Proceedings of the 3rd International Conference on Higher Education Advances
Preface

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Abstract
The series of HEAd conferences have become a leading forum for researchers and practitioners to exchange ideas, experiences and research results relating to the preparation of students and the organization of higher educational systems. The third edition (HEAd’17) was held in Valencia, Spain during 21-23 June 2017. This preface gives an overview of the aims, objectives and scope of HEAd’17, as well as the main contents of the scientific program and the process followed to select them.

Keywords: Higher education; innovative materials, educational technology, evaluation and assessment, globalization in education.
1. Preface to HEAd’17

This volume contains the selected papers and posters of the Third International Conference on Higher Education Advances (HEAd’17), which was held in Valencia, Spain during 21-23 June 2017. This third edition consolidates the series of HEAd conferences as a leading forum for researchers and practitioners to exchange ideas, experiences and research results relating to the preparation of students and the organization of higher educational systems.

The selection of the scientific program was directed by M. Cinta Vincent-Vela, M. José Corbatón Báguena and Jorge García Ivars, who led a team of 182 program committee members representing 46 countries in all five continents. Following the call for papers, the conference received 342 full paper submissions from 51 different countries. All the submitted papers were reviewed by at least two program committee members under a double blind review process. Finally, 108 papers were accepted as full papers for oral presentation during the conference. This represents an overall full paper acceptance rate of 31%, in line with the acceptance rate of the previous editions. This selection ensures a high-quality program which is greatly valued by the research communities. Additionally, 20 submissions were accepted as short papers and 33 as poster communications, all of them receiving high review scores and published by UPV Press in this volume. The program committee chairs congratulate all the authors for having their papers accepted in the proceedings of such a competitive conference.

HEAd’17 also featured three keynote speakers that overviewed important and actual topics: Assoc. Prof. Michelle Morgan (Bournemouth University) talked about postgraduate study – the next academic employability frontier. The talk by Prof. Piet Kommers (Universiteit Utrecht) focused on learning for societal evolution. Finally, Assoc. Prof. Javier Oliver (Universitat Politècnica de València) dealt with the development of the institutional project about the generic student outcomes in the host institution.

The conference was hosted by the Faculty of Business Administration and Management of the Universitat Politècnica de València, which has been recently ranked as the best technical university in Spain by the Academic Ranking of World Universities (ARWU) 2015. Valencia is a city of culture and heritage. It is the third largest city in Spain and its location on the shore of the Mediterranean Sea provides their citizens and visitors with a privileged weather.

The organizing committee would like to thank all of those who made this year’s HEAd a great success. Specifically, thanks are indebted to the invited speakers, authors, program committee members, reviewers, session chairs, presenters, sponsors, supporters and all the attendees. Our final words of gratitude must go to the Faculty of Business Administration and Management of the Universitat Politècnica de València for supporting, once again, the HEAd conference, making it possible to become a great event.
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Preface

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Index

Resigned Indifference: The importance of Cultural Competence Education........... 1

Designing a New Video Game App as an aid for Introduction to Programming classes that use C Programming Language ........................................... 10

Impact of students’ performance in the continuous assessment methodology through Moodle on the final exam ................................................................. 17

Strategies to assess generic skills for different types of students ...................... 26

Outcome assessment of the online English learning and management system: a project on educational technology application to English learning in Taiwanese polytechnic higher education ......................................................... 34

Freshman African engineering student perceptions on academic feedback A case study from Digital Systems ........................................................................... 42

Comparative analysis of higher education study programs’ quality, efficiency and effectiveness .................................................................................................. 55

The Uniza KZN Students’ Perspectives of Student Success ............................... 64
Flipping the classroom and turning the grades - a solution to teach unbeloved phase diagrams to engineering students .................................................................73

Improvement of learning outcome in material science through inverted classroom techniques and alternative course assessment ...........................................82

Short Story in an ESÑ Freshman English course: Bridging the Gap between language and literature .........................................................................................91

A new approach to the introductory teaching of Computing and IT at the Open University UK .............................................................................................101

Autonomy-supportive learning with VaKE (Values and Knowledge Education) in teacher education. Fostering empathy and cognitive complexity ...109

Authentic experiential work in the socialization of undergraduate students: an EHEA-framed epistemological consideration ...........................................117

Impact of a teacher development programme on approaches to teaching in higher education .........................................................................................125

Satisfaction and Getting a Career: Employment Expectations of Undergraduate Students and Their Use of Support Services ............................133

Testing the Trust Game with undergraduates: An experiment with wealth heterogeneity .........................................................................................143

Enquiry Based Learning: A Valuable Mechanism at Level 9? ......................152

Effect of an educational game on student’s learning: different approaches for evaluation .................................................................................................161

Pedagogies of Academic Writing in Teacher Education: from Epistemology to Practice to back against .................................................................169

An affordable and modular development environment for PLC-Training............179
Index

Exploring Pecha Kucha in EFL Learner’ Public Speaking Performances .......... 189

Attitudes and attitude change of students towards the relationship between theory and practice ................................................................. 199

Financing Quality in Mexican State Public Universities.......................... 206

University and Enterprises Linkages for Regional Development in México ...... 214

Facilitating epistemological access by developing students experiences of undergraduate research................................................................. 224

New pedagogical configurations for traditional learning tools: a proposal ........ 231

Liberalism and race equality in higher education: The shift from the mandatory to the persuasive .................................................................................. 239

Applied learning through international collaboration: Using research on domestic violence as a learning tool................................................................. 248

AIM-Mobile Learning Platform 3.0: Design of new functionalities to integrate smartphones in the teaching-learning process ........................................ 259

Assessment of microproject-based teaching/learning (Micro PBL) experience in industrial engineering degrees................................................................. 268

Sciences come alive for first-year university students through flipped classroom ................................................................. 277

Enhancing business students’ skills through a cross-curricular activity .......... 284

Personal development, resilience theory and transition to university for 1st year students .......................................................................................... 293

Reasons for the poor employability of the first degree in students’ perceptions ................................................................. 303
Teaching agile methodologies in a project management course ..........................312

In Search of Reusable Educational Resources in the Web.................................321

The effect on Engineering Educational Accreditation on Materials
Engineering Education in University of Seoul......................................................329

Rubrics use and in-class feedback in higher education: Students’ perceptions
and their effect on academic achievement..........................................................338

The relationship between demographics and the academic achievement of
engineering students..............................................................................................347

LearnTeamPlenum-A Pragmatic Approach for Inverted Teaching ......................356

Universities and standardization instruments: the willingness to put an end to
the organized anarchy............................................................................................364

Integration of a MOOC into a traditional third-level e-learning platform.............373

Learning spaces around the university: Factors that affect the preferences for
a space 382

Comparison of traditional lecture and flipped classroom for teaching
programming.........................................................................................................391

Prediction of college grades in the sample of Norwegian students......................399

A Note on the Pedagogies about Comprehensive Learning: An Empirical
Study in Teaching Finance Courses .................................................................405

A successful institutional policy of quality postgraduates at the UABC ..............418

“University Challenges”: Addressing Transition and Retention through
Games-Based Learning.........................................................................................427

Innovative Learning Analytics Research at a Data-Driven HEI ..........................435
Index

Researcher, PI and CEO-Managing a Large Scale Environmental Restoration Project in New York City; Creating Expectations, Establishing Structure, Protocols and Realistic Outcomes ................................................................. 444

Methodology of the comprehensive teacher training................................................. 455

Teachers’ perceptions about their practices: A qualitative research at the University of Padova ........................................................................................................ 460

Developing Communication Competencies Through E-Learning: The Motivating Potential of Adaptive Video Role Play ............................................................. 468

The New Function of the Student Leisure in Russian Education ................................. 477

What should students learn in the digital world? ...................................................... 485

University Teachers’ Perceptions about Assessment Practices: A Study in Five Portuguese Universities .......................................................... 494

Innovative Food Systems Teaching and Learning: overcoming disciplinary and teaching silos to fix the food system ................................................................. 503

Embedding Information Rights into Higher Education in the UK ............................... 511

Public University Models for Education – from Innovation to Entrepreneurship .................. 520

Pedagogy and content evolution in cross-border higher education: Evidence from an American-Singaporean cross-border partnership ........................................ 531

The ICT and gamification: tools for improving motivation and learning at universities .................................................................................................................. 540

An Action Day for First-Semester Students, fostering Self-Reflection, Networking and many other Skills .............................................................. 549

Internationalization and Digitalization in Engineering Education ............................. 558
What if students propose their own examinations? An introductory experiment ............................................................................................................. 566

