institutionalised education

Expanding beyond space constraints: The concept of space in the context of imparting education has to change. It should be possible to expand beyond the limits of space.

Overcoming competition from other institutions: It is not possible to think of a situation of operating alone. There are always others competing. Therefore, the challenge is to overcome the competition by adding more value to the services provided.

Acquiring autonomy for functioning: Autonomy is seldom impossible. It is obtainable provided the required standards are set and the ability to operate at such levels is established.

Developing alternative ways to overcome backwardness related problems: It would be a refusal of social obligation to cater to the backward strata.

could be reduced with the introduction of flexible hours for classes.

Autonomy in functioning: Augmented autonomy in functioning will give the institution freedom to operate and grow. Attracting more funds for increasing social activities; several funding agencies are willing to contribute to social activities.

Stepping into other realms of economically productive activities: The institution should grow from merely preparing products for employment, to being a job provider in its own right.

Extending educational opportunities for those already employed: Many working professionals would benefit from this through career mobility.

Enhancing revenue through value addition and differentiation: Value addition and differentiation in services will attract revenue.

Overcoming limitations of infrastructure: This can be overcome through optimal utility. Utilising industrial exposure even from a distance, the institution should develop innovative ways of utilising industrial exposure even when it may look inaccessible.

5. Discussion

A supplementary general experience and conclusion, which can be drawn from the above SWOC analysis, is that there are usually no easy solutions to the more profound weaknesses and challenges of the methodologies and practice of impact evaluation. These unavoidably remain with us to a certain extent, and academic staff as well as practitioners have to deal with them discursively. To be more specific, the above SWOC analysis provides a helpful and valuable conceptual differentiation, disclosing the resistive complexity of the topic and can help identify strategies to tackle weaknesses and challenges.

It also points out that certain methodological and pragmatic weaknesses can be overcome (e.g., budget and process time, space constraints, course language in Greek), while basic systematic limitations of methodologies cannot without institutional reform (e.g., entrance of business practices into higher education). Similarly, certain challenges can be solved (e.g., limitations of infrastructure), while others cannot or can only be partially resolved, but there is a need for time, institutional and framework reforms and society preparation (e.g., necessity for external funds and increased self-funding).

6. Conclusion

HEIs in the twenty-first century have become more competitive due to modernisation and globalisation. Institutions are currently trying to recruit the best students as well as staff and implement the best research development (R&D) strategies to compete in the HE context and obtain an acknowledged prestige and long-term reputation (Warwick, 2014). The University of Piraeus, as with the rest of the Greek HEIs following the financial recession, struggles to develop its education and management system as per international standards.

Therefore, it should find a way to remain dynamic, responding to the factors operating on it from the environment. An inert institution is sure to perish, unable to cope with the altering requests of time. By identifying its strengths and weaknesses, an HEI can forecast its future by discovering opportunities and addressing challenges. The strengths of an institution are ingrained in its philosophy, administration, inclusiveness and culture. The geography, location and infrastructure give a strategic push. Key actors and activities are elements of strengths.

A fast-growing institution has fewer weaknesses compared to strengths, some of which could be minimised and others could be overcome through alternative means.
Challenges constitute looking beyond constraints – a question of addressing what is difficult with a vision of nothing is impossible. Among the identified set of challenges, addressing even a single one can impact by reducing many weaknesses and grasping many opportunities.

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Appendix 1: the checklist

Name of the data source:	
What is the data source's name? *Include a reference to internet address if applicable*	

Data source keeper contact information:	
Contact information of the unit/department that collects and creates the data source. *Even when information is incomplete or lacking, the data that is available must be noted. The fact that data is missing should also be noted.*	Name of the Unit:
	Name of the contact person:
	Telephone number of the contact person: E-mail address of the contact person:
	Function and organisational unit (department) of contact person:
	Other information:

Data source provider contact information:	
Record the contact information of the data source provider, if not identical to that of the Unit that collects and creates the data source	Name of the Unit:
	Name of the contact person:
	Telephone number of the contact person:
	E-mail address of the contact person:

Purpose: Reason for use:	
What is the reason for use of the data source by the data source keeper? Why is the data source keeper collecting data and maintaining the data source?	

Usefulness of the data source:	
Mark to which degree you think the data source will be useful. 1: partly useful 2: useful 3: very useful 0: don't know	

Legal provision:	
Is there a law, act, or other legal agreement on the basis of which the data source is being maintained? *Include a reference to the law, act or legal agreement*	1: no 2: yes, namely…….. ……. ……. ……. ……. ……. …….. (briefly describe the legal basis) 0: don't know

Data Protection Act:	
Does the National Data Protection Act or European Data Protection directive apply to the data in the source?	1: no 2: yes 0: don't know

Format:	
Data format(s) in which the data can be delivered	

Data Collection:	
Is there any information available about the way the data is collected by the data source keeper?	1: no 2: yes 0: don't know

Planned changes 1: Familiarity	
Is there any information available about any changes to the data source and/or its maintenance?	1: no 2: yes, namely ……. …….. (report the plans) 0: don't know

Planned changes 2: Communication of changes	
Is there any information available about the way in which changes are reported by the data source keeper?	1: no 2: yes, namely ……. …….. (report how changes are communicated) 0: don't know

Feedback	
Is the research allowed to ask questions or contact the data source keeper in case of problems? *Consider both general and data source content related contacts*	1: no, because……. …… (describe reason) 2: yes 0: don't know

Remarks regarding supplier and contact

Decisions and actions
When the supplier information is incomplete, the data source keeper must be contacted.

Remarks regarding Relevance

Remarks regarding Privacy and security

Remarks regarding Delivery

Remarks regarding Procedures

Chapter Three[6]

Measuring Teaching Effectiveness at a Greek higher education institution

[6] This chapter is transformed into a research article and has now a status revise-resubmit with minor revisions at an international peer-reviewed journal. The manuscript is co-authored with Irene Fafaliou and is titled: Management of HEIs: A Holistic Approach in the Context of Greece.

Acronyms and Abbreviations

AEI	Greek University
ASPETE	School of Pedagogical and Technological Education
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
ECTS	European Credit Transfer and Accumulation System
EEAP	External Evaluation and Certification Committee
EFA	Explanatory Factor Analysis
EHEA	European Higher Education Area
ENQA	European Association for Quality Assurance in Higher Education
HEI	Higher Education Institution
HQAA	Hellenic Quality Assurance and Accreditation Agency
KMO coefficient	Kaiser-Meyer-Olkin coefficient
MODIP	Internal Quality Assurance Unit
RMSEA	Root Mean Square Error of Approximation
SET	Student Evaluations of Teaching
TEI	Technological Educational Institute
TLI	Tucker-Lewis Index

1. Introduction

In the new teaching and learning paradigm, higher education plays an important role in the development of human capital, entrepreneurial ventures and innovation for the advancement of the knowledge economy (Blaskova et al., 2015; Dill & Van Vught, 2010). According to Altbach et al. (2009), unparalleled transformation has taken place in the scope and diversity of higher education during the last 50 years. The challenging and forceful global marketplace and competitiveness request a responsive society with proactive capabilities to develop, adapt and use knowledge as the foundation for national growth in services and manufacturing sectors (Johnson, et al., 2016; Renzulli 1992; Romer, 1990; Zuñiga et al., 2010).

In the last few years, higher education institutions (HEIs) have gone through a major resurgence in Europe and elsewhere in the world. The quest for this evolution is the enhancement of university operations in order to cope with rising demands for better educational services and higher value added for all stakeholders. Despite the fact that quality management in HEIs has been a relatively old issue, and there is no consensus regarding the definition of the term, in many HE systems around the world (i.e., Canada, United States, UK and Italy), quality management is based on student evaluations of teaching (SET) (Becket & Brookes, 2006; Seldin, 1999), often obtained through the administration of standardised questionnaires to measure teaching effectiveness. More precisely, students are literally 'bombarded' with invitations to complete these standardised evaluations (Revilla & Ochoa, 2017; Van Mol, 2017).

In recent years, scholarly researchers have increasingly used web surveys for scientific research related to students' satisfaction with teachers and courses' curricula (Van Mol, 2017). According to the academic literature, web surveys offer a wide range of advantages since, first of all, they tend to reduce the cost of questionnaire distribution and administration and eliminate the influence of an interviewer (McPeake et al., 2014; Saleh & Bista, 2017), and large samples are been obtained in a relatively easy way (Eisele et al., 2020; Liu & Wronski, 2018). Though web surveys are frequently considered an ideal instrument for students' assessments and evaluations, response rates have been gradually decreasing over the last decade

(Adams & Umbach, 2012; Saleh & Bista, 2017). Many scholars have pointed out that the length of the questionnaire to be answered influences significantly the response rate, and participants who receive a short version of a questionnaire are more likely to respond (Galesic & Bosnjak, 2009; Rolstad et al., 2011; Sahlqvist et al., 2011).

Greece is an interesting case since an established, common and compulsory instrument is still lacking, and only recently have some attempts to introduce one been made. The questionnaire proposed is rather short and does not enhance a feeling of survey fatigue (Van Mol, 2017) and a lack of engagement in the survey process; additionally, it can be easily used by each HEI.

To be more specific, this chapter aims to fill this gap and propose an instrument that will measure teacher effectiveness in higher education with a validated scale in Greek and can be thus used to set up consolidated practices of quality management (Manatos et al., 2017; Psomas & Antony, 2017). In this chapter, we developed the instrument, collected primary data using an ad hoc questionnaire addressed to undergraduate students and validated the scale exploring the status of quality management in the case of a Greek university located in the prefecture of Attika.

More specifically, we describe the creation of a new instrument to be used to assess teacher effectiveness in a Greek HEI. We then use data reduction techniques and assess the reliability of the scale with an exploratory factor analysis (EFA) and also test its internal validity with a confirmatory factor analysis (CFA). An ulterior motive to run the CFA was to reduce the model and render it more parsimonious in order to be able to evaluate teacher effectiveness with far fewer items in the following years.

The contribution of this chapter to the existing literature is twofold. On the one hand, we propose and validate an instrument that can be used in different Greek HEIs. Secondly, starting from a large set of items, we are able to define a short scale that is extremely accurate in measuring teacher effectiveness and aims to increase the response rate of similar scientific research related to students' satisfaction with courses and teachers.

In the second section of this chapter, we present the recent history of the Greek institutional setting. In the third section, there is an attempt to conceptualise teacher effectiveness and other factors, such as teaching style, course difficulty and student engagement that can influence the teaching procedure and students' satisfaction regarding the learning outcomes of a course. In the two following sections, the validity of a short questionnaire of 21 survey items exploring teacher effectiveness in the context of Greek HEIs is assessed. The last section is devoted on the discussion of the results of this research.

2. Literature Review

2.1 Teacher Effectiveness

To give additional insight into the concern of this chapter, it is essential to define and delineate teacher effectiveness. Teachers have a deep effect on student learning and achievement (Bardach & Klassen, 2020; Hoa, 2016), and some teachers are evidently more effective than others in producing required educational outcomes (Ammigan & Jones, 2018). With the ultimate goal of providing a qualitative education, detecting the features contributing to teacher effectiveness has been and continues to be critical (Bardach & Klassen, 2020).

Although there is a general consensus that good teaching matters and that it may be the single most important university-based factor in improving student achievement and engagement (Behera et al., 2019; Senyametor et al., 2020), measuring teacher effectiveness has remained elusive in part because of ongoing debate about what an effective teacher is and does. In a discussion of research-based indicators of effective teaching, Cruickshank and Haefele (1990) stated that "an enormous underlying problem with teacher evaluation relates to lack of agreement about what constitutes good or effective teaching" (p. 34).

One way of shedding light onto this elusiveness is defining teacher effectiveness from the standpoint of students. Goe et al. (2008) acknowledged that "student ratings [should] be included as part of the teacher's evaluation process" (p. 41). Such acknowledgement is "based on the premise that students are the direct consumers of

the services provided by teachers and are therefore in a good position to assess and evaluate their teachers' performance" (Goe et al., 2008, p. 69).

"The term teacher effectiveness is used broadly, to mean the collection of characteristics, competencies, and behaviors of teachers at all educational levels that enable students to reach desired outcomes" (Hunt, 2009, p. 1). Awofala (2012) pointed out that teacher effectiveness is synonymous with individual teachers' performance and "teacher effectiveness is encompassed in knowledge, attitudes, and performance" (Hunt, 2009, p. 30). Teacher effectiveness is important because "without effective teacher quality education cannot be possible at all the levels of education" (Behera et al., 2019, p. 4). In particular, teacher characteristics are one of the factors that influence teachers' overall effectiveness (Pagani & Seghieri, 2002). Teacher characteristics are relatively stable behaviors that are related to and influence the way teachers practice their profession (Anderson, 2004). Specifically, effective teachers are those who attain the goals they have set for themselves or which they have set for them by others (Anderson, 2004; Behera et al., 2019). They enable their students to attain "specific learning objectives as well as broader goals such as being able to solve problems, think critically, work collaboratively, and become effective citizens" (Hunt, 2009, p. 1). Furthermore, the work of effective teachers reverberates far outside of school walls. Their students develop a love of learning and a belief in themselves that they carry with them throughout their lives. It must be acknowledged also that "the quality of a teacher can make the difference of a full year's growth in learning for a student in a single year" (Hunt, 2009, p. 24).

