

Coelho, M.J., & Martins, H. (2022). The future of soft skills development: a systematic review of the literature of the digital training practices for soft skills. *Journal of e-Learning and Knowledge Society*, 18(2), 78-85.

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### Appendix A. Summary of key aspects of each review article

<i>Title</i>	<i>Year</i>	<i>Authors</i>	<i>Sample</i>	<i>Purpose</i>	<i>Typology</i>	<i>Summary</i>	<i>Methods</i>
Skills needs, integrative pedagogy and case-based instruction (1)	2020	Lyons, P (Lyons, Paul)[ 1 ] ; Bandura, RP (Bandura, Randall Paul)[ 2 ]	N/A	The purpose of this study is to advance the proposition that organizations involved with training of employees should make.	Empirical literature; IP for adult learners and CBI	Identified are some of the current and projected employee skill needs in the increasingly complex digital workplace. Explained are features of IP as well as how the features help advance a learning environment for adults.	Qualitative
Competencies and success measured by net income among Hungarian HE graduates (2)	2020	Kurath, G (Kurath, Gabriella)[ 1 ] ; Sipos, N (Sipos, Norbert)[ 1 ]	6190 respondents (Hungarian HE graduates)	The purpose of this paper is to show the effects of the six competence areas of Garcia-Aracil and Van der Velden (2007) on new graduates' labor market success measured by salary.	Literature review; Online Survey	The six competence sets do exist, but that not all of them have a significant effect on salaries. With the control variables involved, 24.3% (EFA) and 23.0% (CFA) of the global competencies account for variance in salaries. The impact of methodological and the socioemotional set on salaries can be clearly seen among those with new degrees, and based on the results and the literature review, the HEIs can improve them.	Qualitative; Quantitative??
The effects of game-based learning in the acquisition of "soft skills" on undergraduate software engineering courses: A systematic literature review (3)	2020	Garcia, I (Garcia, Ivan) ; Pacheco, C (Pacheco, Carla) ; Mendez, F (Mendez, Francisco); Calvo-Manzano, JA (Calvo-Manzano, Jose A.)	The study found 96 studies to answer these four questions	The effects of game-based learning in the acquisition of "soft skills" on undergraduate software engineering courses	This study presents a systematic literature review on the use of GBL for teaching software engineering at the undergraduate level, from 2001 to 2020, by addressing four research questions: What kinds of games have been developed for software engineering education? Which software engineering areas have been addressed by these games? Which soft skills have been promoted by using these games? How have these skills been evaluated?	The findings provided evidence on the development of digital games focused on teaching the fundamentals of software engineering defined by software engineering body of knowledge. Moreover, these games have been able to promote the acquisition of more than one soft skill which is beneficial for undergraduate students	Qualitative (Systematic literature review)

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Perceived instructional requirements of soft-skills trainers and hard-skills trainers (4)	2020	Wisshak, S; Hochholding, S	129 soft-skills trainers and 61 hard-skills trainers	The authors used 14 items covering relevant instructional knowledge and skills based on the training literature	Questionnaire	An exploratory factor analysis identified the following two factors: managing interactions and instructional activities. A multivariate analysis of variance showed significant differences in the assessments of managing interactions (p= 0.00) and instructional activities (p= 0.01) between soft- and hard-skills trainers. Research limitations/implications These findings suggest that differences exist in the required instructional knowledge and skills depending on whether trainers teach soft or hard skills	Quantitative and Qualitative
Universities without Walls: A Blended Delivery Approach to Training the Next Generation of HIV Researchers in Canada (5)	2020	Ibanez-Carrasco, F (Ibanez-Carrasco, Francisco); Worthington, C (Worthington, Catherine); Rourke, S (Rourke, Sean); Hastings, C (Hastings, Colin)	?	Although HIV has not diminished in importance in Canada, the field of HIV research remains small, and the graduate students who decide to pursue careers within it feel isolated and uncertain about their professional skills and opportunities. Universities Without Walls (UWW) was created in 2009 to help address these shortcomings.	Case Study, non-credit training program for emerging HIV researchers in Canada (via Online)	The main results reported in our case study included significant "soft outcomes" for UWW fellows, such as developing a "social presence" as a precursor to lasting professional connections; learning to experience community-based research, intersectionality, and interdisciplinarity by interacting online with persons living with HIV, leaders in the field, and a variety of stakeholders (including nonprofit staff and policymakers).	Qualitative
Self-Assessment of Competence and Referral Behavior for Musculoskeletal Injections among Dutch General Practitioners (6)	2020	Spruit, E (Spruit, Emely)[ 1 ]; Mol, MF (Mol, Marianne F.)[ 1 ]; Bos, PK (Bos, P. Koen)[ 2 ]; Bierma-Zeinstra, SMA (Bierma-Zeinstra, Sita M. A.)[ 1,2 ]; Krastman, P (Krastman, Patrick)[ 1 ]; Runhaar, J (Runhaar, Jos)[ 1 ]	355 General practitioners	The number of administered/referred injections and management strategy for musculoskeletal injections.	Online and Offline Questionnaire	GPs considered themselves competent to administer musculoskeletal injections	Quantitative and Qualitative