Design, implementation and evaluation of an authentic assessment experience in a pharmacy course: are students getting it? ............................................................................................................. 574

Using open software to teach resource assessment of renewable energies ........ 584

Driving institutional change: challenge based learning for the University of the 21 st Century ................................................................................................................................. 592

Using COCA to Foster Students’ Use of English Collocations in Academic Writing ................................................................................................................................. 600

Teacher training: a model for introducing innovative digital methodologies for learning Mathematics ................................................................................................................................. 608

Teaching Theory in Applied Degrees: A Critical Examination of Curricular Design for Translation Theory Subjects in Comparison with the Students’ Expectations ................................................................................................................................. 617

Innovative 3D Animations for Teaching Electromagnetic Field Theory and its Mathematics in Undergraduate Engineering ................................................................................................................................. 625

“Nobody is strange”: mobility and interculturality in higher education from the viewpoint of a group of Portuguese international music students ................................ 633

Gamification in teaching Maintenance Engineering: A Dutch experience in the rolling stock management learning ................................................................................................................................. 641

Trends in student behavior in online courses ................................................................................................................................. 649

Project Based Learning experience with engineering students for the design of steel structures ................................................................................................................................. 658

Improving the acquisition of English language competencies with international workgroups of university finance students ................................................................................................................................. 667
Index

Effective Integration of Gamification and Learning Management Systems for Creating Gamified Learning Arrangements .......................................................... 679

Project studies integrated into the working processes of companies ..................... 687

Insights into the expectations of mobility students: the impact of Erasmus in their future professional careers ................................................................. 696

The Interactivity of a Virtual Museum at the Service of the Teaching of Applied Geology ......................................................................................... 705

Block Teaching as the Basis for an Innovative Redesign of the PG Suite of Programmes in University of Bedfordshire Business School ................................ 713

The CAMBRIA case: Learning through experience ............................................. 726

Feedback-based Learning Through Online Feedback Systems in Higher Education ............................................................................................................. 734

Student Evaluation of Teaching (SET): Clues on how to interpret written feedback ......................................................................................................... 743

Introducing a Cross-Course Teaching Innovation to Enhance Group Project Performance .................................................................................................. 750

Makerspaces in Higher Education: the UR-Maker experience at the University of La Rioja ......................................................................................... 758

Examining Preservice Teachers’ Self-Efficacy for Enhancing Literacy of Diverse Learners through Music ............................................................... 766

How about equality and equity in higher music education? A theoretical framework for researching quality of music teaching and learning .................... 775

Students service learning experiences in Mexican Microenterprises ................ 784

A competency development approach to learning for employment .................... 793

XVII
A Transformative Approach to Social Work Education .................................801

Students’ surveys and involvement in educational activities within virtual environments are related to students’ satisfaction in e-learning graduate programs................................................................................................................810

Development of tools for internal control and leadership recognition in working groups ..........................................................................................................................818

The influence of competences in business higher education: a student’s approach .................................................................................................................................826

JALEA: an authentic and personal path to JApeneSE LEAruing.........................835

Education as absorptive capacity and its role for economic growth ..................844

New opportunities of computer assessment of knowledge based on fractal modeling .................................................................................................................................854

An educational software for teaching soil consolidation ..................................865

Self-learning of the direct soil tomography problem using a specific educational software .......................................................................................................................873

Use of webcasting and development of critical thinking skills ..........................882

Use of emerging technologies in flipped classes .............................................891

Boosting the Employability of Students and Staff at European Higher Education Institutions: An Educational Framework for Entrepreneurship, Internationalisation and Innovation .................................................................899

The First Step to Becoming a Kindergarten Teacher: Difficulties and Challenges .................................................................................................................................908

The dialogical approach: education for critical consciousness ..........................915
Index

Objective versus subjective methods to assess discipline-specific knowledge: a case for Extended Matching Questiones (EMQs) .............................................. 924

Using Blog Comments as Feedback to Promote the Metacognitive Development of Creativity ........................................................................................... 933

Making friends with your team: The benefits of raising learner awareness of intra-team relations .................................................................................... 941

Undergraduates’ Views of Assessment in Higher Education: A Study carried out in Portugal ........................................................................................... 950

An Interdisciplinary 4th Level Education Model: Connected Health ......................... 956

The Role of Coherent Research-Based Curricular Unit in Mediating Students’ Integrated Vision of Human Impact on the Environment ...................... 965

“Walking a tight rope”-a risky narrative of transition to University ......................... 974

Internal determinants of university student employability. Construction and validation of scales ................................................................................................ 983

Fostering entrepreneurship in an international university collaboration ......................... 991

Personal development in the virtuality; online activities for individual and group growth ......................................................................................................... 999

Teaching competences in Italian universities: an attempt of classification to inform professional development processes .......................................................... 1007

Developing problem solving competences through the resolution of contextualized problems with an Advanced Computing Environment ......................... 1015

Teamwork: Assessment of teamwork competence in higher education ...................... 1024

Enhance, Extend, Empower: Understanding Faculty Use of E-Learning Technologies ......................................................................................................... 1033
Practise makes perfect: developing critical thinking and effective writing skills in undergraduate science students .............................................................. 1044

Critical analysis and digital literacy in learning social psychology ...............1052

Virtual USATIC: A totally on-line conference to share good practices and experiences using ICT on Higher Education .............................................................. 1060

Evaluating Learner Engagement in Arts Education: Perspectives from Music and Drama in Education ...................................................................................... 1068

Environmental training at companies. The case of Volkswagen Navarra... 1077

Public Higher Education Governing Boards Composition and Regional Difference in U.S. ................................................................................................ 1085

Developing engineering students’ engagement with Circular Economy practices ............................................................................................................... 1095

Assessing resilience at University .......................................................................1104

Online Students’ Expectations Differ: The advantage of assessing students’ expectations in online education ................................................................. 1113

An Investigation into Third Level Module Similarities and Link Analysis ......1121

Is student procrastination related to controlling teacher behavior? ............... 1130

Automated Program Analysis for Novice Programmers ................................. 1138

Animal welfare and Ethics course for post-graduate at Veterinary School: how to improve assessment methodologies with a bottom-up approach ..........1147

Competency Based Education – Current Global Practices ......................1156

Student Auditing of University Social Responsibility – Reform through Reflective, Experiential Learning? ................................................................. 1165
Index

Getting in and getting out: Predicting the likelihood of graduation of master’s program students...........................................................................................................1176

Academic Managers’ Perspective on Research Management in Higher Education Institutions across Romania ..................................................................................1185

Differences in Research Literacy in educational Science Depending on Study Program and University........................................................................1193

Conceptualizing a Theoretical Framework: Embodied narrative Knowing .......1203

Team-Based Learning in Chemistry Courses with Laboratory Sessions ..........1213

Aprendo Enseñando: Autonomy, Creativity and Technology to Promote Mathematical Learning........................................................................................1219

Developing speaking competences in technical English for Spanish civil engineering students........................................................................................1228

Postgraduates in education, exploring their sense and meaning of education.....1237

Relative importance of college success predictors: fluid intelligence, crystallized intelligence, and grit..........................................................1246

Learning Pronunciation with OERs: a practical case for Medicine students .....1255

The reciprocal value of Doctoral Design Research when housed within a Creative Business Center: a case study in Porto, Portugal.........................1263

A case-based tool to assess college students’ perceptions about ethical competence..............................................................................................1271

Action research plan to boost participation in college students ......................1278

An agreement-based approach for reliability assessment of Students’ Evaluations of Teaching........................................................................1286
Are pre-service Primary School teachers prepared to teach science by inquiry? ......................................................... 1294

An innovative cooperative model for the Master Degree Project of Architecture. Overcoming the traditional system .................................................. 1302

Use of LinkedIn in teaching and labour monitoring of the Master in Hotel Companies Management ................................................................. 1310

Representation of the Student-Center Learning Approach on University Website .......................................................................................... 1316

Promoting Creativity and Innovation in Initial Teacher Technical Education in Ireland: A Case Study .............................................................. 1325

Leadership Academic Program Development in North America: Theoretical and Contextual Challenges ............................................................... 1334

Implementing a Freshman Engineering Design Experience at the University of Washington .................................................................................. 1343

Teaching Agile Development with DevOps in a Software Engineering and Database Technologies Practicum ............................................................ 1353

University Educators’ Instructional Choice and Their Learning Styles within a Lesson Framework ...................................................................... 1363

Cracking the Cocoon: Promoting Self-Directed Lifelong Learning in EFL Pre-service Teachers in Chile Through the Guided Use of Social Media Tools. 1371

Using open software to teach resource assessment of solar thermal and geothermal energy .............................................................................. 1381