2.2 Teaching Style

As the competition increases in higher education, how to improve teaching quality to promote teacher effectiveness becomes a noteworthy issue. For this reason, the empirical examination of teaching styles potentially related to teacher effectiveness has prompted significant interest over the past decades (Darling-Hammond, 2000; Klassen & Tze, 2014).

In each country around the world, teaching style is a controversial concept informed by the educational philosophy that is adopted by curricula makers. Thus, defining teaching

styles varies in the literature. At times they are called ‘teaching methods’, ‘techniques, ‘strategies’, ‘ways’, ‘practices’ or ‘approaches.’

When referring to teaching styles or approaches, it is imperative to mention Paulo Freire who had a significant influence on the concept of student-centred learning. In his work, “Pedagogy of the Oppressed” (1970), Freire criticised the “banking” model of education where teachers deposit facts into students’ minds. According to Freire (1970),

> Education thus becomes an act of depositing, in which the students are the depositories and the teacher is the depositor. Instead of communicating, the teacher issues communiqués and makes deposits which the students patiently receive, memorise, and repeat. This is the ‘banking’ concept of education, in which the scope of action allowed to the students extends only as far as receiving, filing, and storing the deposits. They do, it is true, have the opportunity to become collectors or cataloguers of the things they store. (p. 72)

In the ‘banking’ concept of education, according to Freire students passively absorb information, and the main source of knowledge in the classroom is a teacher. This relies on a ‘traditional’ method of teaching, one in which the teacher is the epicenter of all knowledge. These traditional teaching styles are defined by the “predominant use of traditional methods of teaching such as formal lectures, seminars and examinations; the teacher provides structured material during lectures, where students listen while taking notes…” (De la Sablonnière et al., 2009, p. 629). Teachers are the central source of information, and there is little or no interaction between teacher and student in the classroom. Moreover, teachers do not engage students in any classroom activities perceived as unnecessary. A teacher-centred approach concentrates on students “adopt[ing] a surface learning” (Beausaert et al., 2013, p. 2). A surface approach to learning is based on “students who do not seek further understanding of the learning material and only rely on memorisation and reproduction” (Beausaert, et al., 2013, p. 3).

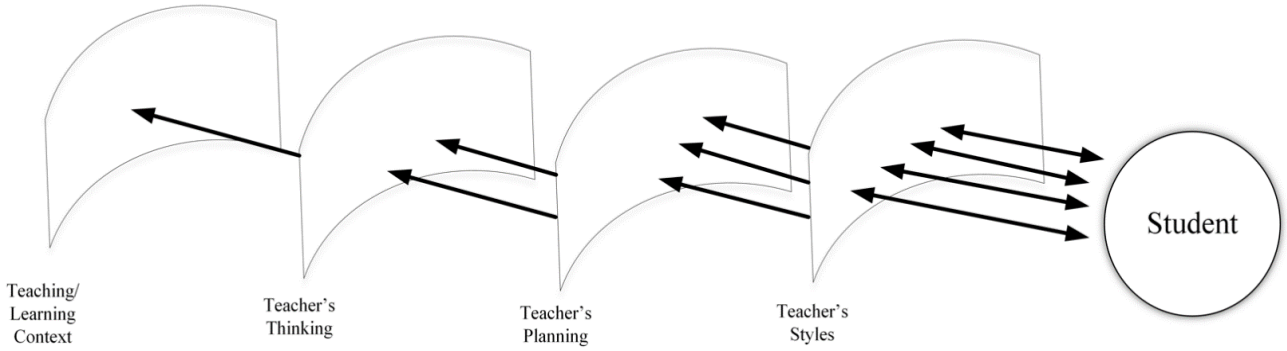
On the other hand, a student-centred approach (also mentioned as a learner-centred approach), can be defined as the use of techniques, attitudes and behaviours (De la Sablonnière et al., 2009, p. 630) that differ significantly to the ones that teachers have

been using in a traditional class. In the student-centred approach, the teacher enriches the quality of discussion by permitting the students to tap into their curiosity, engage in intellectual interpersonal discourse with their peers, and be motivated to discover and explore their knowledge potentialities (Rodríguez et al., 2018). Students are encouraged and motivated to learn to work either in pairs or small groups; they interact with both the teacher and student peers, eventually leading to productive and engaging discussions and fruitful collaboration. Moreover, they develop their capacity to gain autonomy, responsibility, participation and to build mutual trust and confidence with their teachers and peers (Arbabisarjou et al., 2020; Asgari et al., 2016). Likewise, in contrast to the traditional teaching strategies, the teaching strategies emphasising a student-centred approach reinforce students with a degree of freedom in choosing their learning path (Malikow, 2005; Sanchez, 2007; Saravani et al., 2017). In that way, students become active participants in the teaching and learning process. Ideally, teachers would then be equipped with knowledge and practice in using various effective teaching methods for employing a student-centred classroom. For example, teachers should have a sound knowledge of active and interactive teaching and learning methods and use them in their practices frequently. Therefore, teachers would then encourage discussions and ask students for their views and opinions, encouraging students to work in pairs and small groups in their classes. These types of processes promote students' independent learning which, ultimately, leads to better learning outcomes and thus to teacher effectiveness (Shamatov, 2012).

It is important to mention that the adoption of a student-centred teaching style is a challenge for university teachers since university teachers, not having received any methodical preparation for their teaching role, gain styles and knowledge about effective teaching through trial and error in their work, reflection on student feedback and by using self-evaluation (Hativa et al., 2001). To a much lesser extent, they learn from having observed their own teachers while they were students (Kane et al., 2002).

Taking into consideration this gap in teaching preparation in higher education contexts, in Figure 2, through a set of concentric spheres representing aspects of the teaching/learning situation, a model of university teaching is presented, adapted from "Rubric for Statements of Teaching Philosophy" (Kaplan et al., 2005).

Figure 2. *A Model of University Teaching, Adapted From "Rubric for Statements of Teaching Philosophy" (Kaplan et al., 2005)*



The student is at the centre or core, with the layer closest to the student (and the one experienced most strongly) being what the teacher does (teaching styles). The next layers include planning (e.g., course organisation) and thinking (e.g., teacher's knowledge, conceptions and reflections), and all are surrounded by the outer layer, which is the particular teaching/learning context. In this suggested model, all five dimensions illustrated are (a) considered to be a part of teaching, and all may be used in judging and advising on teaching; and (b) are rationally interconnected. Teachers adopting this model consider their role to be helping their students develop and change their conceptions or world views. They transmit information based upon that knowledge to their students. Thus, it matters more to these teachers what the student is learning and experiencing than what the teacher is doing or covering. These are the teachers who encourage self-directed learning, who dedicate time to interacting with students and discussing the problems they encounter, who use a lot of 'lecture' time to question students' ideas and to develop a 'discourse' with students' ideas (Gill & Singh, 2020; Trigwell, 2001).

To sum up, this model is closer to the concept of good pedagogy and effective teaching, which is the effective application of a combination of a scholarly approach to teaching and teaching plans and styles that are derived from (in alignment with) a student-focused conception of teaching (Trigwell, 2001).

2.3 Course Difficulty

University teachers have long debated the possible relationship between the difficulty of the course they teach, the grades they assign and the evaluations they receive from students, with some faculty members perhaps feeling that the relationship is one of simple exchange (Wladis et al., 2014).

More specifically, several scholars have discovered the various factors that seem to influence student evaluations (Andres, 2019; Daniel et al., 2009; Lowe & Cook, 2003), and several commonalities have appeared. These include course difficulty. Addison et al. (2006) stated that student evaluations regarding teacher effectiveness could be negatively affected when the course is harder than originally thought, regardless of the grade earned, and they also confirmed that student evaluations could be higher when the course is viewed as easier than initially expected, regardless of the grade earned. Other scholars pointed out that the level of course difficulty is more related to quantitative methods or science courses. Research has shown that a large portion of university students do not understand many of the basic statistical concepts they have studied (Adeleye & Ofili, 2009).

There is a significant body of empirical data indicating that the conceptions people hold present implications for their learning outcomes. To be more specific, students' conceptions of learning have been shown to be related to their study orientations, approaches to learning and study outcomes (e.g., Entwistle & Ramsden, 2015; Joyce, 2016). Lonka and Lindblom-Ylänne (1996) discovered that conceptions of learning and conceptions of knowledge are connected. They also pointed out that conceptions of knowledge may guide not only comprehension standards but also study strategies and orientations. Lindblom-Ylänne and Lonka (1998) found that students' ways of interacting with the learning environment were associated with study success. Meaning-oriented independent students achieved the highest grades in their studies, though reproduction-oriented and externally regulated students achieved the lowest. Similarly, it can be assumed that the conceptions students hold about a course, thus a learning subject, can have an impact on their learning of the subject.

The cognitive problems that students face may arise from several factors. Firstly, the language that teachers use can be hard for students to understand. Scientific

communities are characterised by their specific forms of discourse (McGinn & Roth, 1999), and disciplines use their own terminology. For example, statisticians may try to teach some statistical concepts by using statistical terms that are well-known to them but unknown to students. Secondly, students' prior knowledge is perhaps not at the level that teachers suppose it to be. This increases the quantity of content to be learned and provokes cognitive overload. According to Sweller and Chandler (1994), some material can be demanding to comprehend because of the heavy cognitive load. The cognitive load related to the material to be learned is strongly associated with the extent to which the elements of that material interrelate with each other. The interactions between the various elements may provide the whole point of what must be learned, so the elements of the task cannot be learned separately because they interrelate. In these circumstances, learning cannot be exclusively defined as a function of the number of elements that must be learned but also of the elements that must be learned simultaneously (Murtonen & Lehtinen, 2003).

According to Lehtinen (2003), problems in methodology studies appear partly because of the complexity of the domain: methodological knowledge includes several challenging properties for the learner. In the case of statistics learning, Watts (1991) concludes that a major difficulty that confuses beginning students and constrains the learning of statistics is that the significant fundamental concepts of statistics are quintessentially abstract. Anderson et al. (1988, p. 163) have explored how students learn to programme recursive functions. They concluded that learning recursive programming is complicated and challenging procedure because it is an unacquainted activity, with unseen and unknown difficulties, that must be learned in an unfamiliar and complex domain. In the domain of methodology, students face many concepts they have not heard of before or with which they are not very familiar. For example, principles of scientific research and statistical inference are not often related to students' everyday activities, research activities in certain domains are very complicated and the connection between theory and practice can be tough to perceive.

On the other hand, freshmen students seem to have difficulty understanding the differences between studying at a university and studying at an upper-secondary school or understanding the demands of the university-level teaching-learning environment (Haarala-Muhonen et al., 2017). This transition may be an especially stressful period

for many freshman students (Coertjens et al., 2017), as they have to deal with a number of serious challenges, such as the need to develop novel learning patterns and also the adaptation of already existing learning strategies to the new academic environment (Vermunt, 2005). Thus, during the first year of their studies, freshmen tend to categorise the majority of their courses as difficult. In addition, recent studies report that students' difficulties in academic adjustment are mainly due to insufficient prior knowledge related to the subject to be studied, ineffective learning strategies and unsatisfactory self-regulation (lack of ability in monitoring the learning progress and difficulty adapting their behaviour to the demands of the new learning situations and the new learning context) (Zimmerman & Schunk, 2008).

2.4 Student Engagement

Students learn best when they are fully engaged in the learning process (Parsons & Taylor, 2011); therefore, student engagement is strongly related to teacher effectiveness and quality of instruction. Nevertheless, there is no consensus on the conceptualisation of student engagement—it can be defined in many different ways according to different stages of the student experience within each learning environment (Markwell, 2007; Steele & Fullagar, 2009). The closely related notion of student involvement is associated with the amount of physical and psychological energy that a student devotes to the academic experience (Strayhorn, 2018) or the extent to which students dynamically participate in academic life (Tinto, 1987). According to some scholars (Strayhorn, 2018; Wolf-Wendel et al., 2009), there are no essential variances between the notions of engagement and involvement. Nevertheless, Wolf-Wendel et al. (2009) point out that involvement focuses on the activities an individual does to become involved, whereas engagement includes two elements—what the student does, and what the institution does—and is also related to the institutional environment that is perceived by the student as inclusive and affirming.