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A preliminary insight into the role and importance of management skills in the prevention of occupational derailment: An exploratory analysis of UK and Spanish pharmacists (7)	2020	Breen, L (Breen, Liz)[ 1 ] ; Acosta-Gomez, J (Acosta-Gomez, Jaime)[ 2 ] ; Tomlinson, J (Tomlinson, Justine)[ 1 ] ; Medlinskiene, K (Medlinskiene, Kristina)[ 1 ] ; Elies-Gomez, J (Elies-Gomez, Jacobo)[ 1 ]	Two thirds of the data were collected from a UK audience and the final third from Spanish pharmacists	The aim of this study was to examine the prevalence and importance of management skills in the pharmacy profession and pharmacists' ability to respond to current and future challenges in healthcare provision.	Data were collected using semi-structured online surveys	The results demonstrated that there was overwhelming support for management skills to be part of undergraduate studies.	Qualitative
3D printed temporal bone as a tool for otologic surgery simulation (8)	2020	Gadaleta, DJ (Gadaleta, Dominick J.)[ 1 ] ; Huang, D (Huang, Denis)[ 2 ] ; Rankin, N (Rankin, Nicholas)[ 2 ] ; Hsue, V (Hsue, Victor)[ 2 ] ; Sakkal, M (Sakkal, Marah)[ 2 ] ; Bovenzi, C (Bovenzi, Cory)[ 1 ] ; Huntley, CT (Huntley, Colin T.)[ 1 ] ; Willcox, T (Willcox, Thomas)[ 1 ] ; Pelosi, S (Pelosi, Stanley)[ 1 ] ; Pugliese, R (Pugliese, Robert)[ 2 ] ; Ku, B (Ku, Bon)[ 2 ]	10 junior residents with no previous drilling experience participated in the study	In this face validity study, we discuss the fabrication and utility of an affordable, computed tomography (CT)-based, anatomy-accurate, 3-dimensional (3D) printed temporal bone models for junior otolaryngology resident training.	Likert questionnaire, 3D printing	The final result was an anatomically accurate (XYZ accuracy= 12.5, 12.5, 5 mu m) 3D model of a temporal bone that was deemed to be appropriate in tactile feedback using the surgical drill. The total cost of the material required to fabricate the model was approximately \$1.50. Participants found the 3D models overall to be similar to cadaveric temporal bones, particularly in overall value and safety.	Quantitative and Qualitative
Soft Skills On-Line Development in Times of Crisis (9)	2020	Naamati Schneider, L (Naamati Schneider, Lior)[ 1 ] ; Meirovich, A (Meirovich, Adaya)[ 1 ] ; Dolev, N (Dolev, Niva)[ 2 ]	N/A	Incorporating the development of soft skills in the current academic systems, which still hold a mainly cognitive focus has been found challenging and efforts are relatively scarce and isolated.	Presenting the theoretical basis of the model and exemplifying the ways it can be used in different subjects and as part of higher education institutions (HEI) strategy.	It is believed that integrating soft skills development using online learning and linking them to course subjects will help HEI to stay relevant in a changing world and fulfil their role in preparing students to the 21st century reality, in the times of the recent health crisis COVID-19 and beyond.	Qualitative
Investing in Extension's Workforce: Assessing and Developing Critical Competencies of New Agents (10)	2020	Berven, BC (Berven, Brandi C.) ; Franck, KL (Franck, Karen L.) ; Hastings, SW (Hastings, Shirley W.	Regional program leaders (of Tennessee?)	Tennessee Extension's creation and implementation of a competency assessment and development program for new Extension agents.	Online assessments, interactive feedback	Expected results include targeted professional development, increased competency of agents, greater job satisfaction, increased retention, and increased public value for Extension.	Qualitative