Project-Based Learning and Self Directed Learning ................................................................................................................................. 1388

Project Learn in English: A CLIL experience at the Faculty of Science of the University of Extremadura ............................................................... 1396
Resigned Indifference: The importance of Cultural Competence Education

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Abstract
This paper presents the findings of a PhD study, which explored how nurses’ deal with their main concern when caring for patients from diverse cultural and ethnic backgrounds. Utilising theoretical sampling and the principles of a grounded theory approach, focus groups (n=10) and individual face-to-face interviews (n=30) were conducted with student and qualified nurses, in one region of Ireland. As data were collected, it was simultaneously analysed using constant comparative analysis during open, selective and theoretical coding. Uncertainty was the consistent main concern that emerged for participants in this study. Feelings of ambiguity of how to act were further influenced by a lack of knowledge, an awareness of potential ethnocentric beliefs and the culture of the organisation in which participants learn and work in. Resigned indifference explains how participants in this study dealt with their uncertainty when caring for patients from diverse cultures. It explains how participants adopted a range of disengagement strategies. Instead of doing what they sometimes knew to be right, participants adopted a range of disengagement strategies which were underpinned by a resigned indifference. The culture within the organisation allowed the disengagement strategies and indifference to also go un-noticed. As a result culturally insensitive care went unchallenged, often un-noticed and subsequently unchanged. The discomfort associated with providing culturally insensitive care was eased with shifting the blame to professional preparation or organisational constraints. As a consequence culturally insensitive care is sustained and perpetuated. This paper highlights the need for imaginative learning and teaching approaches that will replace uncertainty with curiosity and resilience, apathy with courage and commitment both at individual and organisational levels.

Keywords: Cultural Competence Education; Cultural diversity; Cultural Difference; Nursing; Nurse Education
1. Introduction

There is a wealth of evidence in the literature which suggests that nurses experience a range of challenges when caring for patients from diverse cultural and ethnic backgrounds. However, there is a need to further understand how care is organised in healthcare settings as well as what influences nurses attitudes, practices and behaviour when providing quality care in a culturally appropriate way. There is also a need to explore how the culture of the organisation can help or hinder nurses’ ability to provide culturally competent care. Although the current literature highlights the different complexities associated with culture competence, it fails to comprehensively identify the extent of the challenges experienced or explain in any depth how nurses address them in their daily practice. From reviewing the literature, it is evident that it remains unclear how nurses prioritise care needs of patients with different cultures and what influences these priorities. This paper presents some key findings from a PhD study (Markey 2017) which explored how nurses deal with their main concern when caring for patients from diverse cultural and ethnic backgrounds, in an Irish context. Drawing on findings, this paper makes a number of recommendations for cultural competence education in the classroom and practice setting.

2. Background

There is a wealth of international literature highlighting the importance of providing culturally competent care (Campinha-Bacote 2011; Jenks 2011) and more recently culturally competent compassion (Papadopoulos et al. 2016). However, global reports of culturally insensitive care continue. Cultural competence education is the most commonly reported initiative recommended within the literature as a means of addressing such issues. This call is not unique to nursing, as there are also increasing calls for effective cultural competence education in the preparation of other professionals (Whiteford and Wright St-Clair 2002; O’Shaughnessy and Tilki 2007). However, there remains a lack of consensus within the literature as to how cultural competence education should be structured and organised. This requires a deeper understanding as to what the daily challenges are for professionals during cross-cultural encounters and what influences their attitudes, behaviours and practices. Although there is a wealth of evidence within the literature describing various approaches to delivering effective cultural competence education, there is a lack of consensus with regards to the most effective approaches. It is striking how little is known about the challenges, problems and pitfalls of cultural competence education. Although this paper answers some of these questions, it raises other questions that require further consideration.

Feeling ill prepared to care for patients of different cultures has been widely reported as a challenge for nurses globally. Studies carried out in Ireland (Lyons et al. 2008; Tuohy et al.
2008) and more globally (Jirwe et al. 2009; Starr and Wallace 2009) all highlight the difficulties nurses face when they feel ill prepared to care for different cultures. In particular these studies highlight how nurses feel unsure of how to act and as a consequence are generally fearful of getting it wrong. However, these studies fail to explore how nurses deal with these issues in their daily practice, suggesting the need for further research in the area. While there is an abundance of literature on cultural competence, there is a lack of empirical studies exploring how nurses learn and develop cultural competence on a daily basis. This study helps to fill this gap in our existing understanding. The contextual background to this study is reported on in Markey et al (2012).

3. Methods

This study adopted the principles of a classic grounded theory approach (Glaser 1992) aiming for emerging data grounded in participants’ perspectives and experiences. Reasons for choosing a classic grounded theory approach over other grounded theory approaches are reported in Markey et al. (2014). Focusing on the main concern of participants and how they deal with it are key components of classic grounded theory (Glaser 1992). Ethical approval was granted from the University and Region Hospital ethics committees. Anticipating and addressing issues of ethical consideration was fundamental in every step of the research process.

In adopting a subtle realist ontological position, capturing accurately and honestly the views and experiences of participants, remaining non-judgemental, prolonged engagement with data and reflexivity were fundamental during data collection and analysis. Data were collected using focus groups (n=10) and individual face-to-face interviews (n=30) theoretically sampling student and qualified nurses, in one region of Ireland. It became clear that students’ development of cultural competence was largely influenced by the qualified nurses on the ward, hence signposting the researcher to invite qualified nurses to participate in this study. As data were collected, it was simultaneously analysed using the classic grounded theory methodological principles of open, selective and theoretical coding. Data analysis began with line-by-line in vivo coding transcripts for patterns of behaviour, where key phrases as used by participants own words were noted (Glaser 1992). The data were coded in every way possible, by asking the following questions; what is actually happening in the data? What is the main concern faced by participants? How do participants deal with their concerns? As codes emerged they were clustered into categories. These categories formed the basis for further selective coding exploring how participants dealt with their main concern in practice. Mulling with data, memoing, mind mapping and renaming codes and categories many times were fundamental processes that assisted the conceptualisation of emerging data. Theoretical coding enabled the relationship
of all the categories to be considered in a clear and distinct way and enabled the weaving back of the fractured data that occurred as a result of open and selective coding. The credibility of this study was evaluated using Glasers’ (1998) criterion of fit, relevance, workability and modifiability. This theory fits the phenomenon, has workability in explaining how the main concern of participants is dealt with in daily practice, is modifiable with new data and has relevancy to the participants.

4. Findings
The findings describe the different challenges nurses face and how they dealt with them in their daily practice when caring for patients from diverse cultural and ethnic backgrounds. However, the main concern for participants was uncertainty. A number of factors influence the extent of the uncertainty experienced, such as lack of knowledge, ethnocentricity and the organisational culture. Participants consistently described feelings of uncertainty and as a result were fearful of “doing or saying the wrong thing” during cross-cultural encounters.

“I suppose that you would find it weird at the start and because of that, you are always worried about saying the wrong thing and putting your foot in it. Because you don’t have the nitty gritty of the knowledge required”  (Student Interview 11)

Participants were critical of the cultural competence preparation received during education and training. Although participants appeared to want further information and cultural knowledge, they made few attempts to find out for themselves. Instead, participants used a range of disengagement strategies as a means of dealing with the uncertainty experienced when caring for patients from diverse cultural and ethnic backgrounds.

5. Disengagement Strategies
Participants described how they used a raft of disengagement strategies as a means of dealing with their uncertainties and getting through the day. These disengagement strategies allowed them to disguise the extent of the uncertainties experienced, whilst enabling them to provide care to patients from diverse cultures. Participants also described hiding their uncertainties and knowledge limitations to patients and their peers as a means of self-protecting. This was often described in the context of carrying out a performance and doing what was seen to be needed to get through the day with as little conflict as possible.
“I do think we do stereotype in our heads...we may not....act it out. I was thinking it in my head. Now ...I didn’t let it affect my care, I put my own views aside.” (Student Interview 4)

Although nurses did not want to allow their uncertainties and ethnocentricities to affect the care they provided, they did not feel able to deal with these issues appropriately in their daily practice. In taking such an approach, ethnocentric values, stereotypes and prejudices remain unchallenged and unaltered. The following interview extract illuminates the consistent behaviour described by participants, whereby temporary measures were taken to disguise as opposed to challenge ethnocentricities and stereotypes. This demonstrates the dichotomy between what nurses’ think at a personal level and what they feel they need to do to survive in clinical practice.