The concept of academic student engagement, related to students' active participation and taking responsibility for their own learning, was introduced in higher education with the aim of a transfer from "teaching knowledge" to "teaching competences" and "because of the disconnection between what was taught in classes and what was needed in the labor market" (Koenen et al., 2015, p.1). More specifically, academic student engagement concerns the effort students invest in their studies (Ellery, 2008; Zhu,

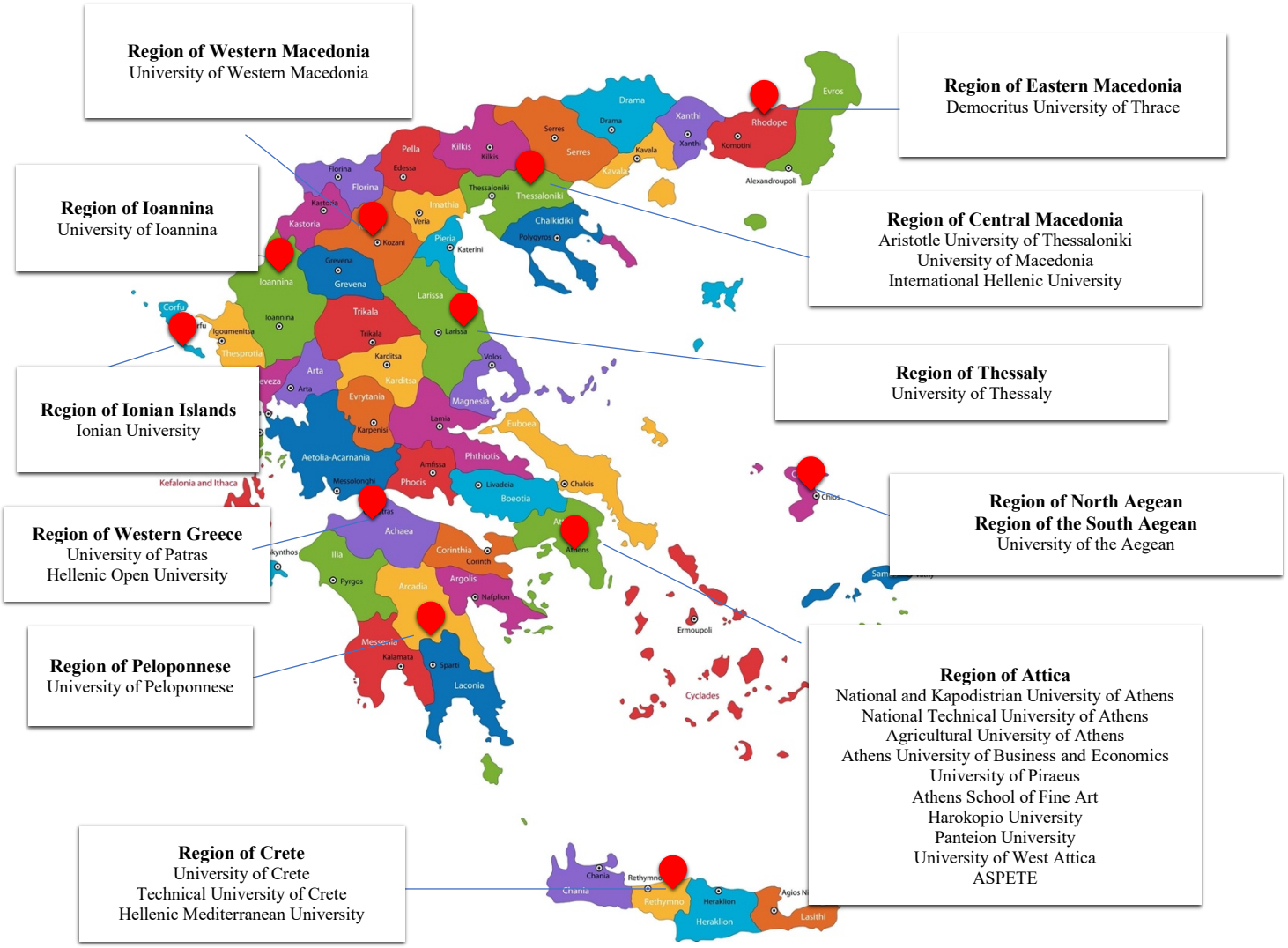
2004), the time they spend studying, the degree of interest in their courses and the adoption of good study habits (Zhoc et al., 2019). In this context, student engagement is concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions, intended to optimise the student experience and enhance the learning outcomes and development of students and the performance and reputation of the institution (Fredricks et al., 2004; Kahu, 2013; Krause & Coates, 2008; Lamborn et al., 1992; Trowler, 2010; Wladis et al., 2014; Zhoc et al., 2019).

According to Markwell (2007), many factors are necessary to encourage student engagement: active and interactive learning (e.g., assignment workloads, laboratories) in a learning community rich with co-curricular and extracurricular activities (from sports to student politics). In this study, teacher effectiveness is related to student engagement. Hence, the higher the teacher's effectiveness, the greater the propensity for the learner to be actively engaged, which will eventually lead to students' academic gains (Cinches et al., 2017).

3. Institutional Setting: The Greek Higher Education System

Until two years ago, the Greek higher education system was divided into universities (AEI) and technological educational institutions (TEI). Nowadays, the new map of higher education in Greece, as it was formed after the mergers of institutions during these last two years (2018 and 2019), includes 25 institutions of higher education, of which 24 are universities and one remains a TEI (ASPETE- School of Pedagogical and Technological Education) (see Figure 1).

Figure 1. *The Structure of Higher Education in Greece (2018–2019)*



To be more specific, the Greek higher education system has undergone radical changes over the past two decades. Greek universities' efforts to adopt a more entrepreneurial model of organisation and to align further with the requests of the European Higher Education Area (EHEA) became a one-way road during the 2000s (Zmas, 2015). The infiltration of European educational discourse into Greek tertiary education is apparent in a series of laws that were passed during that period. The laws 3374/2005 and 4009/2011 were the most significant.

More specifically, law 3374/2005 aimed to assure quality in higher education. This law can be characterised as an attempt to generate evaluation mechanisms in Greek HEIs, following the basic principles of the Bologna Process. Through this process, Greece had actually committed itself to establishing a national system of quality assurance.

Law 3374/2005 defined the mechanisms for internal (founding of the quality assurance unit—MODIP, the responsible body in every higher education institution for the coordination and support of quality assurance processes) and external (founding of external evaluation and certification committee—EEAP, a five-member panel consisting of 3 independent experts from the registry of experts, one student representative and one professional association/chamber representative) evaluation of universities and their specific departments, the use of evaluation indicators, the establishment of ECTS and the provision of a diploma supplement. Provision was also made for the foundation of an independent organisation (Hellenic Quality Assurance and Accreditation Agency in Higher Education (HQAA)- Αρχή Διασφάλισης και Πιστοποίησης της Ποιότητας στην Ανώτατη Εκπαίδευση (ΑΔΙΠ) in Greek), which would guarantee the transparency of the evaluation processes, its mission being to support universities in their attempts to improve their quality of services. In 2007, this organisation became incorporated into the European Association for Quality Assurance in Higher Education (ENQA).

Two years later, the financial crisis in Greece in 2009 generated tremendous reforms in all aspects of the Greek economy and society in general. The Greek educational system, including tertiary education, is free for all the citizens, and the cost for maintaining this service compared with the delivered quality has always been considered to be high. As a reaction to this, and again in alignment with the European educational system and the international trends, the Greek government, during this period, decided to minimise the number of HEIs.

More specifically, the first attempt was made with the Athena Plan in 2011. Following the 2011 Higher Education Act (4009/2011), the Athena Plan was initiated. It was launched in order to reinforce the network of university institutions and ameliorate internal efficiency through departmental mergers. It also aimed to make universities more innovative, to create regional centres of excellence, to link the academic sector to regional development needs and to strengthen research through blends between universities and national research institutes. The Athena Plan was also aimed at improving university visibility and rankings. The Athena plan was actually based on the success of the Danish merging example, in which twelve universities and a number of research institutes and specialist colleges were consolidated into nine larger,

geographically wide-ranging institutions. Actually, the Athena Plan can be characterised as an attempt to correct the shortcomings in tertiary education in Greece, as it foresaw a series of mergers, closures and generally a rationalisation of the higher education system. It was first deliberated in 2012 in the wake of the economic crisis and was implemented during 2013 and 2014, including a series of integration processes of smaller institutions or departments by bigger HEIs. However, during the implementation of the Athena Plan, it was mainly restructuring that was carried out within the institutions (establishment, elimination and merging of departments and faculties). There was also a merger between the Technological Educational Institute of Patras and the Technological Educational Institute of Messolonghi in 2013, based in Patras and the abolition of the University of Western Greece and the University of Central Greece in 2013.

The second attempt for extended university mergers in Greece started in 2017. Under the 2017 Higher Education Act (4485/2017), the government established a process to redesign Greece's higher education and research resources. This procedure aimed to offer opportunities to consolidate, cluster and/or merge similar departments or institutions in a region. The new legislation provided for regional higher education and research academic councils, which would develop plans to increase cooperation between HEIs and research centres and seek efficiency gains through rationalisation while strengthening links to regional development priorities.

Eleven of the 25 institutions changed their academic structure as a result of mergers with former TEIs (see Table 1). These changes were made without consulting the HQAA.

Table 1. *Universities With Changes in Their Academic Structure During the Years 2018 and 2019*

S/N	University	Institute been merged	Higher Education Act
1	University of West Attica	TEI of Athens TEI of Piraeus	N.4521/2018 (ΦΕΚ Α΄142/03.08.2018)
2	Ionian University	TEI of Ionian Islands	N.4559/2018 (ΦΕΚ Α΄142/03.08.2018)

3	University of Ioannina	TEI of Epirus	N.4559/2018 (ΦΕΚ Α΄142/03.08.2018)
4	University of Thessaly	TEI of Thessaly TEI of Central Greece	N.4589/2019 (ΦΕΚ Α΄13/29.01.2019)
5	Agricultural University of Athens	TEI of Central Greece	N.4589/2019 (ΦΕΚ Α΄13/29.01.2019)
6	National and Kapodistrian University of Athens	TEI of Central Greece	N.4610/2019 (ΦΕΚ Α΄70/07.05.2019)
7	International Hellenic University	ATEI of Thessaloniki, TEI of Eastern Macedonia & Thrace TEI of Central Macedonia	N.4610/2019 (ΦΕΚ Α΄70/07.05.2019)
8	Hellenic Mediterranean University	TEI of Crete	N.4610/2019 (ΦΕΚ Α΄70/07.05.2019)
9	University of Western Macedonia	TEI of Western Macedonia	N.4610/2019 (ΦΕΚ Α΄70/07.05.2019)
10	University of Peloponnese	TEI of Western Greece TEI of Peloponnese	N.4610/2019 (ΦΕΚ Α΄70/07.05.2019)
11	University of Patras	TEI of Western Greece	N.4610/2019 (ΦΕΚ Α΄70/07.05.2019)

The Greek academic system is mainly teacher-centred. Despite the recent aforementioned changes related to the quality assurance in Greek universities, Greece does not have a nationwide instrument to measure and evaluate teaching effectiveness as part of a quality assurance framework, such as occurs in other countries (CEQ in Australia and New Zealand, NSSE in USA, National Student Survey in UK) (Alzafari & Ursin, 2019; Jingura & Kamusoko, 2019). Each institution is free to adapt its own instrument from an original questionnaire provided by the HQAA[7]. The digitalised

[7] The Hellenic Quality Assurance and Accreditation Agency in Higher Education (HQAA) has a mission statement associated with the assurance of high quality in higher education. In this framework, the agency

form of the questionnaires has resulted in limited student participation in the evaluation procedure, making it impossible to retrieve reliable and adequate data from these tools. Students themselves have little or no faith in these surveys because they do not believe that their opinion is considered or that their educational needs are going to be heard. Consequently, there is no way to benchmark teaching effectiveness or student satisfaction among Greek HEIs. There is therefore a need for validating an instrument to assess teaching effectiveness for purposes of accountability, comparison between institutions and benchmarking with similar academic units abroad.

4. Research Methodology

The purpose of this study is to determine reproducibility and relative validity of a short questionnaire of 21 survey items exploring teacher effectiveness in the context of Greek HEIs.