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A MOOC About Bariatric Surgery Improves Knowledge and Promotes Patients' Soft Skills (11)	2020	Pottier, E, Boulanour, L., Bertrand, M., Estrade, A., Croiset, A., Martineau, C., Plantec, J. Y., Escourou, B., Ritz, P.	Obesity surgery patients	The ASMBBS studies if patients should be provided with educational materials to improve informed consent about bariatric surgery and soft skills.	5-week learning sessions of online open courses (evaluated with semi-direct interviews)	This study suggests that MOOC can be a resource to improve knowledge and soft skills in patients for a better consent to surgery and follow-up.	Qualitative
Game Jams for Learning and Teaching: A Review (12)	2020	Merilainen, Mikko; Aurava, Riikka; Annakaisa, Kultima; et al.	N/A	Educational aspects of Game jams	Intersection of these disciplines to explore its various learning dimensions.	Starting point for future studies on game jamming in the context of learning and teaching.	Qualitative
INNOVATIVE MODEL OF SOCIO-PROFESSIONAL DEVELOPMENT OF A STUDENT'S PERSONALITY (13)	2020	Zeer, EF (Zeer, E. F.) [ 1 ] ; Tretyakova, VS (Tretyakova, V. S.) [ 1 ] ; Zinnatova, MV (Zinnatova, M., V) [ 1	Russian universities and secondary vocational educational institutions	The learning model in russia is outdated. The authors will develop a new one based on digitalization and soft skills to replace the current one based on the soviet era mass production economy.	Methodological framework; Methods of various types of analysis including SWOT analysis; logical-semantic and structural-functional modelling.	The authors actualised the problem of creating an innovative educational content, which expands the range of professional knowledge and skills required of competitive personnel, who are capable and ready to preadapt to the rapidly changing socio-professional conditions.	Qualitative
Key competencies for big data analytics professions: a multimethod study (14)	2020	Persaud, A (Persaud, Ajax)	University students and employers who desire a career in big data	Identify the precise competencies that employers are seeking for big data analytics professions and whether higher education big data programs enable students to acquire the competencies.	Online job postings, executive interviews and big data programs at universities and colleges	Employers are seeking workers with strong functional and cognitive competencies in data analytics, computing and business combined with a range of social competencies and specific personality traits. The exact combination of competencies required varies with job levels and tasks. Executives clearly indicate that workers rarely possess the competencies and they have to provide additional training.	Qualitative
Beyond supervisors' support: influencing (international) technical training transfer (15)	2020	Richter, S (Richter, Svenja) [ 1 ] ; Kauffeld, S (Kauffeld, Simone) [ 1 ]	441 technical staff members of an automotive company service centres	This paper aims to provide an understanding of influencing motivation and volition in the transfer of learning within the context of technical training in different countries by controlling predictors.	Two online questionnaires, training program	Motivation and volition mediate the effects of peer support, content validity and supervisor support on training transfer after a technical training. The outcomes show that peer support has an important influence on motivation and that national culture is less important than company culture.	Qualitative
Automatic multimodal assessment of soft skills in social interactions: a review (16)	2020	Sowmya Rasipuram, Dinesh Babu Jayagopi	Articles corresponding to previous studies.	Automatic assessment of soft skills in social interactions.	Offline methods such as traditional forms of conversation and online methods using technology.	N/A	Qualitative