“You have values and beliefs, but you have to leave like your personality and personal views at the door or in your car because you have to act in a certain way. You can collect them again on your way out. It’s the only way we can ensure the patient care is not affected” (Student Interview 6)

Participants described how they used a range of avoidance strategies to minimise contact with patients from diverse cultural and ethnic backgrounds as a means of dealing with their uncertainties and fears of causing offense unintentionally. When participants did have contact with patients, they described focusing on the physical aspects of their care only, which was often described as tasks at the detriment of meaningfully engaging during cross-cultural encounters.

“My worry of offending someone is taking over from my ability to care for them...so often I avoid having contact with them as a precaution.” (Student Interview 13)

The culture of the practice setting where nurses learn and work was described as routinizing care. Data highlights that routine assisted to ease the uncertainty experienced as it provided some guidance to their uncertainties. However, not disputing the value of such guidance, the routine described was often rigid, ethnocentric and task-orientated. Participants described various reasons why they needed to fit in with the organizational culture and keeping to the routine that was accepted, took precedence over providing person centered care. Although keeping to the routine helped ease the discomfort associated with feeling uncertain, it facilitated and allowed the disengagement strategies to go un-noticed.

“If I keep to the routine and do as everyone else is doing then it is less likely to illuminate or highlight the bits I don’t know or have a clue about” (Student Interview 19)
However, for others being part of the team required complying with practices and attitudes that they sometimes knew to be incorrect. The need to fit in superseded the need to fulfil moral, professional and legal obligations.

“we want to fit in...we want to kind of...don’t want to be labelled as the kind of awkward nurse...or the one who is always challenging or questioning” (Qualified Nurse Interview 7)

As a result of adopting such disengagement strategies, there were various examples of culturally insensitive care provided albeit as a result of thoughtlessness, ignorance and unwitting prejudices, as exemplified by the following informant.

“But it’s kind of subconscious....well that is what I think anyway nothing bad is intended” (Student Focus Group 2)

6. Resigned Indifference

Participants consistently articulated that culturally insensitive care was rarely intended; however there was a general failure to take action to improve the care described.

“We know it’s wrong but we don’t do anything about it.” (Qualified Focus Group 2)

There was also a lack of confidence to question their own or their colleagues’ attitudes and practices. The fear of being rejected by their peers or failing clinical assessments took precedence over doing the right thing by their patients. Participants described “not wanting to rock the boat”.

“Students will definitely not question or challenge poor practices as that would mean their competencies would be at risk if you know what I mean” (Student Interview 1)

However there was a sense of resigning to the fact that nothing could be done to improve the situation. This was contextualised into adopting various self-rationalising behaviours as a means of self-protecting and easing the discomfort associated with the implications of their actions or omissions. It was easier to blame the organisation for the failure to provide adequate resources, the lack of education and training received or the unprecedented nature of migration to Ireland. Notwithstanding the real pressures nurses experience working in an increasingly complex and diverse healthcare setting, however sometimes such issues were sometimes used as an excuse for the substandard care described. Instead of exploring ways to improve practices and the care provided, participants became resigned to and accepting of the substandard care given to patients from diverse cultural and ethnic backgrounds.
“It’s not our faults, what they expect to happen if they don’t provide us with the staff or interpreters to help us to communicate appropriately with the patient” (Qualified Nurse Interview 8)

Perhaps more concerning was the acceptance of it being acceptable at just doing an “ok job” and doing enough to get by.

“We treat all our patients the same regardless…. And it’s….I think we are doing an OK job” (Qualified Nurse Interview 6)

7. Conclusion and Discussion

This paper presents an overview of the findings from a grounded theory study that explored how nurses deal with their main concern when caring for patients from diverse cultural and ethnic backgrounds. Although this study explored experiences and views of nurses in one region of Ireland, they may be applicable to other professions and contexts. Uncertainty was the consistent main concern that emerged for participants in this study. A number of factors influence the extent of the uncertainty such as lack of knowledge, ethnocentricity and the culture of the organization in which nurses learn and work. Feelings of uncertainty associated with caring for patients from different cultures have been reported by others (Jirwe et al 2009; Hart and Marenco 2014). However, what appears to be missing from this evidence is an explanation of how nurses deal with their uncertainties in practice. There also appears limited evidence explaining what influences nurse attitudes, practices and behaviors when caring for patients from different cultures. This study therefore extends our understanding as it explains how nurses deal with the uncertainty experienced in their daily practice and helps us understand the factors that influence nurses’ attitudes, behaviours and practices during cross-cultural encounters.

Resigned indifference helps explain how and why participants in this study used a range of disengagement strategies when caring for patients from diverse cultural and ethnic backgrounds. It explains how participants reduce the personal discomfort associated with not doing what they sometimes knew to be right, by self-rationalising, justifying their behaviour and shifting the blame for the substandard care described. It explains how nurses self-preserve in times of ambiguity and feel unable to deal appropriately with the daily dilemmas faced in healthcare settings today. Despite participants articulating awareness of the moral, professional and legal responsibilities on nurses to provide quality care, culturally insensitive attitudes and practices were frequently described. However these went unchallenged and subsequently unchanged, raising further questions as to why such approaches to care go unnoticed and remain unchallenged both in the classroom and practice setting. The findings also raise questions as to why nurses feel it acceptable to
provide sub standard care to patients from different cultures and why they choose to do sometimes what they know to be incorrect. Although such reports are not unique to caring for diverse cultures (Francis Report 2012), the findings highlight the need for nurses to stop seeing cultural aspects of care as separate. While acknowledging the individual contexts and the constraints experienced, the ease at doing enough to get by, not rocking the boat and shifting the blame are significant findings that warrant consideration. Although the findings do not imply that participants were weak willed and unable to think for themselves, the culture of the organisation is one that does not encourage or support assertiveness or the challenging of attitudes and practices. It was easier to comply with accepted practices than to risk being rejected or suffer the consequences of challenging those in authority. Therefore, this study emphasises the need to pay careful attention to how cultural competence is taught, learnt and most importantly applied in practice, rather than narrowly considering curriculum content in isolation.

The findings highlight the need to re-shape the core values underpinning curriculum design and development, to ensure a continuous commitment to, and reflection upon personal and professional attitudes, behaviours and practices. Taking responsibility for learning and development must replace the ease at shifting the blame and self-rationalising behaviour. Opportunities to explore values underpinning culturally sensitive care demand rethinking educational philosophies and learning and teaching methodologies both in the classroom and during clinical placements. This does not necessarily require major structural changes but instead requires a shift in thinking. Developing independent and enquiry based learning skills is essential in replacing the uncertainty with curiosity. The findings emphasise the need to help nurses rehearse the skills of questioning, clarifying and challenging when something is not right. They need to understand ethical, legal and professional imperatives and develop courage to challenge ethnocentricity and individual and collective indifference. The challenge for nurse educators is to find the balance between developing knowledgeable doers and emotionally intelligent practitioners that have a greater self-awareness of individual and organizational attitudes that may hinder culturally sensitive care.

References


Designing a New Video Game App as an aid for Introduction to Programming classes that use C Programming Language

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\textbf{Abstract}

This paper describes the use and development of a mobile application as an aid for an introduction to programming class in C, for first year engineering students. One of the biggest problems in teaching programming, and in particular in C is the concept of memory allocation and pointers. To help visualizing these concepts we developed an application in the form of a video game that works on both Android and iOS devices. The paper is inspired Digital Game Based Learning (DGBL) pedagogical theory, studying the kind of learning that happens when playing computer and video games, how to use this medium as a tool for learning, and how to design games for learning. Research has shown benefits in using mobile applications to better engage students and help them learn at their own pace and level. We did some preliminary performance testing on students from two different groups. One group of computer engineering students and another one of non-engineering majors, both groups learning to program, with no previous knowledge of programming, to evaluate the benefits of the application. The results of this test show that there is an improvement in the students understanding in C, and we also noted a very positive attitude of students toward using something as familiar to them as mobile phones to help them understand the material.

\textbf{Keywords:} Computer Education, Educational Video Games, Android, C programming;
1. Introduction

Research has shown benefits in using mobile applications to better engage students and help them learn at their own pace and level. The goal of the project is to integrate tablets and mobile technologies into computer engineering classrooms. The challenge is to maintain the curriculum -what is being learned- while enhancing the learning experience, active participation, prompt feedback and challenging but achievable goals. This paper explores how tablets can be successfully integrated to create a highly innovative, state of the art environment for teaching programming to engineering students.