To be more specific, the 21 survey items were selected and grouped according to a teacher effectiveness literature review. To clean the data and decrease systematic errors, missing values, outliers, the distribution of all measured variables was examined. Only those questionnaires with valid answers to each question were retained in the operative sample. The validity of this teacher effectiveness scale was evaluated using factor analysis, which was conducted using two sequential approaches: (1) EFA and (2) CFA. EFA was conducted to condense the large number of items into a smaller, more controllable set of dimensions (Hair et al., 1998).

In this study, EFA was applied to the construct to determine the adequate structure of latent constructs and to disclose the number of factors underlying, conceptually and statistically, the set of items in each model construct. The results were then affirmed using CFA to provide a foundation for subsequent model assessment and refinement. The CFA results were used to demonstrate whether the model had acceptable levels of fit, convergent validity, discriminant validity and unidimensionality.

supports the state and the higher education institutions in formulating and implementing the national strategy for higher education and in accrediting the quality of HEIs operation (ADIP, 2019).

4.1 Item Writing

The review of literature, presented in chapter one and summarised in the previous section, led to the writing of items on the scale which were based on those identified as the most important aspects of teacher effectiveness, namely: teaching style, course difficulty and student engagement[8]. A total of 21 items were thus included in the final questionnaire, which included three dimensions: teaching style (14 items), course difficulty (4 items) and student engagement (3 items).

4.2 Scale Construction and Content Validity

We generated the list of items to cover the three areas in which we were interested from the literature review presented in Chapter 1 and generated a set of 12 items that we believed spanned the domain of our main construct, teaching style, and three to four items to cover course difficulty and student engagement. This item construction resulted in an initial 21-item scale. All of the survey items were measured on a Likert scale with five values: strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and strongly agree.

We asked for the help of subject matter experts, a common method to examine content validity of a scale (Kuhfeld, 2017; Marshall et al., 2016), and interviewed university students in order to verify that items were worded in a way that students would understand without error. We also piloted the survey items with 50 undergraduate students and collected suggestions regarding how to improve the wording of each item. The final questionnaire is the one reported in the Appendix. It contains 21 items, and it received the approval of the MODIP of the University of Piraeus. Students were required to evaluate their professors, scoring statements on a 5-point Likert scale ranging from "I fully disagree (1)" to "I fully agree (5)". For recognition, the scale was labeled "Teacher Effectiveness Questionnaire in Greek Higher Education (TAGGED)."

4.3 Collecting the Data

Prior to conducting the study, ethical approval was obtained from the institutional board as well as agency approval from the seven departments. Students were provided with

[8] Since the questionnaire was developed in collaboration with the MODIP, two other modules were added to the main questionnaire: one related to the experience with the lab and the other one related to a fairly recent method of evaluation (assignments instead of final exam). The total number of questions was 21.

an email informing them of the purpose of this study. Students were successively invited to participate in the study upon receipt of the student informed consent. Students were assured that their participation was voluntary, their responses would remain confidential, and that they could withdraw at any time without incurring negative consequences. Questionnaires were submitted on paper. Data collection took place midway through the 2018–2019 academic year to (a) ensure that students had sufficient information upon which to evaluate their teachers' effectiveness and (b) to minimise any honeymoon biases that may occur at the start of students' relationships with their 'new teachers' at the beginning of the academic year (Beauchamp et al., 2010). The questionnaire was filled out anonymously at the end of the term in the usual classroom and without the presence of the professor. The application was collective and administered by the researcher in collaboration with qualified personnel.

The questionnaire was applied to undergraduate students of all courses of seven departments (Economics, Banking and Financial Management, Business Administration, International and European Studies, Statistics and Insurance Science, Informatics, Digital Systems and Maritime Studies). The resulting sample included 8,592 students' questionnaires, from students mainly between the ages of 18 and 24, with 57.6% being females[9].

4.4 Evaluation of Construct Reliability and Validity

After briefly describing our data with some simple descriptive statistic (mean, maximum, minimum, kurtosis and skewness) in order to test the construct validity of the TAGGED scale, we used both EFA and CFA. The first one is particularly useful when evaluating a scale in the early stages because it can help in identifying items that might load in different factors than expected. Thus, we randomly selected half of our sample and ran an EFA in order to better understand the latent constructs on which each item was loaded. Then with the other random half, we ran a CFA, which is typically used when an underlying theory exists to test and confirm the hypothesised factor structure.

[9] The questionnaire was completely anonymous. Taking into consideration that a student could potentially answer a questionnaire for each course that they attended, we were not able to compute how many students actually answered the questionnaire, so accurate response rates could not be computed.

Using the first half of the data, we computed the Bartlett's test of sphericity which should be significant, and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy, which should be higher than .5 in order to assure us that our items are correlated and will allow the identification of latent construct without multicollinearity hindering it. After identifying the three factors mentioned above, we examined the factor loadings of each individual item and reliability of each of the three latent constructs. First, we dropped from the analysis items with factor loadings below .50. Then, the reliability of the scale was evaluated using Cronbach's coefficient alpha formula for each of the three latent factors. This method examined the internal consistency of the items on the scale. To be more specific, the reliability of a scale indicates the stability and consistency of the instrument in measuring a concept and helps to assess the goodness of a scale (Bassi et al., 2017). Zeller et al. (1980) proposed the minimum acceptable reliability be set at .70.

Using the second half of the data (and in addition to the findings from the EFA), a CFA was conducted in order to evaluate the structural validity of the scale and reduce the scale to a more parsimonious version. We proceeded in this way. First, we run a CFA on the model obtained with the EFA and applied to our estimates the standard evaluation of fit thresholds: a root mean square error of approximation (RMSEA) lower than .06, a comparative fit index (CFI) higher than .95 and Tucker-Lewis index (TLI) higher than .95 (Abrahim et al., 2019; Daaleman & Frey, 2004; Kline, 2015). Then we respecified our model to improve the fit. We worked in order to achieve a better goodness of fit, deleting variables until we achieved a better fitting model.

5. Results

The purpose of this study was to develop and validate a scale that measures teacher effectiveness in higher education from the perspective of students. In this section, after briefly describing our data, we first put to the test our 21 items and ran an EFA to discover the nature of the constructs and select which items to retain. We then ran a CFA.

5.1 Descriptive Statistics

First of all, we ran a brief description of our data to gain a feel for the data. We considered only those records with all valid information for all the 21 items. In our dataset we had 8,592 questionnaires from 7 departments as shown in Table 2.

Table 2. *Distribution of the Questionnaire Per Programme, Entire Sample*

Department	Freq.	Percent	Cum.
Economics	1,611	18.75	63.15
Business Administration	1,468	17.09	44.40
International & European Studies	1,310	15.25	15.25
Statistics & Insurance Science	1,433	16.68	86.64
Informatics	585	6.81	69.96
Digital Systems	1,148	13.36	100.00
Maritime Studies	1,037	12.07	27.32
Total	8,592	100.00	

The mean, minimum, maximum, average, standard deviation, skewness and kurtosis were calculated, and histograms were created for each item (see Appendix 3, Table A3).

Student evaluations of teachers seemed to be quite positive with all mean values within this scale higher than medium level (3), ranging from 2.31 to 3.66. Most students (62.6%) reported that they feel that their courses were well organised. The majority of them (66.8%) also stated that they felt comfortable to voice opinions about their teachers. Of the students, 51.6% spend more than 8 hours per week studying, 47% claimed that they study frequently and around 60% of the students attend frequently the course's lectures and tutorials.

5.2 EFA

Using a random half of the original sample (N = 4,296) and in order to assess the factorability of the data, we computed the Kaiser-Meyer-Olkin (KMO) coefficient of sampling adequacy and the Bartlett's sphericity test. The KMO coefficient was equal to .941, well above the commonly accepted threshold of 0.50, while the value of the

Bartlett's test was $\chi^2 = 50223.765$, which was highly significant with a $p < 0.001$, indicating that the data were approximately multivariate normal.

Using a principal component analysis (PCA) with varimax rotation (Kaiser normalisation), three components of teachers' effectiveness with an eigenvalue greater than 1 were identified. These three factors accounted for around 64% of the total variance. The dimensions were labeled based on the common themes of items under them. After dropping items with a loading lower than 0.500, one at a time, we ended up with the final model, which consisted of 17 items loaded on three distinct factors. Table 3 reports each factor, its alpha internal consistency reliability score, the survey items associated with each factor, and the factor loading for each survey item.

Table 3. *Survey Items, Alpha Scores and Factor Loadings From the Exploratory Factor Analysis*

Code	**Statement**	**Factors**		
		Teaching style Alpha 0.94 Eigenvalue = 7.76	Course difficulty Alpha 0.76 Eigenvalue = 1.82	Student engagement Alpha 0.70 Eigenvalue = 1.35
Q1	The aims of the course are clear.	0.73		
Q2	The proposed curriculum meets the aims of the course.	0.75		
Q3	The content being taught was well organised.	0.81		
Q4	The material delivered helped in understanding the subject better.	0.73		
Q12	The teacher organises the delivery of the curriculum well.	0.88		
Q13	The teacher stimulates interest in the topic of the course.	0.85		

Q14	The teacher delivers course-related concepts in an effective way.	0.86		
Q15	The teacher encourages students to participate and ask their questions.	0.82		
Q16	The teacher was consistent in his/her obligations (attendance at classes, timely correction of assignments or laboratory reports, hours of collaboration with students).	0.74		
Q17	The teacher makes use of new technologies, e.g. e-class to facilitate communication for educational purposes.	0.64		
Q18	The teacher is accessible to students.	0.82		
Q8	How necessary do you consider the prerequisites of the course, if any?		0.79	
Q9	To what extent was knowledge from other courses used?		0.72	
Q10	The course's level of difficulty is appropriate for an undergraduate programme.		0.71	
Q11	How do you evaluate the number of ECTS in relation to the workload (i.e. studying hours, etc.)?		0.50	
Q20	I study frequently.			0.88
Q21	Hours of study per week.			0.90

It can be observed from Table 3 that the first factor, 'Teaching Style', had the largest cluster of items. 'Teaching Style' is reflected in 11 items (1–4, 12–18) of the scale, was associated with a reliability score of .94 and had an eigenvalue of 7.76. These items reflect effective organisation in the curriculum delivery, stimulating interest in the course topic, showing dedication to the teaching profession, communicating ideas effectively, encouraging students to ask questions and to participate, accessibility and

availability, providing students with activities relevant to lessons, giving instructions clearly, answering students' questions, making learning enjoyable for students, interacting with students during class discussions, welcoming student participation in classroom discussions, using ICT, giving plenty of examples relevant to lessons, providing activities aimed at developing confidence regarding the acquired knowledge and using instructional equipment/materials effectively.

The 'Course Difficulty' factor revealed an alpha score of .76, an eigenvalue of 1.82 and was comprised of four interrelated items (8–11). These items reflect the importance of previous relevant knowledge, the appropriateness of attending this course in this specific semester and the ECTS related to the course. Lastly, the 'Student Engagement' factor had an alpha score of .70, an eigenvalue of 1.35 and was measured by two items (20–21). These items reflect the frequency of student attendance and frequent and systematic studying as a habit for the students in that particular course.

5.3 CFA

In addition to the findings from the EFA, which confirmed the reliability of the measurement scale in identifying the three latent constructs, a CFA was conducted with the other half of the data (N = 4,296) in order to evaluate the structural validity of the scale and assess the overall goodness of fit. An ulterior motive to run the CFA was to reduce the model and render it more parsimonious in order to be able to evaluate teacher effectiveness with far fewer items in the following years. Operatively, we proceeded in this way. First, we ran a CFA of the model we derived from the EFA (initial model). Then, after assessing the goodness of fit of this specification of the model, we respecified the model into a more parsimonious version, leaving out the items with the lowest factor loading, re-estimating the model and verifying that the goodness-of-fit indices indicated indeed a better fit. In both models, all factor loadings were statistically significant with $p < 0.001$. Significance levels of the t-values were assessed for the variables observed as a result of the CFA.

Two absolute fit indices are reported here: the standardised root mean square residual (SRMR) and the RMSEA. The SRMR is recommended by Hu and Bentler (1998) as an index to report because of its sensitivity to simple model misspecification with acceptable model fit indicated by values less than .08. The second absolute fit index

reported was the RMSEA. Hu and Bentler (1998) recommend that this value not exceed .06. Finally, the CFI, an incremental fit index, was also consulted. This fit index compares the model fit of the proposed model to that of an independence model and is particularly sensitive to complex model misspecification. Hu and Bentler (1998, 1999) suggest that CFI values indicating adequate model fit should exceed .95. Currently, there are disagreements about the strict application of cutoffs (Marsh et al., 2005), but in order to aid in decision-making about model fit, we chose to use cut-offs in conjunction with examination of standardised residuals.

