Design Thinking applied in Education or Training

Double peer reviewed PAPERS or CHAPTERS in books

Keyword Research “Design Thinking” + Education or Training
DataBases Research Gate, Academia, Google Scholar, Scopus, ERIC, Science Direct, EBSCO, Web of Science and b-on.


ABSTRACT: As innovation becomes the cornerstone for new problem solving and creation of private and public value, this paper introduces the design thinking approach as a new means of systematic innovation. We introduce the approach with two short examples from programs to graduate students. We illustrate the setup of a design thinking program by using the HPI School of Design Thinking as a case study in order to show how to integrate the approach in engineering education. Finally, we outline how technology-driven startups can benefit by the adoption of the approach and gain a strategic competitive advantage.

Keywords: Design Thinking-Innovation Process-Innovation Culture-Problem-Based Learning-user-centric innovation-technology-driven startups


ABSTRACT: In this work we present a teaching support action - Course Sprint - for the design and implementation of a course in a new virtual classroom. A Course Sprint is an intense and collaborative activity that brings together educators and instructional designers experts in teaching and learning technologies. The main objective is to create or redesign a set of learning activities considering the defined learning objectives and competences in the teaching program using creative thinking. The need of such an activity originated with the deployment of a new learning environment: how to get teachers to adopt this updated virtual environment for teaching and learning? The new classroom is activity-centered as opposed to calendar-centered and, therefore, requires teachers to change the design of the course and the learning activities.


ABSTRACT: This paper outlines a project to develop and track ‘design thinking’ skills within groups of students in the early secondary years of schooling in order to strengthen their creative skills and
innovative mindsets. The outcome of the research will be the development of a model for the broad-based implementation of design thinking in schools which will foster students’ creative skills, critical for 21st century living and their capacity to make a strong contribution to innovation in their future workplaces. Students will develop competence in using the steps ‘understand, observe, visualise, evaluate, refine and implement’ in relation to examining contemporary issues concerned with living in rural and remote areas and will subsequently design illustrative multimedia presentations or computer games. Design thinking as a framework to solve problems and/or as a pedagogical framework has emerged from the processes that designers have used over the last twenty years to create unique and innovative products. A convincing supporting literature base has continued to grow across almost every discipline area, yet ‘design thinking’ is only just starting to influence school-based education.


ABSTRACT: The innovation curve has become saturated; the low hanging fruit have been exhausted by traditional problem solving approaches. Any advancement in the education sector from here forward requires a new thinking paradigm: design thinking. This paper documents the process of infusing design thinking into the minds of the education system’s greatest problem-solvers: policy makers, engineers/designers, educators, and students of high school, undergraduate, and graduate schools. Using the formation of the Education Designshop as a case study, we analyze the benefits and points of contention when using a design thinking approach, typical of tangible product designs, in a large-scale application, the systemic reform of education.


ABSTRACT: Creative confidence comes when people are given the opportunity to think like a designer. The hands-on, learning-by-doing experiences afforded by maker spaces implicitly require a design approach to problem-solving. However, there is little in the literature that investigates it in relation to the education and training of librarians. As someone who trains future librarians, I wondered if there was a way to integrate meaningful “making” experiences with tangible technology into the professional training of librarians so they can, in turn, effectively establish or manage a library-based makerspace that asks young people to think in new, creative ways? To address these questions, I pilot tested a “maker” experience with Library and Information Science (LIS) students at the University of Pittsburgh through the ‘Bots and Books Design Challenge.’


ABSTRACT: Today the changing nature of design practice and the role of design within a widening domain indicate that the survival of design as a profession may depend less on traditional design education and more on responding strategically to contemporary changes, influenced by ethical and environmental issues as well as technological advancements. As a result, one of the challenges facing contemporary design educators today is how to prepare and educate design students in light of the expanding and shifting definitions of the profession as well as changes in social responsibilities. To this end, the article explores the nature of the design process by presenting a model of designing. Following from this, the inherent characteristics of design thinking are identified before discussing the application of design thinking within an education context. Reference is made to the lil’green box, a social innovation project by a final year Information Design student from the University of Pretoria. The scope of the article is limited and therefore only a single case study is presented. Nonetheless, the main argument that emerges from the case study is that in order to advance design research, focus must be
placed on the design (problem solving) methodologies that are taught and subsequently employed by students as part of their design training.