Teaching C as the first programming language is a challenge. To the usual difficulties of learning programming for the first time (requiring a slightly different way of thinking) we need to add that C is one of the most difficult programming languages to learn, requiring the mastery of several new and unique to C concepts and has a slow learning curve, meaning that before writing the first program students have to learn and understand several concepts (types of variables, functions, memory allocation of variables, etc) plus the syntax. The problem is that if students don’t learn these concepts first, than they will struggle for the rest of the course, increasing frustration and drop off. To help with this stage we have developed an application for mobile devices that will aid in the visualization of memory allocation in C/C++, and will help to explain C concepts giving students the possibility of practicing over and over until they master this principles, and at the same time provide instant feedback to the class instructor allowing for extra homework and recommendations to individual students.

Previous work, Belloc (2009) studies the incorporation of tabletPC on an introductory year in computer engineering class using already available technology to make class presentations for a digital logic/computer architecture class more engaging. But tabletPC are a much smaller market now than mobile phone and tablets, and Classroom Presenter is not available yet for Android or iOS. Liang (2011) Studied the use of tablets on a k12 environment and conclude, that introducing new technologies without support for training and software has no real advantage. Callaghan (2013), Jones (2011) and Coller (2011) Use video games to help teach electrical engineering, finance, and mechanical engineering concepts respectively, showing all of them really promising results.

We decided to create our own application to teach C programming for the following reasons:

1. Current classes are generally very static, based on slides and/or handwritten notes on the board.

2. Students cannot interact with slides. Example: Change values of variables, Increase/decrease loop variables, Assign different addresses to pointers, etc.
3. Instructors don’t get immediate feedback from students about their understanding of the lecture.

4. Visualizing concepts and being able to touch/design memory help students understand C/C++.

5. General acceptance in the educational community that using video games and mobile devices help students to remain engaged in class.

We decided to implement an application for mobile devices for the following reasons:

1. One of the most important differences between using a mobile device compared vs. a desktop computer, from the classroom point of view, is that users are “able to touch” the screen and move things around.

2. Mobile devices are ubiquitous, almost all students have a smart phone or a tablet. Allowing students to practice anywhere.

3. Mobile devices are easy to bring to class and setup if needed.

The main contribution of this paper is the development of a mobile application to help in teaching programming. To the best of the author's knowledge there is no other application other than tutorials out there on the market that performs the same task as the one presented in this article. The aim is to reinforce programming concepts not to substitute a compiler. To really learn programming students still need to “program”, the application will only be used at the initial learning stage.

The article is organized as follows. Section 2 gives the description and overview of previous work, section 3 describes the application in detail, section 4 presents the results of using the application, and section 4 presents the conclusions.
2. Description

A typical introduction to programming class consists on the following topics:

<table>
<thead>
<tr>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables declaration</td>
</tr>
<tr>
<td>Repetition Statements (for loops)</td>
</tr>
<tr>
<td>Functions</td>
</tr>
<tr>
<td>Arrays</td>
</tr>
<tr>
<td>Strings</td>
</tr>
<tr>
<td>Recursion/Tail Recursion</td>
</tr>
<tr>
<td>Pointers</td>
</tr>
<tr>
<td>Pass by Reference</td>
</tr>
</tbody>
</table>

For difficult concepts like pointers we recommend students to watch videos. Videos can be played again and again until the concept is understood. Several video options were given and after a poll the preferred one was Buckland(2008) a 55 minute video with exhaustive examples. We did get also good feedback from students about the web, Sims(2014), for their online compiler although right now can only be used to program in JavaScript and Python. Therefore we decided to create an application combining in one place the three main principles that are consistently liked by students:

1. Ability to watch videos about programming concepts that are deep and present extensive examples.

2. Possibility of having code on the screen that can be easily changed and visualize the effect of the change.

3. Having the above points (1, and 2) in a mobile device so students can play with concepts at their convenience and is also easy to carry around.

To incorporate the previous elements the application contains a screen for each one of the elements on table 1, this elements are displayed on the main application screen. Each screen is customized for the specific concept, but there are some common elements to all of them.
In part A we describe the common components. Part B describes the peculiarities of each screen.

2.1. Common Screen Elements.

Each one of the screens has three buttons (Fig. 1):

2.1.1 Video

Currently the video button takes the student to a YouTube video. In the future we plan to tape our own videos, we are still undecided if we should tape the professor or actually students.

2.1.2 Slides

This option allows student to download and view class slides related to the topic directly on their device.

2.1.3 Quiz

Each topic has 10 quiz questions; students can retake the quiz as many times as they want although there is a 10 second mandatory delay between submitted answers. If the student answers all the questions correctly a checkmark appears next to the topic name on main screen.

The questions for the quizzes are stored on a database; the database is stored on the cloud using Google App Engine this way the instructor can add/delete questions and the upgrade will automatically show on the students devices without the need to upgrade/reload the application. This option also allows the instructor to personalize the quiz to students by assigning specific or extra questions.

Figure 1. Sample Screen.
3. Results

Before deploying the application on a full university class we did perform testing in a small and controlled sample of students. The students that used the application got, on average 10% higher score on the quiz for memory allocation and showed on average more interest in learning more C than students with just lecture slides and no mobile application. The test administered to students was based on questions for pointers used on previous class exams.

Students that knew already how to program in other programming language did not get too much value from the application except for the pointer screens, but this is expected since the application was just mean to be used on the initial stages of learning how to program.

Based on the positive feedback we are planning in using the application on the first three weeks of the “Introduction to programming” class.

4. Conclusion

The overall experience of using tablets on an introductory programming class has been positive. If the users are beginners they do really enjoy the idea of the tablet as an aid to explain concepts. They still find some of the concepts difficult to understand but they still prefer expending time using the application just reading more examples from a book. But once the students achieve a certain level of expertise they find the application “funny” or “cute” but not very useful. So this application should be used for what it is, for teaching C to people that are beginners programmers. Another important point is that the tool should not be considered as a substitute for a C compiler, the tool is just meant to teach concepts and should always be complemented with programming assignments that will be of course implemented using a text editor/compiler environment.

References


Impact of students’ performance in the continuous assessment methodology through Moodle on the final exam

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Abstract

This paper looks into the different evolution of students’ online questionnaire performance and its impact on the final examination mark. This innovative technique has been used in a group of an introductory financial accounting course with 8 online questionnaires (one per unit) in the Moodle platform. Using cluster analysis, we identify different groups of performance evolution. The evidence obtained suggests that in one of these groups a favourable test performance evolution may lead to overconfidence with the subsequent negative effect on the final examination mark. Future research with more variables and bigger samples will help to identify this student profile with a view to prevent this undesired negative effect of this teaching technique.

Keywords: Moodle; accounting; online questionnaires.
1. Introduction

In the new European Higher Education Area, the educational model must be student-centered (European Ministers of Education, 1999). Therefore, Information and Communication Technologies (ICTs) are very useful in the teaching-learning process (UNESCO, 2008) and there have been numerous experiences of application in different subjects with very positive overall results (García-Benau & Zorio-Grima, 2012; Swan, 2004).

Specifically, in the area of business administration and management, a positive experience on the use of the Moodle platform has recently been analysed (Escobar-Rodriguez & Monge-Lozano, 2012). In this sense, some authors point out the interest of formative evaluation, which has also been evidenced in the accounting field (Einig, 2013).

Our work contributes to the literature in the sense that it identifies different types of students according to their performance evolution in the online tests and how some of these behaviors can be identified as generating over-confidence towards the final exam.

After this brief introduction that states the research objective, section 2 presents the teaching experience, the sample and the methodology used. Section 3 analyzes the results obtained. Finally, the main conclusions are presented.

2. Materials and Method

2.1. Teaching experience

The introduction of the Moodle platform as a teaching and evaluation tool has been implemented in a Financial Accounting course in the year 2015/2016. This subject is taken by first-year students of the Degree in Business Administration and Management of XXXX University. The evaluation of the subject is based on a final exam (80% of the final mark in the subject) and a continuous assessment methodology (remaining 20%) which includes a practical exercise test in the classroom (10% final grade) and eight online questionnaires (one per unit) through Moodle (10%).

In the academic year 2015/2016, the following final grades were obtained for the subject: 26.42% of the students made a no-show, 33.96% failed the subject (final grade <5), 26.42% had passed (5th final grade <7) and 13.21% obtained a grade of good (7≤final mark<9). No student in this group got the highest grade, i.e. excellent (9≤final mark≤10). Note that the Spanish system has a grading system ranging from 0-10 points, requiring at least 5 points to pass the course.

The syllabus consists of 9 units. 8 units have been evaluated through online self-corrective questionnaires in the Moodle platform, combining multiple-choice and true/false questions.
2.2. Description of the sample

The group of students in this course includes 53 students, 32% of which are women and 68% are men. 81% of the students are between 18-24 years old, 9.43% between 25-29, and the rest are over 30 years old. The 73.6% is the first time they take the subject, 15.1% re-take it for the second time and 11.3% of the students are taking it at least for the 3rd time.