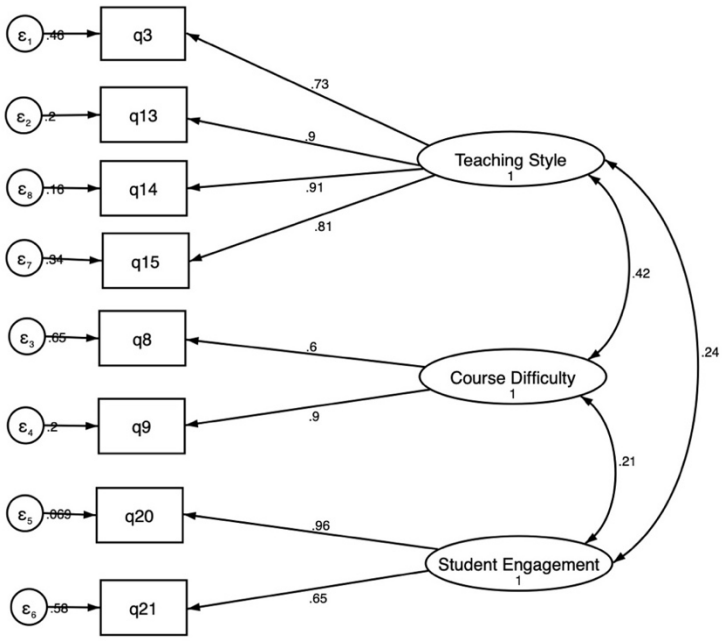
Thus, as it can be seen in Table 4, the goodness-of-fit indices of the initial model identified a poor degree of fit with the data: the RMSEA was well above the 0.05 level of acceptance, and the CFI and TLI are below the 0.95 cutoff. The SMRS was the only acceptable parameter.

Table 4. *Goodness-of-Fit Values of the Model (n = 3684)*

Measures	Initial model (17 items)	Final model (6 items)
	Value	Value
Chi-square value	398.223	48.066
Degrees of freedom	116	6
Chi-square *p*	0.000	0.000
RMSEA	0.088	0.040
Comparative fit index	0.911	0.995
TLI	0.896	0.988
SRMR	0.50	0.18

The final model consisted of eight items, four for the construct ‘Teaching Style’ and two for the constructs ‘Course Difficulty’ and ‘Student Engagement’. These 8 items fit the data pretty well: the RMSEA was below 0.05, both CFI and TLI were above 0.95 and the SRMR were well below 0.5. Figure 2 plots the estimated model.

Figure 2. *Confirmatory Factor Analysis*



The parsimonious scale was easily compiled by the students, and in that way it allowed the university to measure teaching effectiveness quite well. It seems that in order to get a better fit of the scale to the data, four items related to the organisation of the course (q3) and items related to enjoyable (q13) and interactive learning (q14–q15) could be used for the 'Teaching Style' factor. Accordingly, two items related to the importance of previous relevant knowledge (q8–q9) could be used for the 'Course Difficulty' factor, and two items for the 'Student Engagement' factor related to frequent and systematic studying (q20) and frequency of attendance (q21) were able to be used.

6. Conclusions

Education is the process of a major change. In recent years an enormous amount of public attention has been focused on teacher effectiveness (Dutta et al., 2017). These initiatives have listed teacher effectiveness as a major factor in ameliorating student achievement (Collingwood & Hughes, 1978; Özen, 2017). Effectiveness of teachers is often measured by the student achievement (Huffmyer & Lemus, 2019).

This study set out to understand the determinants of teacher effectiveness at a Greek HEI by confirming the factorial validity of a 21-item instrument entitled TAGGED,

based on an exploration of its dimensionality among undergraduate students. It also aimed to assess the perceived teaching quality offered at a Greek university by proposing a shorter (8-item) scale that is extremely accurate in measuring teacher effectiveness.

The results reveal that TAGGED is a three-factor instrument consisting of the three dimensions: teaching style, course difficulty, and student engagement. First, teaching style involves a complex mix of beliefs, attitudes, strategies, techniques, motivation, personality and control. Second, course difficulty indicates subjective student assessment of the requirements of a course. Finally, student engagement refers to student involvement in educationally purposeful activities.

Even if this three-factor instrument included only 8 items, according to the conducted CFA, it is extremely valid and is in compliance with the new total quality management tendency to generate parsimonious scales in order to recruit student samples and parallelly ensure and achieve acceptable response rates.

As the first academic research that investigates the possibility of assessing a shorter questionnaire at Greek universities related to teacher effectiveness and thus student satisfaction, this study can help researchers conduct confident investigations using the adapted and validated teaching quality instrument within the Greek higher education system.

Notwithstanding the positive results above, there are limitations to this study that should be noted. The fundamental limitation associated with this study is that the sample was based only on undergraduate students at a Greek university. Hence, generalisations to universities in other countries should be made with caution.

Additionally, the issues of culture and diversity are not addressed in the current framework of student engagement. Further research should also look at student engagement predictors and consequences, paying special attention to students' academic performance, health and well-being.

Last but not least, this study focused on evaluating the factor structure, internal consistency and criterion validity of the TAGGED. Future research should include a

more comprehensive evaluation of the scale, such as the test–retest reliability, the concurrent validity and the divergent validity.

We also recommend conducting future replication studies. This can help watch, over time, any possible quality-related changes in services offered at Greek higher education institutes.

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Appendix 1: The Greek version of the TAGGED questionnaire

Βαθμολογική Κλίμακα	1 = Διαφωνώ απόλυτα	2 = Διαφωνώ	3 = Ούτε διαφωνώ/Ούτε συμφωνώ	4 = Συμφωνώ	5 = Συμφωνώ απόλυτα

	1	2	3	4	5
1. Οι στόχοι του μαθήματος ήταν σαφείς;	☐	☐	☐	☐	☐
2. Η ύλη που καλύφθηκε ανταποκρινόταν στους στόχους του μαθήματος;	☐	☐	☐	☐	☐
3. Η ύλη που διδάχθηκε ήταν καλά οργανωμένη;	☐	☐	☐	☐	☐
4. Το εκπαιδευτικό υλικό που χρησιμοποιήθηκε βοήθησε στην καλύτερη κατανόηση του θέματος;	☐	☐	☐	☐	☐
5. Τα εκπαιδευτικά βοηθήματα (σύγγραμμα, σημειώσεις, πρόσθετη βιβλιογραφία) χορηγήθηκαν εγκαίρως;	☐	☐	☐	☐	☐
6. Πόσο ικανοποιητικό βρίσκετε το κύριο βιβλίο(α) ή τις σημειώσεις;	☐	☐	☐	☐	☐
7. Πόσο εύκολα διαθέσιμη είναι η βιβλιογραφία στην Πανεπιστημιακή Βιβλιοθήκη;	☐	☐	☐	☐	☐
8. Πόσο απαραίτητα κρίνετε τα προαπαιτούμενα του μαθήματος, εάν υπάρχουν;	☐	☐	☐	☐	☐
9. Σε ποιό βαθμό χρησιμοποιήθηκαν γνώσεις από άλλα μαθήματα ;	☐	☐	☐	☐	☐
10. Πώς κρίνετε το επίπεδο δυσκολίας του μαθήματος για το έτος του;	☐	☐	☐	☐	☐
11. Πώς κρίνετε τον αριθμό Διδακτικών Μονάδων σε σχέση με τον φόρτο εργασίας;	☐	☐	☐	☐	☐
12. Οργανώνει καλά την παρουσίαση της ύλης στα μαθήματα;	☐	☐	☐	☐	☐
13. Επιτυγχάνει να διεγείρει το ενδιαφέρον για το αντικείμενο του μαθήματος;	☐	☐	☐	☐	☐
14. Αναλύει και παρουσιάζει τις έννοιες με τρόπο απλό και ενδιαφέροντα χρησιμοποιώντας παραδείγματα;	☐	☐	☐	☐	☐
15. Ενθαρρύνει τους φοιτητές να διατυπώνουν απορίες και ερωτήσεις για να αναπτύξουν την κρίση τους;	☐	☐	☐	☐	☐
16. Ήταν συνεπής στις υποχρεώσεις του/της (παρουσία στα μαθήματα, έγκαιρη διόρθωση εργασιών ή εργαστηριακών αναφορών, ώρες συνεργασίας με τους φοιτητές);	☐	☐	☐	☐	☐
17. Αξιοποιεί τις νέες τεχνολογίες π.χ. e-class για να διευκολύνει την επικοινωνία για εκπαιδευτικούς λόγους;	☐	☐	☐	☐	☐
18. Είναι γενικά προσιτός στους φοιτητές;	☐	☐	☐	☐	☐

19. Παρακολουθώ τακτικά τις διαλέξεις.	☐	☐	☐	☐	☐
20. Μελετώ συστηματικά την ύλη.	☐	☐	☐	☐	☐
21. Αφιερώνω εβδομαδιαία για μελέτη του συγκεκριμένου μαθήματος: **1 = < 2 Ώρες, 2 = 2–4 Ώρες, 3 = 4–6 Ώρες, 4 = 6–8 Ώρες, 5 = > 8 Ώρες**	☐	☐	☐	☐	☐

Appendix 2: The English version of the TAGGED questionnaire

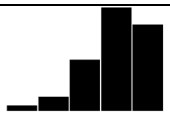
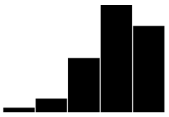
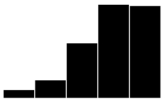
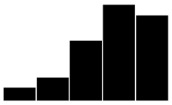
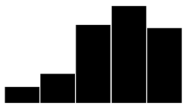
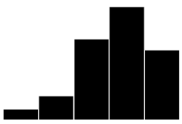
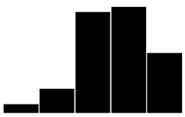
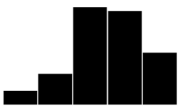
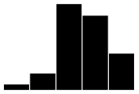
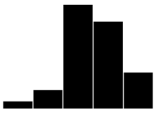
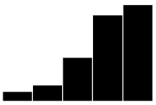
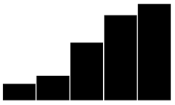
Rating scale	1 = I strongly disagree	2 = I disagree	3 = Neither disagree nor agree	4 = I agree	5 = I strongly agree

	1	2	3	4	5
1. The aims of the course are clear.	☐	☐	☐	☐	☐
2. The proposed curriculum meets the aims of the course.	☐	☐	☐	☐	☐
3. The content being taught was well organised.	☐	☐	☐	☐	☐
4. The material delivered helped in understanding the subject better.	☐	☐	☐	☐	☐
5. The course material (main coursebook, course/lecture notes, tutorial material, additional bibliography) was delivered on time.	☐	☐	☐	☐	☐
6. The main coursebook(s) is/are satisfactory.	☐	☐	☐	☐	☐
7. The bibliography is available in the university library.	☐	☐	☐	☐	☐
8. How necessary do you consider the prerequisites of the course, if any?	☐	☐	☐	☐	☐
9. To what extent was knowledge from other courses used?	☐	☐	☐	☐	☐
10. The course's level of difficulty is appropriate for an undergraduate programme.	☐	☐	☐	☐	☐
11. How do you evaluate the number of ECTS in relation to the workload (i.e. studying hours, etc.)?	☐	☐	☐	☐	☐
12. The teacher organises the delivery of the curriculum well.	☐	☐	☐	☐	☐
13. The teacher stimulates interest in the topic of the course.	☐	☐	☐	☐	☐
14. The teacher delivers course-related concepts in an effective way.	☐	☐	☐	☐	☐
15. The teacher encourages students to participate and express their questions.	☐	☐	☐	☐	☐
16. The teacher was consistent in his/her obligations (attendance at classes, timely correction of assignments or laboratory reports, hours of collaboration with students).	☐	☐	☐	☐	☐
17. The teacher makes use of new technologies, e.g. e-class to facilitate communication for educational purposes.	☐	☐	☐	☐	☐

18. The teacher is accessible to students.	☐	☐	☐	☐	☐
19. I attend frequently all the course's lectures and tutorials.	☐	☐	☐	☐	☐
20. I study frequently.	☐	☐	☐	☐	☐
21. Hours of study per week: **1 = < 2 Hours, 2 = 2–4 Hours, 3 = 4–6 Hours, 4 = 6–8 Hours, 5 = > 8 Hours**	☐	☐	☐	☐	☐