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Use of the LMS Moodle for an Effective Implementation of an Innovative Policy in Higher Educational Institutions (17)	2020	Zabolotniaia, Mariia; Cheng, Zhichao; Dorozhkin, Evgenij; Lyzhin, Anton	Teachers and students in higher Educational Institutions	Understanding the benefits of implementing the Moodle LMS platform to enhance a better digital performance on higher education institutions.	LMS Moodle educational platform	Universities are provided with an efficient, innovative, technological tool, with the goal to adjust their educational and professional needs to recent changes on the field of digital transformation.	Qualitative
HYBRID CLOUD-ORIENTED LEARNING ENVIRONMENT FOR IT STUDENT PROJECT TEAMWORK (18)	2020	Glazunova, OG (Glazunova, Olena G.) ; Voloshyna, TV (Voloshyna, Tetyana V.) ; Korolchuk, VI (Korolchuk, Valentyna, I)	3rd year students of the Specialty "Computer Science"	Proposal for the development and implementation of a hybrid cloud-oriented learning environment	MS Teams-based cloud environment for project teamwork; traditional and cloud-oriented forms of training; Software component: tools for communication, project management and placement of the teaching resources included in MS Teams	Data analysis of experimental studies demonstrated that MS Teams-based cloud-oriented environment, which ensures execution of tasks on communication, organization of teaching process, project management and makes it possible to integrate additional tools for arranging an interdisciplinary project, namely, professional, educational and the like, - is an effective environment for the development of the digital, professional and personal competences of the future IT specialist.	Qualitative and Quantitative
A Delphi Study of Effective Adapted Physical Education Practicum Experiences (19)	2020	Taliaferro, AR (Taliaferro, Andrea R.)[ 1 ] ; Bulger, SM (Bulger, Sean M.)[ 1 ]	24 content experts	The purpose of this study was to determine expert consensus regarding the essential characteristics of adapted physical education practicum experiences for preservice physical educators	Online questionnaire	Four major themes were identified through a post hoc qualitative cluster analysis: program context, teaching and learning activities, outcomes/soft skills, and evaluation of instructor performance.	Qualitative
E-Government Insights to Smart Cities Research: European Union (EU) Study and the Role of Regulations (20)	2020	Lytras, MD (Lytras, Miltiadis D.)[ 1,2 ] ; Serban, AC (Serban, Andreea Claudia)[ 3 ]	Comparison between EU countries in certain domains	The recent evolution of smart cities research has initiated a holistic dialogue for the integration of past initiatives promoting e-government at European Union Level. At the same moment Future Smart Cities research, is justified as a multi-disciplinary and inter-disciplinary research domain.	N/A	Confirming the hypothesis that low performance countries record higher growth rate than developed countries. We found that the opportunity of using e-services, particularly e-government services, is less accessible to citizens with low overall digital skills and, as is technically normal, to those with low access to internet access.	Qualitative

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Soft Pneumatic Actuator for Rendering Anal Sphincter Tone (21)	2020	Osgouei, RH (Osgouei, Reza Haghghi)[ 1 ] ; Marechal, L (Marechal, Luc)[ 2 ] ; Kontovounisios, C (Kontovounisios, Christos)[ 3 ] ; Bello, F (Bello, Fernando)[ 1 ]	??	Sphincter tone examination, as part of digital rectal examination (DRE), can provide essential information to support the early detection of colorectal cancer. Mastering DRE skills for junior doctors is always challenging due to the lack of real training cases.	Different pumping actuation (syringe and bellows) and driving mechanisms (linear, stepper, and servo motor) were implemented and compared for their effect on the rendered tones ; . A further comparison was made with a previous prototype based on a cable-driven mechanism.	The results show the capacity and limitation of each mechanism, with the one based on a servo motor and a bellows being the most favourably rated.	Quantitative and Qualitative
Constraints and strategies for effective use of social networking sites (snss) for collaborative learning in tertiary institutions in nigeria: perception of tvet lecturers (22)	43831	Olelewe, CJ (Olelewe, Chijioke Jonathan)[ 1 ] ; Orji, CT (Orji, Chibueze Tobias)[ 2 ] ; Osinem, EC (Osinem, Emmanuel C.)[ 3 ] ; Rose-Keziah, IC (Rose-Keziah, Ikemelu Chinelo)[ 4 ]	128 TVET lecturers	The main purpose of this paper is to ascertain the perception of TVET lecturers on the constraints and possible strategies to effective use of SNSs for collaborative learning in tertiary institutions in Nigeria	Questionnaire, Mean, standard deviation, exploratory factor analysis and t-test statistics	13 SNSs were commonly used by TVET lecturers, 13 major constraints hinder effective use of SNSs for collaborative learning by TVET lecturers, while 10 strategies were proffered to promote the effective use of SNSs for collaborative learning. This paper therefore calls for continuous professional development (CPD) of TVET lecturers particularly to enable them acquire the needed soft skills required for effective utilization of SNSs in their teaching practices.	Quantitative
Merits of capstone projects in an online graduate program for working professionals (23)	2019	Blanford, J (Blanford, Justine)[ 1,2 ] ; Kennelly, P (Kennelly, Patrick)[ 1,2,3 ] ; Kinga, B (Kinga, Beth)[ 1,2 ] ; Miller, D (Miller, Douglas)[ 1,2 ] ; Bracken, T (Bracken, Tim)	Past students	we highlight the capstone project model used in an online geospatial professional program in which students apply a wide range of technical skills as well as enhance their soft skills through problem-based projects	Survey	The learning model presented here is flexible and highly applicable for enhancing industry competencies for working professional students not only by providing students with the opportunity to develop research-led projects, but also for the educational institution to adjust to changing demands.	Qualitative