ABSTRACT: The paper presents the design thinking (DT) methodology together with objections raised against it and discussion on them. Example wicked problems to be solved by means of DT have been shown. It has also been pointed that the DT application might be effective in an appropriately designed and prepared creative space being a component of a creative working environment. A traditional class has been compared to the class led in a creative space. An example university structure referring to and containing a creative space has been shown. Finally, the necessity for multidisciplinary education of engineers with the practical use of heuristic methods has been discussed.


ABSTRACT: Architecture design education is evolved in respond to the emergence of information technologies as well as globalization. In the new era, digital design education is becoming a design platform to integrate technology and design. This paper aims to provide overviews of digital architectural design education. Therefore, this paper proposes a framework to examine the focus of digital design education and the relationship among (1) design contents, (2) digital technologies and tools, and (3) design theory and methodologies in digital design studios. The attempts in National Cheng Kung University in the past 10 years provide the foundation for observation and discussion. The pedagogy and approaches are examined, and the trend and potential directions are reported.


ABSTRACT: Roger Martin, dean of the Rotman School of Management, University of Toronto, is interviewed on the subject of “design thinking”—approaching managerial problems as designers approach design problems—and its potential impact on management education. Under a design-thinking paradigm, students would be encouraged to think broadly about problems, develop a deep understanding of users, and recognize the value in the contributions of others. In Martin’s view, the concept of design thinking can potentially address many of the criticisms currently being leveled at MBA programs. The interview is followed by a discussion and critique of the themes Martin raises.


ABSTRACT: Product development processes are commonly represented in sequential models covering the necessary stages from planning to product rollout, while processes to take needs into the development activities show other aspects, namely that understanding needs requires, for a product developer, additional skills. In our curricula for engineering design education we apply some aspects of design thinking to bring together (a) business savvy, in terms of understanding people’s needs as market opportunities, and (b) product development process, in terms of team-based creativity and collaborative skills, with (c) the basic engineering knowledge. This is a demanding aim, much because the approaches, methods and mindsets differ widely from what the students are used to. Hence, in this paper we elaborate on our efforts to educate engineers in design thinking to provide insights into some challenges for engineering design. Three key challenges are identified, (1) integrative approaches are not straightforwardly implemented, (2) training of “soft” capabilities to
provide a change in thinking, and (3) social competence to make use of design thinking.


ABSTRACT: We draw on our experiences as university-level educators in design and management, as well as consulting, to argue that management education has isolated design, specifically design thinking, from traditional MBA curricula—to the detriment of both business schools and firms. Notwithstanding the occasional “new product development” marketing course, we question the widespread practice of segregating design thinking solely for use by so-called “creative professionals.” The social bases of this isolation include semantic gaps, conceptual blocks, and social barriers between business disciplines. We unpack design thinking in a concrete, tractable manner and offer concrete suggestions for promoting a shift to design thinking within management education, and in firms. We conclude by mentioning the pros and cons of diverse solutions, including an ad hoc approach, management education programs, teaching problem-driven design thinking, firm-specific executive programs, leveraging in-house design resources, and deploying designers as top managers.


ABSTRACT: Based on the human-centered design ethos, “Design Thinking” has greatly changed the traditional design process. However, in the process of student designing and learning, student’s academic achievement might be affected by their learning styles. Therefore, in architectural design operation, it is suggested that teachers give students different teaching and learning strategies to implement differentiated instruction. The purpose of this study was to investigate the association among architectural design course student’s learning style, design thinking methods use frequencies and learning achievement, also to analyze the beneficial design thinking methods. The participants were architecture-majored students at NTUSTT, taking Architectural Design course. Data were analyzed using one-way ANOVA and benefits calculation method. The results of research showed that the most learning style of architectural design course students is Assimilator. Students with different learning styles have significantly difference in learning achievement. There were no significant differences between Learning styles and the using frequency of design thinking methods. The highly frequency of using design thinking method was affected by traditional architectural design education. The use of design thinking methods with higher frequency is more correspond with their learning style, and vice versa. In addition, if students use appropriate methods to enhance their skills, or to make up their missing, they can obtain better academic achievement. The contribution of the research is to give students and teachers advice and reference to enhance students’ achievement in teaching and learning architectural Design.