During the 2015/2016 academic year, 94.12% of women chose to follow the continuous assessment system (16/17) compared to 83.33% of men (30/36). Of the total of 46 students who followed the continuous assessment method, only 39 showed up in the final exam (84.7%).

2.3. Variables and Data Analysis

We use the Cluster Analysis in its hierarchical modality, whose main purpose is to group objects based on the characteristics they possess, trying to maximize the homogeneity of the objects within the clusters while at the same time maximizing the heterogeneity between the aggregates (Hair et al., 1999).

Also, Multiple Correspondence Analysis is implemented, as it is a procedure to summarize the information contained in a contingency table through an objective procedure of assigning numerical values to qualitative variables (Peña, 2002).

For the analysis of multiple correspondences, the average grade of the online tests and the grade of the final exam have been categorized into a variable with 4 categories (failed, pass, good, excellent). The equivalences are Failed X <5 (variable = 1), Pass 5≤x <7 (variable = 2), Good 7≤x <9 (variable = 3), Excellent x≥9 (variable = 4).

3. Results

3.1. Pearson's correlation analysis

A Pearson correlation analysis is performed considering as variables the final exam grade and the grade of each of the questionnaires. There was no significant correlation between the grade obtained in the final exam and the grade obtained in any of the 8 questionnaires.

For the case of the tests, there is significant and positive correlation between the test of the units 3 and 4 (r=0.315, sig=0.033), and for the units 6 and 7 (r=0.339, sig=0.047). Note that these tests refer to consecutive but not specifically related thematic units: "accounting cycle" (unit 3) and "Inventories" (unit 4), "Non-financial fixed assets" (unit 6) and "Other financial assets and liabilities" (unit 7). This may suggest that the variables that condition the results obtained in the test are not only related to contents but also to other variables such as the chronology of the course, the specific academic calendar of that course, the evolution of student motivation along the course, etc.
3.2. Student profiles in continuous assessment

A hierarchical cluster analysis is performed on the students performance, considering as classification variables the different grades obtained in each one of the questionnaires.

The Ward method is chosen to minimize the differences within the cluster and avoid problems with the allocation chaining. Among the different alternatives, in terms of the measure of similarity between objects, the square Euclidean distance has been chosen, since the variables are measured on a common scale (0 to 10). As mentioned above, there are no problems of multicollinearity in our sample.

After studying multiple solutions, a solution with three clusters has been chosen.

| Table 1. Number of cases in the solution. |
|------------------|-------|-----|
| Cluster | Cases | %   |
| 1       | 12    | 48% |
| 2       | 4     | 16% |
| 3       | 9     | 36% |
| Valid   | 25    |     |
| Lost    | 21    |     |

| Table 2. Cluster composition. |
|------------------|-------|-------|-------|
| Variable | Cluster 1 | Cluster 2 | Cluster 3 |
| T1       | 7,22    | 8,19   | 7,04   |
| T2       | 7,61    | 7,24   | 8,22   |
| T3       | 6,73    | 6,81   | 6,58   |
| T4       | 7,21    | N.P.   | 8,06   |
| T5       | 7,52    | 7,25   | 7,87   |
| T6       | 6,75    | 7,00   | 7,41   |
| T7       | 7,17    | 6,50   | 8,11   |
| T8       | 5,25    | 6,33   | 9,48   |
Figure 1 shows that students in Cluster 1 and 2 have followed a decreasing trend in their results of the continuous assessment questionnaires, compared to students in cluster 3 that are characterized by an increasing trend in their results of the questionnaires. The main difference between clusters 1 and 2 is that cluster 2 maintains a nearly constant decreasing trend and cluster 1 has a greater variability in the average test results.

Likewise, for a more visual interpretation of the different clusters, the evaluation of the similarities between the different profiles of students (according to their results in the tests) and the categorization of the average grade obtained in the questionnaires has been performed with a multiple correspondence analysis. The results are presented on a perceptual map (Figure 2). The blue circle shows the 3 categories of average marks in the tests (1, failed, 2, pass, 3 good) and the green circle represents the profile student cluster (1, 2 and 3, illustrated in Tables 1 and 2 as well as in Figure 1).
According to figure 2, and as expected, those students who obtain an average mark of good in the tests are mainly those in cluster 3, whereas those who do not take test 4 (cluster 2) are the closest to obtaining an average grade of test of failed, and those in cluster 1 are those that obtain an average grade of pass.

3.3. Impact of students’ performance in the continuous assessment through Moodle on the final exam mark

In this section, we look into the similarities between the different profiles of students (according to their result in the questionnaires) and their mark in the final exam through a multiple correspondence analysis. The perceptual map (figure 3) will help us identify the profile of students who achieve better results in the final exam.

The number of dimensions is selected based on the desired level of total explanation of the variation and the increase of explanation when adding an extra dimension. It is recommended to include in the analysis those dimensions with inertia greater than 0.2, always taking into account that a three-dimensional representation, or smaller, are valuable for an easier interpretation.

Thus, a two-dimensional solution is the most suitable for further analysis in terms of explanation and interpretation.
Table 3. Dimensions and inertias.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Eigenvalue</th>
<th>Inertia</th>
<th>Cumulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.249</td>
<td>0.062</td>
<td>0.789</td>
</tr>
<tr>
<td>2</td>
<td>0.129</td>
<td>0.017</td>
<td>0.211</td>
</tr>
<tr>
<td>Total</td>
<td>0.078</td>
<td>1.000</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Figure 3. Perceptual map of the multiple correspondence analysis for the categorical variable Final exam and the result of the cluster analysis (student profile).

Contrary to what might be considered as an initial hypothesis, the perceptual map shows that there is a relationship between those students who belong to cluster 3 and category 1 of the final exam mark (failed). Smolin & Butakov (2014) look into this paradox, i.e. the inconsistency between in-class performance and the performance in the final exam. On the other hand, there is also a certain similarity between the students in cluster 1 and category 2 of the final exam result (pass).

Category 3 of the exam mark (good) is not specifically related to any student profile.
This result could indicate that there is an inverse relationship between the trend in the results obtained in the continuous assessment by a student and the probability of passing the final exam.

The findings of our study suggest some very interesting questions for future research, as follows. Could the relationship identified with failure in the final exam be attributed to certain emotional factors such as overconfidence? Does the tendency for a worsening of the continuous assessment mark encourage the student to make a greater study effort for the final exam?

4. Conclusions

In the context of incorporating the ICTs to the formative evaluation of the students, it seems extremely relevant to evaluate if an improvement on students’ performance is really and efficiently achieved. The literature describes the different learning styles of the students (Escobar-Rodriguez & Monge-Lozano, 2012) and how different methodologies can be useful to respond to that variety. However, in accounting, there is no extant research on the existence of different patterns of knowledge level evolution, nor on the impact of these patterns on a final exam. Some studies, however, point out the possibility that in certain contexts overconfidence can arise depending on certain variables - such as the previous domain of technology or gender (Gunn and McSporran, 2003). Therefore, our findings suggest new avenues for research on the results of these new teaching methodologies using larger samples and more variables that may allow to identify the characteristics of the students with this profile, in order to try to avoid these undesired consequences of the instrument.

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References


Strategies to assess generic skills for different types of students

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\textbf{Abstract}

The Universitat Politècnica de València (UPV) has synthesized a profile to be acquired by all the students based on 13 generic skills. For its assessment, the UPV has also developed a rubric for every skill depending on the level of the course. In this research, we develop an educational innovation for validating the rubrics for 3 of the 13 generic skills specified by the UPV. The chosen skills are: “Ability to think practically and apply knowledge in practical situations”, “Innovation, creativity and entrepreneurship ability” and “Teamwork and leadership ability”.

To do this, we develop the same methodology in two groups (Morning/English) of the same course (Marketing Research of the Degree of Business Administration and Management of the Faculty of Business Administration and Management at the UPV) with significantly different student profiles. The assessment results of the skills reveal that there are no significant differences between groups. In conclusion, we could say that the rubrics developed by the UPV are adequate to assess all types of students: Erasmus or non-erasmus, working or having worked in the last 2 years or without work experience, and regardless of their satisfaction with the course.

\textbf{Keywords:} Generic skills; achievement; rubric; validation; profile; competency-based learning.
1. Introduction

The Universitat Politècnica de València (UPV), taking into account the most important standards and guidelines as well as national and international scientific literature, has listed 13 generic skills. These skills synthesize a profile that has to be acquired by all the students at the UPV. For its assessment, the UPV has also developed a rubric for every skill depending on the level of the course (Universitat Politècnica de València, 2016).