Appendix 3: Statistical Information

Table A3. *Distributional Properties of the Items*

Item	M	SD	Min	p25	p50	p75	Max	Sk	Ku	Histogram
Q1	3.94	0.98	1	3	4	5	5	-0.85	3.40	
Q2	3.94	0.96	1	3	4	5	5	-0.82	3.40	
Q3	3.90	1.05	1	3	4	5	5	-0.83	3.13	
Q4	3.77	1.12	1	3	4	5	5	-0.75	2.87	
Q5	3.61	1.13	1	3	4	5	5	-0.56	2.62	
Q6	3.69	1.03	1	3	4	4	5	-10.60	2.96	
Q7	3.60	0.99	1	3	4	4	5	-0.41	2.84	
Q8	3.47	1.06	1	3	4	4	5	-0.38	2.67	
Q9	3.42	1.04	1	3	3	4	5	-0.36	2.68	
Q10	3.53	0.95	1	3	4	4	5	-0.29	2.94	
Q11	3.49	0.93	1	3	3	4	5	-0.30	3.09	
Q12	3.96	1.07	1	3	4	5	5	-0.98	3.37	
Q13	3.77	1.18	1	3	4	5	5	-0.76	2.71	

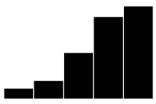
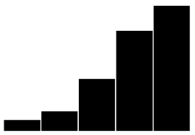
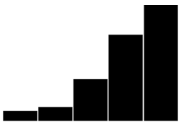
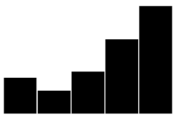
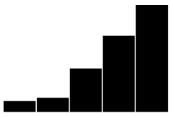
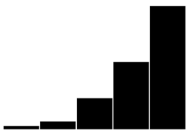
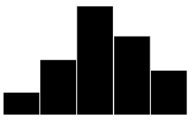
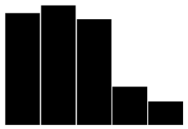
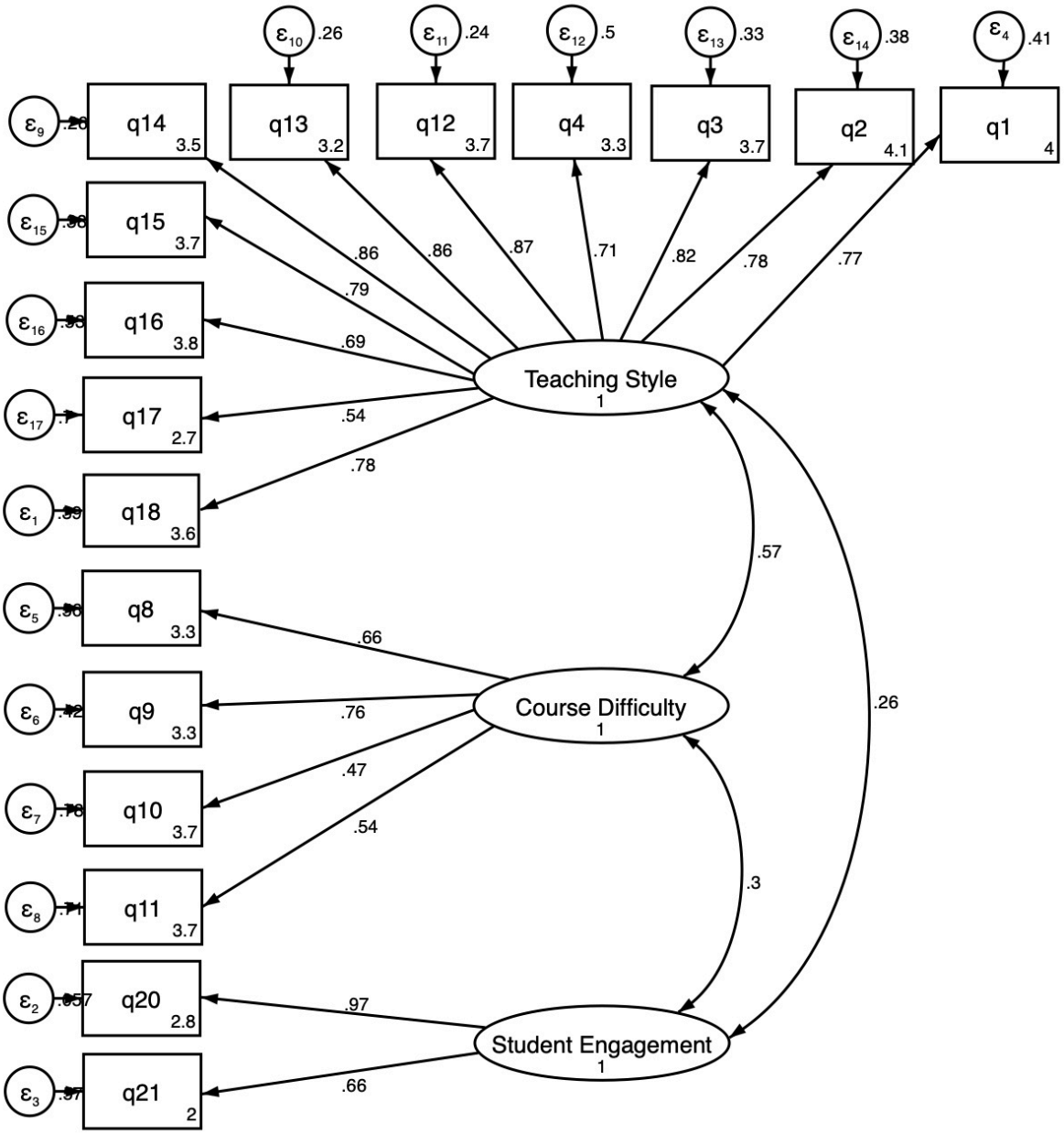
Q14	3.90	1.11	1	3	4	5	5	-0.90	3.11	
Q15	3.98	1.08	1	3	4	5	5	-0.99	3.34	
Q16	4.04	1.07	1	3	4	5	5	-1.12	3.66	
Q17	3.67	1.38	1	3	4	5	5	-0.76	2.31	
Q18	4.00	1.11	1	3	4	5	5	-1.04	3.37	
Q19	4.26	0.94	1	4	5	5	5	-1.29	4.28	
Q20	3.21	1.12	1	3	3	4	5	-0.13	2.35	
Q21	2.36	1.16	1	1	2	3	5	0.57	2.56	

Table A4. *Confirmatory Factor Analysis With 17 Items*



Chapter Four

Vulnerable Students and their learning needs: a preliminary note

Acronyms and Abbreviations

ESF	European Social Fund
HE	Higher Education
HEI	Higher Education Institution
MODIP	Internal Quality Assurance Unit

1. Introduction

Higher education (HE) across Europe has been subject to significant changes over recent years. Key are variations in fee regimes (and the extent of government support); differentiation in the types of institutions providing HE; and a general upsurge in student numbers (massification) combined with moves towards 'widening participation', targeting vulnerable students (Padilla-Carmona et al., 2017). In a nutshell, vulnerable students are those underrepresented in HE – and whose participation may be limited by structural factors. They involve first generation students (first in family to participate in HE), mature students, students with disabilities, students with special learning difficulties, single parents, students from low-income families, and minority ethnic groups (Crosling et al., 2009). If Europe is to compete internationally, opportunities for widening participation in HE must be accelerated (Osborne, 2003).

While vulnerability is extensively used as a conceptual idea in many fields of human activities, such as in social and natural disaster management, psychology, medicine, its use in the field of education, particularly in higher education (HE), is severely under-conceptualised. Yet, vulnerable university students affront varying forms of learning difficulties to both external as well as internal factors, which could have negative consequences for fulfilling their academic path. Incidences of unsatisfactory levels of student performance, and completion rates and repetition point out a prevalence of student vulnerabilities in the field (Maringe & Sing, 2014). Undoubtedly, there is a large corpus of research on the causes and consequences of such wastage (Pierrakeas et al., 2004; Vergidis & Panagiotakopoulos, 2002).

Nevertheless, it can be claimed that a large proportion of this research draws evidence from secondary data to arrive at conclusions about the nature, extent, causes and effects of the wastage phenomenon in HE and does not focus on ways of teaching that can affect student performance and consequently increase student satisfaction. There thus exists little to none, as far as we know, evidence which demonstrates which teaching style vulnerable students in universities need and feel comfortable with. Same stands for the mapping of the learning needs of this specific

group. Thus, the voices of the vulnerable have not been adequately captured in existing research.

To be more specific, as regards the Greek HE context, increasing the capacity of Higher Education Institutions (HEIs) to address vulnerable students' learning needs has been deemed essential due to the financial crisis. The voices of these vulnerable students since have not been sufficiently and effectively captured in existing research and can be best sought through quantitative research which targets the very vulnerable students experiencing such learning difficulties. Thus, this chapter is framed within the conceptual theory of vulnerability and complements the analysis with descriptive regression models to describe the teaching styles vulnerable students find more adequate to their learning needs and to explore their learning challenges related to the course delivery.

The chapter begins by exploring the concept of vulnerability, drawing from the extant literature in other fields, and identifying critical approaches that have been used in these fields, which can potentially be used in HE. Based on the theoretical frameworks for exploring vulnerability, the chapter presents some preliminary results concerning the teaching style that vulnerable students prefer. The chapter ends with emerging findings and early implications for strengthening processes, which might help in interrogating student vulnerabilities in HE.

2. Literature Review

This research was influenced by the theory of Social Justice Knowledge which relies on five conceptual and pedagogical philosophies which include: democratic education, critical pedagogy, multicultural education, culturally responsive education, and social justice education (Mayne, 2019).

Re-envisioning an inclusive model for teacher style in the Greek context should be responsive to preparing teachers to become transformative intellectuals (Giroux, 1985). "Transformative intellectuals develop a language of critique which enables them to speak out against social injustices within and outside of school; essentially leading students to view the world through the democratic ideal. The practice of critical

pedagogy should also be included as it does not transfer knowledge but rather create the possibility for its production." (Giroux, 1985, p. 4).

2.1 Conceptualising vulnerability

Early development of the theory of vulnerability can be found to discourses on natural disasters and hazards. Weichselgartner (2001) understands vulnerability in the sense of being open to abuse as a consequence of the weight of disadvantaging circumstances. Such circumstances can affect people who, for example, may be exposed to challenging nuclear, environmental, climate change, health and disease factors over which they have little or no control. The consequences of such vulnerabilities can present severe socioeconomic consequences and can cause psychological damage to the victims. In this context, Hewitt (2014, p. 143) views vulnerability as being: "essentially about the human ecology of endangerment ... and is embedded in the social geography of settlements ... and the space of distribution of influence in communities and political organization".

On the other hand, vulnerability can be defined as the capacity of individuals or communities to cope with the effects of such natural disasters and hazards. Some other scholars (Blaikie et al., 2014) define vulnerability as the characteristics of a group or individual regarding their capacity to predict, manage resist, and recover from the effect of a natural hazard. It includes a mixture of factors that determine the degree to which someone's life and livelihood is at risk by a isolated and identifiable event in nature or society.

Basically, vulnerability can be perceived from a wide range of contexts and levels, including individual, community, institutional, organisational, systemic, and even global levels. The implications of such vulnerabilities can enhance an understanding that when people are in hazardous situations over which nobody (neither the vulnerable people nor the people in power) has any control, they experience further vulnerability because social, economic, and political structures are not considered adequate to offer them support. In other words, it is possible to put in place strategies and structures that will help vulnerable people to cope in the face of disaster. As such, this correspondence may be applied in an HE context. Research, which investigates vulnerabilities at any of these levels, often sheds light on the vulnerabilities of other levels. For example,

understanding individual student vulnerabilities at an HEI could provide insight into how the institutions, their systems, and organisation harbour their own vulnerabilities. Such insight could lead to new ways in which they could harness resources differently in order to assist students with vulnerabilities.

For the purposes of the current chapter, we adapt the view of Blaikie et al. (1994) and define vulnerability in the context of HE as the conditions that influence the capacity of students to finish successfully their studies; vulnerability thus represents those factors which may jeopardise the achievement of learning goals and educational outcomes.

2.2 The notion of being vulnerable

At HEIs, vulnerable students are usually defined as those students who, for example: have consumed more time to complete their studies; are viewed by their teaching staff as being at risk of failing; or are repeating their courses including those who are experiencing a combination of contributing factors that are impacting on their academic proficiency (Aldridge & Rowley 2001, p. 61). It is often supposed that the vulnerable in HE are more concentrated among students: who have some form of disability, psychological problem or special learning difficulties; who are second language learners; who are coming from fragile socioeconomic backgrounds; who are from environments with inherent prejudice; who learn in highly gendered curricula areas; and those who graduated from schools in puzzling circumstances. Nevertheless, there is a need to beware of making assumptions as to who vulnerable people are in order to avoid unproductive categorisation and stigmatisation in researching people with different manifestations of vulnerability (Maringe, 2014).