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Faculty Use and Perceptions of Service-Learning in Radiologic Science Education (24)	2019	King, MP (King, Mari P.)[ 1 ] ; Anson, D (Anson, Denis)[ 2 ] ; Kahanov, L (Kahanov, Leamor)[ 3 ]	444 students in radiologic science faculty	To investigate faculty integration of service-learning into radiologic science curricula and its effects on faculty and students.	Quantitative analysis using descriptive statistics was performed on the raw data, and mind maps were created from responses to open-ended questions for qualitative analysis	Faculty who incorporated service-learning into their courses reported outcomes of increased professionalism, leadership, career skills, empathy, and community awareness. Survey results indicated that service-learning provides students with experiences relevant to the environment they will encounter after graduation. Faculty who use service-learning reported additional benefits for themselves and their students, including having a richer understanding of the community and its members, which ultimately improves critical soft-skills of practice.	Quantitative and Qualitative
Adults video gaming: Key competences for a globalised society (25)	2019	Alonso-Diaz, L (Alonso-Diaz, Laura)[ 1 ] ; Yuste-Tosina, R (Yuste-Tosina, Rocio)[ 1 ] ; Mendo-Lazaro, S (Mendo-Lazaro, Santiago)[ 2 ]	404 individuals	the profile of adult video gamers and defines the characteristics of the games they choose to play. It also examines the way and with what type of video games adults perceive those key competences are developed	questionnaire on video games and adult education	The results confirmed that adult video gamer, while playing, also learns and develops key competences. Role-playing games are those most closely linked to the development of hard (technical, practical and mechanical) and soft skills (personality traits) for globalised society	Quantitative

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Transformative Training in Soft Skills for Peacekeepers: Gaming for Peace (26)	2019	Holohan, A (Holohan, Anne)[ 1 ]	77 experienced military, police and civilian peacekeeping personnel around Europe	Personnel in peacekeeping missions come from diverse organizations and nations, yet must coordinate together in each peacekeeping mission. Diversity in organizations (militaries, police forces, civil organizations), gender and culture (national, ethnicity, religion) make communication and cooperation difficult yet vital in order to achieve peacekeeping missions' goals. Current training puts few resources into training personnel in the critical soft skills of communication, gender awareness and cultural awareness that facilitate working together. Experiential learning through role-play is recognized as the best way to improve soft skills but is expensive and logistically difficult. Role-playing in a digital environment, specifically a Serious Game, can provide experiential learning that is low cost and accessible to all. Training peacekeepers in soft skills digitally requires deep knowledge of soft skills in peacekeeping. Yet we know little about the experiences of soft skills by peacekeeping personnel on peacekeeping.	Interview	The research demonstrates the limited and uneven nature of training in soft skills, identifies the soft skills needed by the interviewees on missions, and demonstrates that the majority of the interviewees want more training and practice in soft skills relevant for peacekeeping.	Qualitative