Competency-based learning supposes a completely different way of curricular organization and teaching and learning methods (Lasnier, 2000). The challenge we face now is how to develop assessment strategies for these 13 generic skills according to Bologna Process (European Ministers Responsible for Higher Education, 1999). These strategies should be focused on the students for a better learning (Biggs and Tang, 2011).

In this research, we develop an educational innovation for validating the rubrics for 3 of the 13 generic skills specified by the UPV. The chosen skills are: “Ability to think practically and apply knowledge in practical situations”, “Innovation, creativity and entrepreneurship ability” and “Teamwork and leadership ability”. The specific objectives of the research are: (i) measure the achievement of every generic skill considered, and (ii) check for significant differences in the achievement of students depending on their profile.

2. Theoretical framework

Assessment is a necessary byproduct of the current emphasis in higher education on accountability and learning outcomes. Assessment activities can identify learning outcomes for student success and improvement over time in student learning (Dunn, 2002). Multiple approaches are needed in the assessment of learning, many of which require the use of a rubric (Dunbar, Brooks and Kubicka-Miller, 2006).

Rubrics are documents that articulate the expectations for an assignment, or a set of assignments, by listing the assessment criteria and by describing levels of quality in relation to each of these criteria (Reddy and Andrade, 2010). In a student-centered approach, the rubric could be shared with the students in order to support student learning. The main reason for this potential lies in the fact that rubrics make expectations and criteria explicit, which also facilitates feedback and self-assessment (Jonsson and Svingby, 2007). In the case of the UPV, both the 13 generic skills and the corresponding rubrics are published on their own website for the students' knowledge.

However, there are a number of factors identified that may moderate the effects of using rubrics formatively, as well as factors that need further investigation. Panadero and Jonsson
Baviera-Puig, A.; Escriba-Perez, C.; Buitrago-Vera, J. (2013) point out Gender and Educational level among others. In this research, we consider Gender and other variables in order to define the students’ profile in higher education.

3. Methodology

The course where we develop this educational innovation is “Marketing Research”. It is taught in the first semester of the third year of the Degree of Business Administration and Management of the Faculty of Business Administration and Management at the UPV. The educational innovation is carried out in the Morning Group and in the English Group.

First of all, students were divided into groups of 2-4 people. In total, 32 groups of students were formed: 20 in the Morning Group and 12 in the English Group. Once organized, they were asked to propose a new product / service for a supermarket. To do this, they had to elaborate a concept test in order to determine the suitability of the new product / service. They have worked on this concept test both in theory classes (to sketch and generate ideas) and in lab sessions (for the completion of the questionnaire and analysis of the answers obtained from it). Based on their work, they have drafted one report per group.

This group report is the one we are going to use for the assessment of “Ability to think practically and apply knowledge in practical situations” and “Innovation, creativity and entrepreneurship ability”. It is evaluated by the lecturer. Instead, to evaluate “Teamwork and leadership ability”, we use self-assessment and co-evaluation among members of the same group. For both the report and the self-assessment and co-evaluation, we use the rubrics developed by the UPV. Following the institutional project, 4 different categories are established: A. Excellent / exemplary; B. Good / adequate; C. In development; D. Not reached. In order to facilitate an average per group, these 4 categories have been translated into numbers according to the following scale: A = 4, B = 3, C = 2 and D = 1.

4. Results

4.1. Group profile

In the total sample, there are 110 students: 65 in the Morning Group and 45 in the English Group. To determine the profile of every group, a cross-tabulation of frequencies between the data of the Groups with the different variables considered (Gender, Erasmus, Working and Satisfaction with the course) was conducted. As a statistical test, Pearson’s Chi-square test ($\chi^2$) was performed (Santesmases, 2009). From the results obtained, it can be observed that there are not significant differences between the Morning Group and the English Group regarding the Gender variable (Table 1). However, there are significant differences with respect to the other variables.
Table 1. Cross-tabulation of frequencies between Group and Gender.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Morning Group</th>
<th></th>
<th>English Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
<td>Frequency</td>
<td>%</td>
</tr>
<tr>
<td>Man</td>
<td>28</td>
<td>43.08</td>
<td>22</td>
<td>48.89</td>
</tr>
<tr>
<td>Woman</td>
<td>37</td>
<td>56.92</td>
<td>23</td>
<td>51.11</td>
</tr>
<tr>
<td>TOTAL</td>
<td>65</td>
<td>100.00</td>
<td>45</td>
<td>100.00</td>
</tr>
</tbody>
</table>

$\chi^2$ with 1 degree of freedom = 0.3623 (p = 0.5472). Source: Authors.

As for the Erasmus variable (p <1%), 44.44% of the students in the English Group are Erasmus Exchange students and in the Morning Group only 3.13% (Table 2). In the English Group, 71.11% are working or have worked in the last 2 years, while in the Morning Group this percentage drops to 41.38% (p <1%) (Table 3). Finally, in the Morning Group, students who consider the course interesting or very interesting are 88.33%, rising to 95.56% in the English Group (p <5%) (Table 4).

Table 2. Cross-tabulation of frequencies between Group and Erasmus.

<table>
<thead>
<tr>
<th>Erasmus Students</th>
<th>Morning Group</th>
<th></th>
<th>English Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
<td>Frequency</td>
<td>%</td>
</tr>
<tr>
<td>Erasmus</td>
<td>2</td>
<td>3.13</td>
<td>20</td>
<td>44.44</td>
</tr>
<tr>
<td>Not Erasmus</td>
<td>62</td>
<td>96.88</td>
<td>25</td>
<td>55.56</td>
</tr>
<tr>
<td>TOTAL</td>
<td>64</td>
<td>100.00</td>
<td>45</td>
<td>100.00</td>
</tr>
</tbody>
</table>

$\chi^2$ with 1 degree of freedom = 28.0018 (p = 0.0000). Source: Authors.

Table 3. Cross-tabulation of frequencies between Group and Working.

<table>
<thead>
<tr>
<th>Working or having worked</th>
<th>Morning Group</th>
<th></th>
<th>English Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
<td>Frequency</td>
<td>%</td>
</tr>
<tr>
<td>Working</td>
<td>24</td>
<td>41.38</td>
<td>32</td>
<td>71.11</td>
</tr>
<tr>
<td>Not working</td>
<td>34</td>
<td>58.62</td>
<td>13</td>
<td>28.89</td>
</tr>
<tr>
<td>TOTAL</td>
<td>58</td>
<td>100.00</td>
<td>45</td>
<td>100.00</td>
</tr>
</tbody>
</table>

$\chi^2$ with 1 degree of freedom = 9.0289 (p = 0.0027). Source: Authors.
<table>
<thead>
<tr>
<th>Satisfaction with the course</th>
<th>Morning Group</th>
<th>English Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
</tr>
<tr>
<td>Very uninteresting</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Uninteresting</td>
<td>1</td>
<td>1.67</td>
</tr>
<tr>
<td>Indifferent</td>
<td>5</td>
<td>8.33</td>
</tr>
<tr>
<td>Interesting</td>
<td>44</td>
<td>73.33</td>
</tr>
<tr>
<td>Very interesting</td>
<td>9</td>
<td>15.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>60</td>
<td>100.00</td>
</tr>
</tbody>
</table>

$\chi^2$ with 4 degrees of freedom = 9.9589 (p = 0.0411). Source: Authors.

In short, we can state that, despite having analyzed a single course, the profiles of the two groups are different in terms of the number of Erasmus Exchange students, the number of students who are working or have worked in the last 2 years and their satisfaction with the course.

**4.2. Comparison of skills assessment by group**

In order to show the results of the assessment of the 3 generic skills, the average of each of the indicators considered in the rubrics was calculated by Group (Morning / English) and for the total of the sample. To verify if there are significant differences between the results of each group, a cross-tabulation of mean values was performed. As a statistical test, the Snedecor F test was used (Santesmases, 2009).

There are not significant differences by indicator between both groups for the “Ability to think practically and apply knowledge in practical situations” (Table 5). The indicator that has the greatest average in each group and in the total of the sample is “Sets specific targets in relation to the situations that are presented”. In contrast, the indicator that has the lowest average in the total sample and in the English Group is “Evaluates the quality of information available for application”. The Morning Group obtains the lowest average in “Proposes control indicators for monitoring the plan”. The greatest and lowest means are underlined in Table 5.
Table 5. Assessment of “Ability to think practically and apply knowledge in practical situations”.