More notably, it is claimed here that such categorisation, though it may be generative in terms of setting a basis for designing targeted interventions, hides the possibility, nevertheless, of omitting a quiet majority who suffer several forms of less apparent but nonetheless equally if not more debilitating vulnerabilities. Often their voices are silenced carelessly through being ostracised from the conventional classification of those typically thought to be vulnerable. Consequently, vulnerable students are often marginalised, sidelined, discriminated against, and most importantly, are silenced in the

academic literature. The incentive behind giving such students a voice has been a key driver of research with vulnerable people.

2.3 The student voice

Vulnerable student voices are a matter for concern in current higher education, but that concern is focused more on identifying vulnerable groups, and search for broadening their participation in higher education (Batchelor, 2006).

The concept of the student voice utilises "an epistemological voice for knowing, a practical voice for doing, and an ontological voice for being and becoming" (Maringe, 2014, p.5). These three dimensions describe the key elements needed to comprehend the nature of being vulnerable (Batchelor, 2006).

Therefore, on reflection, HEIs should concentrate on the creation of a space for vulnerable students to share their narratives in order to provide the adequate scaffolding needed to have their voices, needs and challenges heard. Giving vulnerable students voice is related to hearing, listening and doing. Doing can be defined as the action that will include active engagement "with the depth of meaning siphoned from vulnerable students' lived experience" (Maringe, 2014, p.5). In that sense, vulnerability is the significant characteristic of life, that can be traced at the heart of the essence of the human condition, of organisational conditions, of systemic conditions, and of the global condition.

Research in education can become an answer to the vulnerability of the humans' condition, their organisations, their communities and their systems (Füssel, 2007). Therefore, exploring the human, organisational, systemic, and even global conditions through vulnerability can generate conditions, which free others from the fetters of their daily life vulnerabilities. Nevertheless, vulnerability has a inclination to magnify when being interrogated, as there is always a danger of aggravating such vulnerability. Thus, conducting research with vulnerable people intensifies the need for an enhanced sense of ethical and methodological attentiveness. With this in mind, we confronted the idea of developing a theoretical or empirical framework for researching vulnerability in HE.

2.4 Theoretical and Empirical Framework

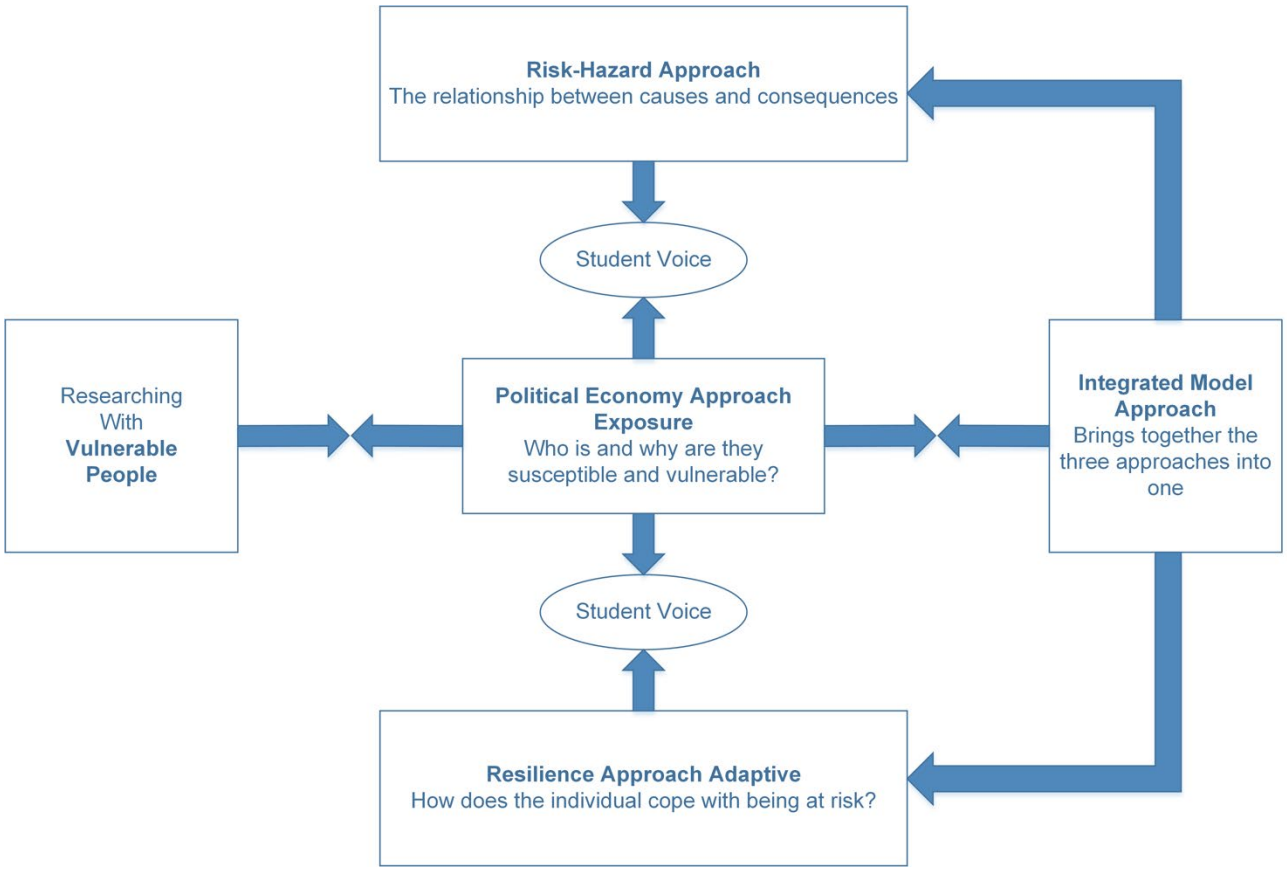
Three main approaches to the study of vulnerability have been identified in the literature (Füssel 2012). Firstly, the *risk-hazard approach*, studies the relationship between elements and factors, which create vulnerabilities, and their consequences. In other words, it examines the relationship between cause and effect.

Secondly, the *political economy approach*, searches for answering the question – who is vulnerable and why? In other words, it tries to comprehend a person's susceptibility to a risk or hazard and the extent to which they feels included or excluded according to their vulnerabilities. It indicates not only socioeconomic vulnerability exposed to multiple stresses, but to internal social vulnerability or cross-scale social vulnerability, that is, vulnerability within the person at risk, in relation to one or more social situations.

Thirdly, the *resilience approach* asks the questions– how does a system, a group or an individual affront the hazard and how do they deal with vulnerability. In other words, it examines a person's capacity to manage with and adapt to a stress.

The three approaches help the us understand vulnerable students and their needs better. Nevertheless, since all three approaches interpret different aspects of vulnerability, an integrated approach combining all three of them to studying vulnerability amongst students at risk was adopted, as illustrated in Figure 1.

Figure 1. *Theoretical framework: Theorising vulnerability research in HE (adapted from Batchelor 2006 and Füssel 2007)*



3. Research Methodology

The purpose of this study is twofold: to describe the preferred teaching styles of vulnerable students at a Greek University and to identify their learning needs and difficulties related to course delivery.

3.1 Methodological challenges associated with researching vulnerable students

In designing and conducting the current research, a range of methodological challenges were identified which are briefly defined below.

3.1.1 Accessing the sample

Gaining access to vulnerable students provided formidable challenges. To avoid labelling, which may aggravate stigmatisation and exclusion (Goffman, 1982), a decision was made that students willing to participate must: a) self-identify, rather than be identified externally by someone else, posing ethical questions associated with

anonymity and confidentiality b) have received at least one time some of the supportive services of the accessibility unit of the University of Piraeus.

Prior to conducting the study, ethical approval was obtained from the institutional board as well as agency approval from the four departments. Then an email was sent to the accessibility unit[10], which was subsequently distributed to students. The email did not mention the notion of being vulnerable, but only indicated an interest to recruit for the research those students who felt they wanted to share their experience about studying and, especially, to identify their learning needs and challenges. Students were assured that their participation was voluntary, their responses would remain confidential, and that they could withdraw at any time without incurring negative consequences. Questionnaires were submitted online and anonymously. Data collection took place midway through the 2018–2019 academic year to (a) ensure that students had sufficient information upon which to evaluate their teachers' effectiveness and (b) to minimise any honeymoon biases that may occur at the start of students' relationships with their 'new teachers' at the beginning of the academic year (Beauchamp et al., 2010).

3.1.2 The role of generative deception

It can be claimed that by not telling participants that they were being invited to represent vulnerable students, the approach could have been deceptive. However, much evidence shows that students generally do not want to be associated with labels, which may be construed to be negative. They usually choose to steer away from participating in research in which they seem to be presented as victims or in deficit (Maringe, 2014; Swanson & Ward, 1995). For this reason, we decided that avoiding conventional labels would aid to yield a valuable sample of participants for the research.

3.2 Participants and Student Grouping

The sample was made up of 1808 university students of four departments (Banking and Financial Management, Business Administration, Statistics and Insurance Science, and

[10] This primary accessibility unit has been set in order to offer psychosocial support (counselling centre) to students in need. To be more specific, this unit is part of a project co-financed by Greece and the European Union (European Social Fund-ESF) through the Operational Programme "Human Resources Development, Education and Lifelong Learning 2014- 2020". The project aims to offer support to students with low family income or a certified disability, monitor their psychosocial and learning needs, increase their accessibility to psychosocial care, and improve their academic outcomes.

Industrial Management and Technology) of the University of Piraeus, who at least once during the previous year contacted the accessibility unit. Among them, 978 defined themselves as vulnerable students[11]. We provide evidence that in self-defining themselves as vulnerable, these students are indeed coming forward and signaling their perceived fragility. This group should be treated cautiously, and we will discuss this definition of vulnerability later in the study. The other 830 of students in the sample asked at least one of the services of the accessibility unit and we are going to consider their different needs as well. 51.66% were women and 48.34 men. Most of the students (72.83%) claimed to attend class frequently or always, while 18.67% said they attended class sometimes, and 8.5% stated that they rarely or never attended class. The vast majority of them (90.93%) pointed out the need to have at their disposal supportive teaching material. Accordingly, 94.58% expressed the need for extra supportive teaching hours. Over half of them (54.31) asked for career counselling sessions. Lastly, few of them asked for extra digital material (23.67%) and psychological support (20.02%).

Table 1. *Average characteristics of Vulnerable Students*

	Freq.	Percent
Vulnerable student		
Yes	978	54.09
No	830	45.91
Gender		
Male	874	48.34
Female	934	51.66
Department		
Business Administration	600	33.08
Banking & Financial Management	80	4.41
Industrial Management & Technology	432	24,14
Statistics & Insurance Science	696	38.37
Attendance		
Always	1.316	72.83

[11] They responded positively that they belong to one of the following categories: have some form of disability, psychological problem or special learning difficulties; are second language learners; are from fragile socioeconomic backgrounds; are from environments with inherent prejudice; learn in highly gendered curricula areas; graduated from schools in puzzling circumstances.

Often	338	18.67
Sometimes	94	5.19
Rarely / Never	60	3.31
Services Needed		
Supportive teaching material		
Yes	1.644	90.93
No	164	9.07
Supportive teaching hours		
Yes	1.710	94.58
No	98	5.42
Career Counselling		
Yes	982	54.31
No	826	45.69
Psychological Support		
Yes	362	20.02
No	1.446	79.98
Extra digital material		
Yes	428	23.67
No	1.380	76.33

3.3 Measures of teaching style

All participants responded to the 4 items of the *Teaching Style* construct adapted from the short version of Teacher Effectiveness Questionnaire in Greek Higher Education (TAGGED) presented in Chapter 3. The questionnaire was related to courses in these four subjects: mathematics, economics, statistics and ICT. Participants indicated their level of agreement on a scale ranging from 1 ("I fully disagree") to 5 ("I fully agree"). A principal component factor analysis with varimax rotation was conducted on the 4 items. This analysis yielded a single factor for *Teaching Style* (eigenvalue= 2.73), and Cronbach's alpha presented good internal consistency (.84)[12].

[12] Factor loadings are reported in the Appendix Table A1.

3.4 Empirical strategy

We started our analysis by comparing vulnerable students with the other students in terms of their evaluation of teaching style. To carry out the empirical analysis, we used an econometric approach to be able answer to this question: anything else equal, does being vulnerable change students' opinion about the teaching style of teachers? The econometric model was as follows:

$$Y_{isd} = \alpha + \beta Vulnerability_{isd} + \lambda X_i + \tau_d + \gamma_s + \varepsilon_{it} \quad (1)$$

where the suffix "*irst*" denotes the *i-th* student in department *d* and subject *s*. Y, the dependent variable, is the teaching style, as defined in section 3.3. X is a vector of students control variables (gender and level of attendance), $Vulnerability_{isd}$ is a dummy equal to one if the student defined himself as vulnerable. γ_s and τ_s are fixed effects for the subject of the course and the department and ε is an error term. We estimated equation (1) using a linear OLS model, progressively adding to the equation each set of fixed effect. The coefficient of interest will measure the difference in the evaluation of teaching style between students that rated themselves as vulnerable and those who did not consider themselves as such, anything else being equal.