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Online learning as a form of distance education: Linking formation learning in theology to the theories of distance education (27)	2019	Roberts, JJ (Roberts, Jennifer J.) [ 1 ]	N/A	Online learning is a form of DE and fast becoming the preferred method of instruction and delivery. Critiques of online learning, and of DE itself, will argue that, because of the separation of the teacher and the student, only academic skills can be taught and learnt using this medium. The so-called 'softer skills' - those that focus on the development of the person - are best taught in a face-to-face, traditional environment. This article focuses on a review of DE theories and models. A particular emphasis is placed on online learning theories, and how the teaching of formational learning skills can be successfully incorporated into this educational setting	The article draws from a range of studies that have been conducted	It concludes by suggesting a blended model of both face-to-face and online learning, where meaningful interactions between the learner and teacher take place, is desirable. The article highlights the important role that DE (and specifically online education) can play in developing the human component of education.	Qualitative

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Impactful Leadership Traits of Virtual Leaders in Higher Education (28)	2019	Alward, E (Alward, Erin)[ 1 ] ; Phelps, Y (Phelps, Yvonne)[ 1 ]	10 experienced academic leaders	One benefit of a virtual workforce is the ability to hire the most qualified individuals regardless of where they are physically located. As the virtual workforce expands, leaders may intuitively rely on traditional face-to-face approaches and strategies for employee oversight and motivation. These techniques may be ineffective or challenging to use in the virtual environment necessitating new approaches. Leaders of virtual teams need to understand the intricacies associated with these groups and be cognizant of factors that assist in creating cohesiveness, trust, and communication amongst virtual teams.	Interview	As a result of the interviews, seven major themes emerged: (a) training and development; (b) trust; (c) emotional intelligence; (d) communication/team building/technology; (e) employee recognition and motivation; (f) leadership styles; and (g) virtual leadership competencies unique to higher education. Based on these themes and further evaluation, the need for specific soft skills and robust technology emerged. Specifically, organizational success partially hinges on comprehensive training for virtual leaders, the significance of trust, emotional intelligence, and effective, respectful communication.	qualitative phenomenological study
Walk the talk: soft skills' assessment of graduates (30)	2019	Succi, C (Succi, Chiara)[ 1 ] ; Wieandt, M (Wieandt, Michaela)[ 2 ]	500 HR managers and 240 graduates	In the literature, an increased attention has been devoted to the impact of interpersonal skills and personal characteristics on employability (Heckman and Kautz, 2012; Succi, 2019; Wheeler, 2016). In this context, the so-called soft skills become of crucial importance, but a lack of academic attention devoted to their development, and a deficit of companies in integrating soft skills in their selection, induction and training processes have been identified	Online Questionnaire	The large majority of HR managers indicate they offer formal training to young graduates and that they are involved in the performance appraisal sessions, while only 22 percent of students confirm they receive formal training and only 26 percent declare to be inserted in a performance appraisal process. Moreover, concerning the assessment of soft skills during the selection process, significant differences between Italian and German companies emerged.	Qualitative

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Dominant recent trends impacting on jobs and labor markets-An Overview (31)	2019	Jagannathan, S (Jagannathan, Shanti)[ 1 ] ; Ra, S (Ra, Sungsup)[ 2 ] ; Maclean, R (Maclean, Rupert)[ 3 ]	N/A	Provide a comprehensive overview of global and regional trends that impact on emerging jobs and labor markets of the future. With reference to Asia, the papers examine promising strategies in skills for jobs that address these trends. The articles provide a snapshot of the changing dynamics of labor markets of the future and the importance of reimagining not just the content of skills development and training but also the mechanisms by which they can be delivered to prepare a future-ready workforce	Article	The key attributes possessed by such a globally relevant talent pool for the workforce of the future include basic digital skills and literacy; learnability skills; skills needed for greening economies; skills required for engaging in Industry 4.0 occupations; skills for next-generation infrastructure and services; skills for technology-infused manufacturing sectors; and broad-based soft skills that help to improve workplace effectiveness, such as skills for teamwork, problem-solving, creativity, and design-thinking. All these will have an important and far-reaching impact on future directions for technical and vocational education and training in the region that policy makers and practitioners need to take into account.	Qualitative
Proposal for the strengthening of soft and complementary skills, and their impact on the ICT curriculum from a work, professional and academic management perspective (32)	2019	Araya-Fernandez, E (Araya-Fernandez, Eduardo)[ 1 ] ; Garita-Gonzalez, G (Garita-Gonzalez, Gabriela)[ 1 ]	leaders of companies that operate their business in information and communication technology (ICT) in Costa Rica	In the higher education scenario, the study plans required to strengthen the set of technical, soft and complementary skills in the student body.	Interviews	The main result is the analysis of skills and how to define, implement and manage them within the curriculum. Equally important, research revealed some factors that impede its optimal development. Research is the first stage that will lead us to propose a comprehensive model for the identification, selection, application and evaluation, in a systematic way, that strengthens the study plans of careers in the field of ICT.	Qualitative