ABSTRACT: Alongside the digital innovations in AEC (Architectural, Engineering and Construction) practice, are calls for a new type of digital literacy, including a new information-based literacy informed by creativity, critical analysis and the theoretical and practical knowledge of the construction profession. This paper explores the role of design thinking and the promotion of abductive problem situations when developing digital literacies in construction education. The impacts of advanced digital modelling technologies on construction management practices and education are investigated before an examination of design thinking, the role of abductive reasoning and the rise of normative models of design thinking workflows. The paper then explores the role that design thinking can play in the development of new digital literacies in contemporary construction studies. A three-part framework for the implementation of a design thinking approach to construction is presented. The paper closes with a discussion of the importance of models of design thinking for learning and knowledge production, emphasising how construction management education can benefit from them.

ABSTRACT: This work presents an innovative interdisciplinary cornerstone engineering design-and-build course infused at the freshman level. The course promotes systematic design thinking and process using an inductive pedagogy, PBL, as the mode of delivery, in conjunction with technological tools such as robotics kits, a rapid prototyping machine, and C++ interface.


ABSTRACT: Design domains are fundamentally similar but with different working mechanisms due to some factors namely clients’ expectations, customers’ needs, production procedures and marketing strategies. One of the similar design processes for all design disciplines is the design thinking process. In view of design education, no matter what kinds of design students, they need to learn design thinking skills in the initial stage of their study. Teaching design thinking is educating design students to manage creative thinking and design planning concurrently. This hybrid process of design thinking is aiming for discoveries eventually, same as other major scientific breakthroughs, design students have to balance both abilities of creative thinking and design planning in a systematic, deliberate and scientific manner. This paper aims to discuss the ways of teaching design thinking skills in tertiary design education by emphasizing (1) the role of creative thinking in design education; (2) the ways of teaching creative thinking in design education; (3) the management of creative thinking and design planning for design thinking.


ABSTRACT: What is Design? The lack of consensus on a common definition for design and whether its body of knowledge constitutes a science or a discipline continue driving investigations of the nature of design. Despite the ambiguity, design is recognized as a process of creative problem solving and as such has become an integral part of modern business practices. The shift from product-focus towards user and experience focus has paved the way for interdisciplinary design research and the adoption of new investigative tools. Researchers agree that the understanding of the complexity of modern society requires holistic thinking, and therefore demands the implication of expert disciplines in the process of building design knowledge. How has the evolved mindset impacted design education? Although, interdisciplinary practices and transdisciplinary thinking have been acknowledged as a fundamental notion of building design knowledge, design programs seem to have made only timid adjustments in their curricula to address this new dimension. Traditional teaching methods and settings reveal themselves as insufficient and address little systemic thinking. Hence, alternative design approaches are being experimented with. The intent of this paper is to describe how the School of Industrial Design at the University of Montreal has reassessed its program to reflect the evolved mindset and what is being done to facilitate interdisciplinary design approaches.


ABSTRACT: This conceptual paper argues that the future of industrial design education is determined by the ability of design programs to consciously position themselves according to higher education trends. Whether a design program chooses to be part of a scholarly University, or practice-oriented higher
education system, depends on the choice of design thinking models and related processes and methods to be taught, researched and practiced. From a design thinking perspective, it can be argued that a positivistic approach towards problem solving is a typical trait of design programs, which have subjected themselves to a University system of research and education. These programs advocate problem solving and participative models of design thinking. Design programs, who are part of a practice-oriented higher education system, tend to support the reflective and hermeneutic design thinking approaches towards designing. However, a common dedication of faculty members towards mentorship and scholarship being able to promote learning and inquiry from a theoretical, collaborative and process perspective is also important, irrelevant what strategy has been adopted.


ABSTRACT: Design Thinking is a method for creative thinking and fostering idea development. This method has been selected as part of a university course to stimulate students in the creation of new ideas in the field of media industries. This paper describes the practical arrangements for organizing a Design Thinking course in a university context. It presents a hands-on guideline for conducting a similar course in an university setting on the basis of the “Frontiers of Media Management” course that has been organized by the EMMi Lab., at the Tampere University of Technology.