We then concentrated our analysis to the different students' needs and estimated the following equation:

$$Y_{isd} = \alpha + \beta Student\ need_{isd} + \lambda X_i + \tau_d + \gamma_s + \varepsilon_{it} \quad (2)$$

In which we include alternatively a dummy variable for each different service asked to the accessibility unit and supposedly needed. All the other variables are the same as in equation (1). In estimating this regression, the coefficient of the variable *Student need* measures the difference in the evaluation of teaching between students that asked for that specific service and those that did not asked for it.

4. Results

Table 2 presents the estimates of equation (1). The estimates show that on average students that consider themselves as vulnerable are more critical in evaluating the teaching style of their teacher, once we added the relevant controls and irrespectively of the set of fixed effect included in the specification. As it can be seen, two students that attend the same course in the same department on the same subject and differ from

one another only in self-reported vulnerability express a statistically different opinion of the instructor teaching style. In particular, vulnerable students' evaluations are around 14 percent of a standard deviation lower than that of other students. No significant coefficient is associated with the gender of the student, while the evaluation of teaching increases with attendance. These results are very preliminary and should be interpreted cautiously, since they clearly reflect some issues related to the self-reported definition of vulnerability, as if the perceived and acknowledged vulnerability truly reveal a difficulty in following lectures and teachers' explanations, and our regression could be picking up this reverse relation.

Table 2. *Evaluation of teaching style by vulnerable students*

VARIABLES	(1) Teaching style	(2) Teaching style	(3) Teaching style
Vulnerable	-0.142**	-0.142**	-0.142**
	(0.0616)	(0.0614)	(0.0574)
Female	-0.0164	-0.0165	-0.0147
	(0.0429)	(0.0428)	(0.0400)
Attendance	0.355**	0.357**	0.332**
Sometimes	(0.150)	(0.149)	(0.139)
	0.279**	0.283**	0.229*
Often	(0.127)	(0.126)	(0.118)
	0.452***	0.455***	0.422***
Always	(0.120)	(0.119)	(0.111)
	-0.0164	-0.0165	-0.0147
	(0.0429)	(0.0428)	(0.0400)
Constant	0.471***	0.516***	-0.971***
	(0.170)	(0.173)	(0.127)
Observations	1,804	1,804	1,804
R-squared	0.194	0.202	0.306
Department FE	YES	YES	NO
Subject FE	NO	YES	NO
Course FE	NO	NO	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We, thus, proceed with the analysis considering alternatively each need for which the unit has been contacted by each student. Table 3 reports the result of the estimation of equation (2).

As it can be seen, the only need that correlates negatively and significantly with teaching style evaluation is career counseling. Students that asked for this service report an evaluation of teaching style 7 percent of a standard deviation lower than other students.

Table 3. *Evaluation of teaching style by vulnerable students*

	(1) Teaching style	(2) Teaching style	(3) Teaching style	(4) Teaching style	(5) Teaching style
Supportive teaching hours	0.0233				
	(0.0957)				
Supportive teaching material		0.116			
		(0.0764)			
Career Counseling			-0.0804*		
			(0.0428)		
Extra digital material				-0.0565	
				(0.0502)	
Psychological Support					0.0183
					(0.0541)
Female	-0.0291	-0.0306	-0.0214	-0.0288	-0.0291
	(0.0428)	(0.0425)	(0.0426)	(0.0425)	(0.0427)
Attendance	0.394***	0.399***	0.405***	0.396***	0.394***
Sometimes	(0.149)	(0.148)	(0.148)	(0.148)	(0.149)
	0.308**	0.302**	0.312**	0.304**	0.308**
Often	(0.126)	(0.126)	(0.126)	(0.126)	(0.126)
	0.474***	0.470***	0.479***	0.472***	0.475***
Always	(0.119)	(0.119)	(0.119)	(0.119)	(0.119)
	-0.0291	-0.0306	-0.0214	-0.0288	-0.0291
Constant	0.339*	0.268	0.412**	0.388**	0.352**
	(0.186)	(0.171)	(0.162)	(0.161)	(0.162)
Observations	1,804	1,804	1,804	1,804	1,804
R-squared	0.200	0.201	0.201	0.200	0.200
Department FE	YES	YES	YES	YES	YES
Subject FE	YES	YES	YES	YES	YES

Once again, our results point out the fact that students that are aware of their difficulty are more critical towards the teaching style of the instructor. In fact, a negative correlation has been found for those students who consider themselves as vulnerable or have asked for career support having in a way realized that their choice of the type of degree was not the correct one.

These results are clearly non conclusive, but they are suggestive of a discomfort that some sub groups of vulnerable students have. An ideal empirical research would indeed try to compare more clearly defined vulnerable students with the other students. Only in this way, in fact, differences in need in university classes will clearly emerge and could be studied more in depth.

5. Conclusions and recommendations

The chapter has gone some way, in the limited context of the data, to make a strong case for locating vulnerability as a generative theoretical framework for exploring the lives of students at risk in HE. Based on the literature and the empirical study, a key contribution of the chapter is the development of a design model for researching student vulnerabilities at Greek HEIs.

Thus, through the development of this design model, there is a two-fold need that has been emerged: to broaden access and reinforce diversity and inclusiveness, alongside the opening up of an increasingly competitive higher education "marketplace" (Dooris et al., 2017).

Additionally, taking cautiously into consideration the preliminary results of the empirical analysis, we came to some preliminary conclusions. Many students that are facing some kind of vulnerability either because of internal or external factors do not want to be self-defined as vulnerable in order not to be associated with labels and thus not to be discriminated or stigmatized. But in order to certify that suitable support is in place, it is imperative that HEIs continue to encourage vulnerable students to disclose prior to commencement of studies. Cultural change is required and HEIs should be more proactive in encouraging students to disclose. A starting point could be at university open days and career fairs, an idea also argued by Mortimore (2013).

Moreover, although the University of Piraeus has formulated inclusive policies and established vulnerable student support services, a gap between rhetorical policy and practice is apparent, with most vulnerable students struggling to receive ad hoc support or being more critical regarding the offered teaching styles. As such, the ideal of

constructing fully inclusive institutions in which anticipatory adjustments are inserted will undoubtedly take some time to accomplish.

Furthermore, we identified a lack of information to support vulnerable students in making choices about their futures, principally in relation to gaining information about pursuing HE. Therefore, without information to make informed choices, vulnerable students not only experienced stress and anxiety but also difficulty in preparing themselves for HE. This multi-faced insecurity follows them during their studies and their early career choices and challenges.

Again, according to students' responses, it is clearly suggested that there must be a commitment on the part of HEI to develop student support services and personal development planning must be embedded.

To conclude, as Konur (2007) suggested vulnerable students or students at risk should have opportunities to reach the same academic standards as their non-vulnerable peers – and the issues raised within this chapter that have come directly from these students would be a valuable starting point for proactive action.

6. Limitations

Although the study sheds light on a growing line of research on different learning styles and needs in higher education, there is a number of limitations that should be taken into account. It should be emphasized that the results cannot be generalized to other University disciplines. Longitudinal data would provide valuable information about how vulnerable students evolve during university education. Finally, we need more information from other instruments to reach a sufficient understanding of the web of individual variables contributing to overcoming or mapping the learning difficulties that vulnerable students affront.

7. Future research

The present study is contributing to the exploration of learning needs and difficulties of vulnerable students at a Greek HEI.

Further exploration of vulnerable students' profiles would enrich our understanding of learning and interventions in higher education. A SEM model study taking account of a broad range of individual variables would provide a "vehicle" to figure out the obscure picture of the inter-play between personality, psychological, and learning variables. This could provide input for further person-oriented studies that will illuminate the way individual variables involve with inclusive learning.

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Appendix 1: Statistical Information

Table A1. *Factor loadings*

Factor analysis/correlation — Number of obs = **1.808**
Method: principal-component factors — Retained factors = **1**
Rotation: (unrotated) — Number of params = **4**

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	2.54355	1.98357	0.6359	0.6359
Factor2	0.55998	0.03003	0.1400	0.7759
Factor3	0.52995	0.16342	0.1325	0.9084
Factor4	0.36653	.	0.0916	1.0000

LR test: independent vs. saturated: chi2(6) = 2325.56 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor 1	Uniqueness
The content being taught was well organised.	**0.7977**	**0.3637**
The teacher stimulates interest in the topic of the course.	**0.7965**	**0.3656**
The teacher delivers course-related concepts in an effective way.	**0.7961**	**0.3663**
The teacher encourages students to participate and ask their questions.	**0.7994**	**0.3609**

Conclusions

Higher education institutions have been facing challenges related to their efficacy and relevance in the context of higher education, especially in the west world. Thus, in today's competitive academic environment where students have many options available to them, factors that enable higher education institutions to attract and retain students should be seriously and furtherly studied. Higher education institutions, which desire to obtain and preserve a competitive edge in the future, may need to begin searching for effective and creative ways to attract, retain and foster stronger relationships with students.

Through this study, an immediate need to initiate a brand-new quality dialogue in higher education has been raised, wherein transformation is looked at from the perspectives of students, faculty, leadership, government, society, that is, all stakeholders.

Through this brand-new quality dialogue, firstly, the role of the teacher and the expectations of the students should be clearly identified. Thus, taking into consideration this aspect, we conducted a thorough scoping review in order to enhance understanding and further conceptualise teacher effectiveness in higher education from both practical and research-driven perspectives. We have discovered that teacher effectiveness should essentially include competence in four areas (teaching style, course organisation, student engagement and determining progress). Actually, this scoping review introduced an initial step forward in understanding evidence-based practice in the classroom. However, it is important to point out the limitations of this attempt. First of all, the synthesised themes of practice cannot be perceived as a complete list of all possible teacher practices. Instead, the themes represent the most important practices relating to the implementation of teacher effectiveness. Thus, additional research is needed to evaluate teacher effectiveness together with students' perceptions of effectiveness and assessments of an effective classroom climate.

Secondly, in order to seriously promote quality in higher education, the need of a simple and easily adjusted instrument to identify good aspects of an institution and areas which need improvement is preponderant. That is why in the second essay we conducted a SWOC analysis at a Greek higher education institution. This analysis was mostly conducted in order to find ways to guide the institution to overcome weaknesses and challenges. A supplementary general experience and conclusion, which can be drawn from this SWOC analysis, is that there are usually no easy solutions to the more profound weaknesses and challenges of the methodologies and practice of impact evaluation. Through this business model analysis, we identified the strengths and the opportunities that can occur in a fast-growing institution such as the University of Piraeus. We underlined the fact that some weaknesses and challenges cannot be overcome without institutional and framework reforms and society preparation. However, we did not proceed with the mapping of the good practices in order to develop new forms of collaboration.

Quality in higher education should be also related with approaches and practices easily adaptable. That is why in the third essay we emphasised on the introduction and implementation of a short student evaluations of teaching questionnaire. This decision of proposing a shorter evaluation instrument emerged by the study of the literature review and the revelation that response rates of students' questionnaires have been gradually decreasing over the last decade. Therefore, we collected primary data using an ad hoc questionnaire addressed to undergraduate students and validated the scale exploring the status of quality management in the case of a Greek university located in the prefecture of Attika. Despite the positive results, there are limitations to this study that should be noted. The fundamental limitation associated with this study is that the sample was based only on undergraduate students at a Greek university. Hence, generalisations to universities in other countries should be made with caution. Additionally, the issues of culture and diversity are not addressed in the current framework of student engagement. Further research should also look at student engagement predictors and consequences, paying special attention to students' academic performance, health and well-being.

To conclude, any reference to quality in higher education could not disregard issues of inclusion. For this reason, the fourth essay, even though it was COVID-19 affected, was

focused on students' vulnerabilities regarding the obtained learning outcomes. For the last essay, we had to overcome a very severe challenge: the difficulty to find the right sample. Even if we asked from the accessibility unit of the institution in which we conducted the research to provide us the list of vulnerable students, then almost half of these students, when answering the questionnaire, by the fear of being stigmatised did not identified themselves as vulnerable. This parameter underlined, except of some validity issues of the sample, the fact that higher education institutions have to encourage vulnerable students to disclose prior to commencement of studies. Cultural change is required and higher education institutions should be more proactive in encouraging students to disclose. Again, according to students' answers, there is a clear need for constant support services and individualised development planning.