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UNIVERSITY LEGAL LEARNING SPACES EFFECTIVENESS IN DEVELOPING EMPLOYABILITY SKILLS OF FUTURE LAW GRADUATES (33)	2019	Turner, JJ (Turner, Jason James)[ 1 ] ; Amirnuddin, PS (Amirnuddin, Puteri Sofia)[ 1 ] ; Singh, HSI (Singh, Harmahinder Singh Iqbal)[	256 law students at a university in Malaysia	Examine the role of legal learning space in a Malaysian university and how this space impacts on law students' preparation for the employment market.	Online survey (accessed via a QR code)	Students, regardless of their year of study, did not consider that legal learning space at the university replicated real life legal practice but thought that the space prepared them for employment. The students felt that some legal learning space was better than others in developing their employability skills. Despite this they enjoyed interacting in the space collectively and felt that it helped them improve their teamwork, communication and soft skills.	Qualitative
Massive Open Online Courses: Concept and Implications (34)	2019	Mahajan, R (Mahajan, Rajiv)[ 1 ] ; Gupta, P (Gupta, Piyush)[ 2 ] ; Singh, T (Singh, Tejinder)[ 3 ]	Number of participants enrolled across the globe per course	With increased and unrestricted use of internet, and with ease of developing new online platforms, MOOCs are proving to be an evolutionary phenomenon	Massive open online courses (MOOCs)	Many universities and institutes of higher learning are using MOOCs for knowledge dispersion and skill development. Their role in faculty development, capacity and capability building in medical education arena is unequivocal. Potential of MOOCs can be well-tapped for conduct of continuing medical education programs, and programs for improving soft-skills and research skills in medical field for faculty development. This review details the concepts of MOOCs and their application in education field, particularly in medical education, and feasibility of developing MOOCs in India.	Qualitative

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AI meets labor market: Exploring the link between automation and skills (35)	2019	Colombo, E (Colombo, Emilio)[ 1,2 ] ; Mercurio, F (Mercurio, Fabio)[ 2,3 ] ; Mezzanica, M (Mezzanica, Mario)[ 2,3 ]	We construct a taxonomy for skills and map it into the recently developed ESCO classification system. We subsequently develop measures of the relevance of soft and hard skills and we analyze their detailed composition. We apply the dataset constructed to the debate on computerization of work	This paper develops a set of innovative tools for labor market intelligence by applying machine learning techniques to web vacancies on the Italian labor market.	Machine learning techniques	We show that soft and digital skills are related to the probability of automation of a given occupation and we shed some light on the complementarity/substitutability of hard and soft skills	Qualitative and Quantitative
Strategies for Pan-European Implementation of Blended Learning for Innovation and Entrepreneurship (I&E) Education (36)	2019	Pisoni, G (Pisoni, Galena)[ 1 ]	350 students	Technology enabled learning plays a vital role in contemporary education and blended learning is widely adopted across higher education as a learning mode. In this paper we reflect on the strategies for introducing blended learning in a network of European universities and the first lessons learnt from the experience.	Lecturers, the different types of lessons resulting from this effort, as well as the teachers' and students' perceptions regarding the blended learning activities performed	Our reflection is focused on the use of blended learning and its positive effect on activating students and development of innovation and entrepreneurship soft skills. The perceptions on blended learning are interrelated, with the success of the blending models depending on the blended learning activities, and how well the respective online contents are embedded into the teaching and learning processes.	Qualitative