<table>
<thead>
<tr>
<th>Indicators of the rubric</th>
<th>Morning Group</th>
<th>English Group</th>
<th>Total Sample</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets specific targets in relation to the situations that are presented</td>
<td>3.40</td>
<td>3.75</td>
<td>3.53</td>
<td>0.5051</td>
</tr>
<tr>
<td>Obtains the necessary information to address situations</td>
<td>3.05</td>
<td>3.00</td>
<td>3.03</td>
<td>0.9900</td>
</tr>
<tr>
<td>Evaluates the quality of information available for application</td>
<td>2.90</td>
<td>2.42</td>
<td>2.72</td>
<td>0.4237</td>
</tr>
<tr>
<td>Draws up a coherent plan to resolve situations that are presented</td>
<td>2.95</td>
<td>2.67</td>
<td>2.84</td>
<td>0.7315</td>
</tr>
<tr>
<td>Proposes control indicators for monitoring the plan</td>
<td>2.80</td>
<td>3.25</td>
<td>2.97</td>
<td>0.2120</td>
</tr>
</tbody>
</table>

Source: Authors.

For “Innovation, creativity and entrepreneurship ability” (Table 6), there are not significant differences per indicator between both groups except for “Controls Results” (p <5%). In this case, the Morning Group obtains its lowest average (2.55) in this indicator, while the English Group obtains a higher score (3.25). The indicator that has the lowest average in the English Group is “Uses creative strategies and / or techniques to shape ideas and solutions in a formal way”. The total sample obtains its lowest means (2.81) in both cases. On the contrary, the indicator that has the highest average in each group and in the total of the sample is “Identifies opportunities and / or improvement aspects”. The greatest and lowest means are underlined in Table 6, as well as the significant probability at 5%.

Table 6. Assessment of “Innovation, creativity and entrepreneurship ability”.

<table>
<thead>
<tr>
<th>Indicators of the rubric</th>
<th>Morning Group</th>
<th>English Group</th>
<th>Total Sample</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifies opportunities and / or improvement aspects</td>
<td>3.20</td>
<td>3.67</td>
<td>3.38</td>
<td>0.2415</td>
</tr>
<tr>
<td>Provides original ideas and approaches</td>
<td>3.05</td>
<td>3.58</td>
<td>3.25</td>
<td>0.2593</td>
</tr>
<tr>
<td>Uses creative strategies and / or techniques to shape ideas and solutions in a formal way</td>
<td>2.90</td>
<td>2.67</td>
<td>2.81</td>
<td>0.7866</td>
</tr>
<tr>
<td>Controls results</td>
<td>2.55</td>
<td>3.25</td>
<td>2.81</td>
<td>0.0433</td>
</tr>
</tbody>
</table>

Source: Authors.
There are not significant differences per indicator between the two groups for “Teamwork and leadership ability” (Table 7). The indicator that has the highest average in each group and in the total of the sample is “Participates in the planning of the objectives”, while the indicator with the lowest mean is “Acts to deal with the conflicts of the team”. The greatest and lowest means are underlined in Table 7. It should be pointed out that this generic skill has greater averages (all of them are greater than 3.55) in comparison with the other two skills. This might be due to the self-assessment and co-evaluation conducted by the students.

Table 7. Assessment of “Teamwork and leadership ability”.

<table>
<thead>
<tr>
<th>Indicators of the rubric</th>
<th>Morning Group</th>
<th>English Group</th>
<th>Total Sample</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participates in the planning of the objectives</td>
<td>3.77</td>
<td>3.71</td>
<td>3.74</td>
<td>0.8465</td>
</tr>
<tr>
<td>Acts to deal with the conflicts of the team</td>
<td>3.68</td>
<td>3.58</td>
<td>3.64</td>
<td>0.6399</td>
</tr>
<tr>
<td>He/she has committed to the realization of the collective tasks</td>
<td>3.71</td>
<td>3.67</td>
<td>3.69</td>
<td>0.9347</td>
</tr>
</tbody>
</table>

Source: Authors.

5. Conclusions

The educational innovation is developed in the Morning and English Groups of the course “Marketing Research” of the Degree of Business Administration and Management of the Faculty of Business Administration and Management at the UPV. The total sample analyzed is 110 students (65 in the Morning Group and 45 in the English Group). In spite of having analyzed a single course, the profiles of the two groups are significantly different in terms of the number of Erasmus Exchange students, the number of students who are working or have worked in the last 2 years and their satisfaction with the course.

Nevertheless, despite this difference in profile, no significant differences are found in the assessment of the 3 generic skills. Each of the indicators considered in the rubrics has been evaluated and no significant differences in the mean value of each group have been obtained. We only have one significant difference in the indicator “Controls results” of “Innovation, creativity and entrepreneurship ability”.

As there are no significant differences between the Morning Group and the English Group in the assessment of skills, we could say that the rubrics developed by the UPV are
adequate to evaluate all types of students: Erasmus or non-erasmus, working or having worked in the last 2 years or without work experience, and regardless of their satisfaction with the course.

Having evaluated each generic skill with a different methodology, we observe how students are more generous in self-evaluation and in evaluating their peers in the “Teamwork and leadership ability”. On the contrary, the lecturers of the course are more rigorous when evaluating “Ability to think practically and apply knowledge in practical situations” and “Innovation, creativity and entrepreneurship ability” from the report elaborated by the group.

As future lines of research, this educational innovation could be conducted in different degrees of the UPV to validate these rubrics from a multidisciplinary approach.

References


Outcome assessment of the online English learning and management system: A project on educational technology application to English learning in Taiwanese polytechnic higher education

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Abstract

This paper presents the result of a three-year action research plan involving the innovative application of “LiveDVD”, a web-based English learning system loaded with VODs and embedded into the English learning program of a polytechnic university in Taiwan. Over the implementation period, the LiveDVD action plan essentially involves use requirement on students along with creation of learning and assessment materials for the target VODs and outcome management. Outcome assessment indicators include (1) the association between use activeness of LiveDVD and pass status of English proficiency certificates and (2) the causal relations between LiveDVD-related variables and English learning outcome. A survey questionnaire on LiveDVD and the management platform were employed to collect relevant data. The chi-squared test of group independence and an SEM-based path analysis were performed to address the outcome indicators respectively. The findings of the project include: (1) use of LiveDVD is positively and significantly associated with the pass status of English proficiency certificates and, (2) use motivation has direct effect on English proficiency and create the significant mediation effect on English proficiency certificates. This project yields significant implications especially for vocational higher education in Taiwan in the innovative application of educational technology to English education coupled with an effective outcome management model.

Keywords: technology enhanced language learning, computer aided language learning, SEM-based path analysis, LiveDVD.
1. Introduction

Vocational higher education has hardly been the government’s top priority, and schools in this system have long been criticized by policymakers and EFL teachers for having undesirable English learning standards. In a formal school English learning setting, two critical but long neglected elements conducive to successful English education at polytechnic universities are, arguably, an effective learning tool or program and outcome management. Lack of learning motivation of students, especially those of vocational and technological universities, has long been claimed to cause undesirable outcomes of English education in Taiwan. In a technology-friendly age, language learning enhanced and aided by technology has been a vital issue in ESL/EFL teaching and learning. How to best utilize education technology to enhance English learning becomes particularly significant in terms of increasing, on a large scale, the learning motivation of low achievers in the Taiwanese vocational higher education. Teaching approaches geared towards initiating self-directed learning via technology-mediated support with a view to enhancing learning motivation have hence been gaining ascendancy in English learning settings across different educational levels in Taiwan. The purpose of this paper is therefore to document the process, method, management and result of embedding the technology enhanced learning aid to the English education of Southern Taiwan University of Science and Technology (STUST) as a long-term action research project.

1.1 LiveDVD Online Film-based English Learning and Management System

LiveDVD is characterized by a series of learner-friendly and helpful features along with a powerful management module. The system platform can accommodate 600 concurrent users to access as many as around two hundred VODs on the LiveDVD server. Students connect to the system platform to watch the uploaded films, learning English by using a series of functions, including (1) display of multi-mode film subtitles (e.g. English-Chinese subtitles), (2) key word search and playback of movie clips, (3) the on-line dictionary, (4) collection of movie lines and words, (5) vocabulary coverage based on the TOEIC word lists, among others.

The LiveDVD system comes with a management platform, or module, known as WEBMEN, specifically for school administrators and teachers to collect and analyze data of students’ learning by LiveDVD. The main function of the platform is to establish students’ learning profiles and track their learning hours, movies watched, practice tests completed, and specific features practiced. All types of learning data can be exported for statistical analyses and assessment for administrative, teaching and research purposes.
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