ABSTRACT: Within the scope of this paper, we describe a practical hands-on approach of applying “Design Thinking” a principal teaching method for a university course. The course was established as part of the media management minor at the EMMi Lab., at the Tampere Univ. oTechnology. The course was held in cooperation with the Tampere University (UTA), and the Tampere University Applied Sciences (TAMK) at the premises of the New Factory (Demola), an innovation facility in Tampere Finland. It shall train students in the development innovations in the media field, and foster creative thinking methods. We discuss the basic curriculum, course structure, methods utilized in the course, as well as we present a reflection on the course in the discussion section.


ABSTRACT: Design and design thinking are identified as making valuable contributions to business and management. The numbers of higher education programs that teach design thinking to business students and executives are growing, however to date little information about the outcomes of these initiatives has emerged. This paper presents the findings from the incorporation of design thinking and methods in one unit of an MBA program. All 90 participants from three MBA classes wholeheartedly expressed their support for this initiative. An evaluation of this experiment found positive reactions, learning, changes in behaviour and positive results for their companies. The challenges and future directions for the inclusion of design thinking and design methods in management education programs are proposed.


ABSTRACT: Design and design thinking have been identified as making valuable contributions to business and management and the numbers of higher education programs that teach design thinking to business
students, managers and executives are growing. However, multiple definitions of design thinking and the range of perspectives have created some confusion about potential pathways. This paper examines notions of design and design thinking and uses these definitions to identify themes in higher educational programs. We present the findings from an initial exploratory investigation of design and design thinking in higher education business programs and define four distinct educational approaches around human-centered innovation, integrative thinking, design management and design as strategy. Potential directions for management education programs are presented.


ABSTRACT: Business education leaders have expressed interest in learning more about design and design thinking and their contributions to better problem framing, problem solving and to generating new solutions. Many business schools have engaged in educational programs with students from multiple disciplines, applying design thinking to business problems around workplace issues. This paper investigates a range of educational programs that teach design thinking to students in business education, at undergraduate and postgraduate levels around the world. We identify four patterns of program delivery that are emerging: human-centered design, integrative thinking, design management and design as strategy. We expect that these four patterns of program delivery will continue and predict an increasing focus on programs around design as strategy in the near future.


ABSTRACT: The term design thinking is increasingly used to mean the human-centred 'open' problem solving process decision makers use to solve real world 'wicked' problems. Claims have been made that design thinking in this sense can radically improve not only product innovation but also decision making in other fields, such as management, public health, and organizations in general. Many design and management schools in North America and elsewhere now include course offerings in design thinking though little is known about how successful these are with students. The lack of such courses in Australia presents an opportunity to design a curriculum for design thinking, employing design thinking's own practices. This paper describes the development of a design thinking course at Swinburne University taught simultaneously in Melbourne and Hong Kong. Following a pilot of the course in Semester 1, 2011 with 90 enrolled students across the two countries, we describe lessons learned to date and future course considerations as it is being taught in its second iteration.


ABSTRACT: Web Design Curriculum is currently too much emphasis on learning software, instead of the most important web design. To address this issue, combined with reform of teaching practice, discussed the importance of design thinking and creativity in web design and tell how to strengthen the cultivation of students’ design thinking from classroom teaching, practice and skills certification so as to effectively improve their web design ability.


ABSTRACT: This paper relies on the interfaces between the literature on entrepreneurship education and design thinking to offer insight into how to develop an entrepreneurship teaching model through design thinking. From reviewing and synthesizing these literatures we propose a teaching model, namely the
DesignUni model. The model suggest a designerly approach to entrepreneurial learning in which idea generation, creative problem-solving and opportunity creation to form an unknown future is combined with processes of idea evaluation, idea exploitation and analytical thinking paying attention to existing and future markets. A discussion of the models theoretical and practical strengths and implications follows, and finally we point at further research to be done in the area of entrepreneurship education through design thinking.


ABSTRACT: This is a conference paper. The need for educational reform has led to much research documenting the value of experiential learning and creative problem solving to increase relevance and motivation in learning. Design, which may be succinctly defined as purposeful thought and action, can serve as a framework and catalyst for teaching and learning strategies that promote innovative, high end thinking, cooperative teamwork, and authentic, performance assessment. This keynote will feature research findings and two models of large-scale applications of design education in the K-12 curriculum. Both projects are funded by major grants from the National Endowment for the Arts and by the Department of Education in the United States. As models of best practices and applied research that have been assessed and documented, they can provide useful and valuable examples for other art educators and educational sites. This research was conducted through the “Design for Thinking Teaching Institute, at The University of the Arts, Philadelphia, Pennsylvania, USA, which also was the host site for the National Design for Thinking Network and the Design Link for Teaching the Arts, Link-to-Learn projects. Other sites and research will also be addressed.


ABSTRACT: Science, business and social organizations alike describe a strong need for a set of skills and competencies, often referred to as twenty-first century skills and competencies (e.g. Pink, Wagner, Gardner). For many young people, schools are the only place where such competencies and skills can be learned. Therefore, educational systems are coming more and more under pressure to provide students with the social values and attitudes as well as with the constructive experiences they need, to benefit from the opportunities and contribute actively to the new spaces of social life and work. Contrary to this demand, the American as well as the German school system has a strong focus on cognitive skills, acknowledging the new need, but not supporting it in practice. Why is this so? True, we are talking about a complex challenge, but when one makes the effort to take a closer look, it quickly becomes apparent that most states have not even bothered to properly identify and conceptualize the set of skills and competencies they require. Neither have they incorporated them into their educational standards.


ABSTRACT: This study aims to reflect experts’ opinions in analyzing a design thinking as foundation of multidisciplinary education. For this purpose, a delphi survey was conducted with 20 experts in three sessions from May 1 to June 25, 2012. To analyze the collected data, descriptive statistics, including frequency, percentage, the mean, and standard deviation were implemented, and internal reliability test on the survey instrument was carried out for statistical processing. The main results are as follows: First, the delphi analysis on intuitive thinking of design thinking suggested 7 items (to pursue the possibility of outside, to pursue the possibility of applying new forms of technology, content planning, facing a complex real-world phenomena etc.). Second, the delphi analysis
on logical thinking of design thinking suggested 7 items (executed repeatedly, reasoning and verification, artificial intelligence, a decision support system etc.) Third, the delphi analysis on subjective thinking of design thinking suggested 9 items (user experience measuring, user satisfaction ratings, user requirements analysis, user interface design, behavioral responses of the human etc.). Fourth, the delphi analysis on objective information of design thinking suggested 8 items (information management system, simulation, production process, information exchange and sharing etc.). According to the results of the delphi analysis, design thinking can be seen as the foundation of multidisciplinary education. Suggestions were made for discussion about the main results and further researches.

29.

ABSTRACT: Design creativity is one of the most relevant fields in design and innovation. To better understand the effectiveness and origin of it, this study draws attention to the question of how design creativity can be mediated via design education. Since institutes exist that focus on teaching design thinking, the question arises what the experts of education believe they achieve with their lessons and how they support students in developing a capability of thinking and acting creative. In the empirical part of this study we find that there are different levels of creative knowledge, skills and mindsets that can be achieved by design thinking education, culminating in a capability called ‘creative confidence’. Building on these results we demonstrate how design education contributes to both the development and understanding of design creativity. Furthermore we suggest a definition of “design thinking” as a learning model towards creative confidence.

30.

ABSTRACT: In an ever changing society of the 21st century, there is a demand to equip students with meta competences going beyond cognitive knowledge. Education, therefore, needs a transition from transferring knowledge to developing individual potentials with the help of constructivist learning. Advantages of constructivist learning, and criteria for its realisation have been well-determined through theoretical findings in pedagogy (Reich 2008, de Corte, OECD 2010). However, the practical implementation leaves a lot to be desired (Gardner 2010, Wagner 2011). Knowledge acquisition is still fragmented into isolated subjects. Lesson layouts are not efficiently designed to help teachers execute a holistic and interdisciplinary learning. As is shown in this paper, teachers are having negative classroom experience with project work or interdisciplinary teaching, due to a constant feeling of uncertainty and chaos, as well as lack of a process to follow. We therefore conclude: there is a missing link between theoretical findings and demands by pedagogy science and its practical implementation. We claim that, Design Thinking as a team-based learning process offers teachers support towards practice-oriented and holistic modes of constructivist learning in projects. Our case study confirms an improvement of classroom experience for teacher and student alike when using Design Thinking. This leads to a positive attitude towards constructivist learning and an increase of its implementation in education. The ultimate goal of this paper is to prove that Design Thinking gets teachers empowered to facilitate constructivist learning in order to foster 21st century skills.

31.

ABSTRACT: Discourse is often considered as a taken-for-granted notion, however, it is already a representational genre of design thinking whether written/ unwritten, spoken/unspoken, designed/undesigned, realised/unrealised. This article explores current architectural discourse to understand its relations with the design thinking transmitted through various modes of representations in media, education and practice, and to find out how such discourse might
implicitly influence design ideas. The article argues that discourse, in this context, will stand as a product in itself in architectural culture. Moreover, a cross-view of today's architectural discourses will inform us about the present state of architecture, how contemporary architects express themselves or communicate from such points of view, and what might be the emergent issues and possibilities in architecture and design representation.


ABSTRACT: Design thinking has a central focus on creative, innovative, empathetic activity orientated towards process, problem resolution and products for ill-defined contexts, through application of a particular form of thinking. Little attention however has been given to the cognitive flaws that are inherently a feature of the decision-making aspects of design thinking in an educational setting. As a consequence designing is often presented within Technology Education as an idealistic rational activity that brings about conscious planned change in the made world. This paper represents the first stage of an embryonic research project examining the existence, identification of and reflection upon cognitive limitations and heuristic flaws of those engaged in design thinking processes as part of a Technology education experience. As such the paper provides a discussion, overview and rationale for the use of Metacognitive Debiasing and Reflection Tools in Design Thinking (MDRTDT) activities as part of an educational experience that will be used in the research study.


ABSTRACT: This paper studies two master-level project courses in two universities that use design thinking processes and problem-based learning as the main educational approach in the courses in question. One of the courses has been under development since 1969 and another one was launched during 2012. Both are interdisciplinary and multicultural by nature and have an ill-defined and open-ended real-life problem setting. In this paper we examine the two courses impact on the learning results concerning working life skills such as communication skills, teamwork, design thinking, problem solving and an entrepreneurial mindset. We also seek to understand how these findings relate to design thinking and problem-based learning theories. For data gathering we used semi-structured interviews, study journals and surveys. The data is analyzed and first divided into themes, which are then further analyzed. Research method is close to grounded theory. Altogether 15 alumni and 10 students were interviewed from three different nationalities. We can conclude that in both course structures the students go through a significant learning process that involves learning from the areas of: 1. Communications, team dynamics, cross-cultural, and multiple disciplinarity 2. Self-discovery, personal growth and team based group work 3. Design process, prototyping, testing and decision-making 4. Attitude for failing, entrepreneurship The depth and intensity of the learning process is closely linked to the commitment and time spent in the course. These findings are the same irrespective of which of the courses is in question. There are clear differences as well. The understanding of the need for pragmatic prototyping and tolerance towards ambiguity is greater in other of the courses, namely the older one. This can be partly explained by more tested coaching methods and more mature structure of the course. This research is limited to student and teacher perspective of the learning results mentioned above. Industry, university administration and other stakeholder opinions and perspectives are not in the scope of this paper. One limiting factor for the analysis is also the fact that all of the authors are somehow linked in to the courses in question.


ABSTRACT: Art and design education hold a unique role in preparing the kinds of innovative, balanced, synthetic creators and thinkers needed in the 21st century. This paper sheds shed light on how learner-
centered art classrooms, that incorporate design thinking as a balanced process, can better develop the overall learning capacity of students. In a mash-up between mixed model research involving the impact of learner-centered pedagogies on visual art students’ balanced intelligence and reviews of literature surrounding the promotion of depth and complexity of knowledge, new conceptual frameworks and assessments are offered. Towards a vision of fostering deep, connected, and independent thinkers, the author— as designer, artist, and art educator— explores design thinking as an aesthetic, inquiry based process that integrates complex intelligence theories.


ABSTRACT: Although design thinking becomes increasingly attractive for business management, it has not yet been sufficiently recognized and discussed in the context of entrepreneurship and especially not in the context of entrepreneurship education. The objective of this contribution is to conceptually analyze the potentials of EDT as being a rather new method for entrepreneurship education in universities. The results of our work show that the characteristics of EDT can enhance entrepreneurship education. In addition we reveal that EDT offers beneficial guidelines for the design of entrepreneurship education programs.


ABSTRACT: The present publication includes selected papers from the 62nd annual conference of the International Council for Educational Media (ICEM). Nicosia. The event was under the Auspices of the Cyprus Presidency of the Council of the European Union 2012


ABSTRACT: Design Thinking is a human-centred methodology for innovation, which has evolved from the study of the unique ways in which designers ‘think’, and ‘practice’ (Bauer & Eagen, 2008). While there is emerging research into the learning and teaching of Design Thinking, it is often anecdotal, i.e. reflection rather than research-based, and there is general lack of rigorous evaluation of curricula. This paper presents a PhD research project that explores how Design Thinking expertise can be best introduced, developed, and nurtured within Product Design and Business higher education programmes. The project involves the development, evaluation and refinement of a Design Thinking curriculum, including the design of learning outcomes, content, learning activities, assessment, and resources. The evaluation focuses on the students’ learning experience, and their development of Design Thinking expertise. Participants also contribute to the further development of the curriculum. The research uses Action Research, Design and Co-Design methodologies, with embedded Case Studies, and draws upon both qualitative and quantitative methods. A number of key theories and constructs inform the curriculum design, in particular Design Thinking (Brown, 2008), Constructivism (Cross, 2011), Experiential Learning (Kolb, 1984), and Bloom’s Learning Domains (Bloom, 1965).


ABSTRACT: In this paper, we consider the integration of design into engineering curricula from the perspective of designiettes. Designiettes are glimpses, snapshots, small-scale, short turnaround and well-scowped design problems that provide a significant design experience. While most engineering programs around the world introduce design at distinct points in a curriculum, such as freshman and capstone design courses, we present
the concept of a “4-D” design pedagogy, where design is integrated across courses, semesters, years, and extra-curricular activities. This pedagogy, or framework, may be implemented in whole or in part in any engineering program. Building on this design pedagogy, we present the context of designiettes in terms of educational theories, the I-Engineering, and assessment. We then explore the strategic development and use of designiettes, and present a literature review on small scale design project efforts as they relate to the concept of designiettes. This literature leads to a categorization of characteristics and questions that form a basis for creating designiettes for use in engineering curricula. Exemplar designiettes are then presented to illustrate their development and implementation process.


ABSTRACT (traduzido): O artigo analisou a utilização desta abordagem de projeto (Design thinking anjo) como métodos modernos de ensino no processo educacional e desenvolvimento do empreendedorismo estudado competências empresariais no caso do curso de graduação. O empreendedorismo é uma fonte de criação valores e crescimento econômico nas últimas décadas tornou-se parte da prática pedagógica de vários níveis de ensino. Pesquisas recentes, no entanto, salientar que o pedagógica Pratique muitas vezes ineficaz e não produz resultados satisfatórios no desenvolvimento de competências empresariais. Apesar do fato de que o debate sobre a pertinência ea qualidade da educação para o empreendedorismo realizada há pelo menos três décadas (FIET de 2001 do Gartner e Vesper, 1994; sacristão & Bowman, 1984), ainda não há consenso sobre o conteúdo ou objectivos de programas de negócios (Blenker, Korsgaard, Neergaard, & Thrane, 2011). Discussões muitas vezes colocados no centro de estudar o desenvolvimento do empreendedorismo competências como um objetivo básico do projeto abordagem baseada educação para o empreendedorismo proposta como uma das formas promissoras para o desenvolvimento destas competências. Esta abordagem de design É geralmente definida como um designer de aplicativo para métodos criativos de resolver conflitos pessoais, problemas sociais ou de negócios.