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Learning-related soft skills among online business students in higher education: Grade level and managerial role differences in self-regulation, motivation, and social skill (37)	2019	Tseng, HW (Tseng, Hungwei)[ 1,2 ] ; Yi, X (Yi, Xiang)[ 3 ] ; Yeh, HT (Yeh, Hsin-Te)[ 4 ]	162 students in fully online business courses	To investigate how undergraduate and graduate business management students, as well as those who had a managerial role in their career and who did not, differ on levels of soft skills (SRL strategies, motivation, and social skills) after gender was controlled. Moreover, we intended to investigate how well soft skills factors influence business students' successes in an online learning environment after students' individual characteristics and learning characteristics were controlled	MANCOVA and hierarchical multiple regression analyses on data collected	Graduate students had higher level of soft skills than undergraduate students, especially in self-regulation and motivation; students with managerial experiences demonstrated a higher level of soft skills ;goal setting, self-efficacy, and social skills were found to be significant predictors. We suggest that instructors and instructional designers should realize that soft skills are important contributor to the learning outcomes.	Quantitative
Point of care ultrasound training needs for primary care physicians: Practice setting matters (38)	2019	Jalil, R (Jalil, Rabiya)[ 1 ] ; Warren, R (Warren, Robert)[ 1,2 ] ; Ma, IWY (Ma, Irene W. Y.)[ 3,4 ]	88 primary care practitioners in Calgary, Alberta, on the electronic departmental	Point of care ultrasound (POCUS) is increasingly used in primary care. This study seeks to determine the educational needs of primary care physicians.	Online survey	Interests of office-based primary care practitioners in learning POCUS differed significantly from hospital-based practitioners. We recommend that separate office vs. hospital practice streams be offered to address their educational needs.	Quantitative and Qualitative

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An exploratory study of digital workforce competency in Thailand (39)	2019	Siddoo, V (Siddoo, Veeraporn)[ 1 ] ; Sawattawee, J (Sawattawee, Jinda)[ 2 ] ; Janchai, W (Janchai, Worawit)[ 1 ] ; Thinnukool, O (Thinnukool, Orawit)[ 1 ]	260 IT experts	Leaders in higher education must keep up with the situation and accelerate plans to produce graduates with the quality and preparation required to meet industry needs. But based on the existing demand gap, universities are eager to first know which skills the IT-related industries expect from new digital workers. This study, conducted in Thailand, explores the competency of the digital workforce, an issue that was identified as vital to the 2017-2021 national agenda	systematic literature review and Survey	The top five competencies desired were lifelong learning, personal attitude, teamwork, dependability, and IT foundations. However, there were some slightly different requirements between the IT industry and IT in non-IT industries. The results presented a new perspective that is very useful to Thailand. The academic sector can use these results to shape IT curriculum in order to effectively respond to real demand.	Qualitative
Impact of co-curricular involvement on academic success of pharmacy students (40)	2019	Fox, LM (Fox, Laura M.)[ 1 ] ; Sease, JM (Sease, Julie M.)[ 1 ]	Pharmacy students	The purpose of this study was to examine the relationship between participation in co-curricular activities and academic performance of pharmacy students enrolled in a traditional PharmD program.	online portfolio; Inferential statistics were used to elucidate the differences in co-curricular engagement by student rank, progression status, and leadership experience as well as differences in grade point average (GPA) by level of co-curricular participation and leadership experience.	The results of this study offer evidence in support of the importance of co-curricular involvement to the development of the whole pharmacy student, including academic success. The provision of co-curricular opportunities by pharmacy programs provides personal and professional development opportunities to students and supports deep learning associated with improved academic performance and overall success.	Qualitative and Quantitative

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The Future of Leadership Development (41)	2019	Moldoveanu, M (Moldoveanu, Mihnea)[ 1 ] ; Narayandas, D (Narayandas, Das)[ 2 ]	N/A	Companies spend heavily on executive education but often get a meager return on their investment. That's because business schools and other traditional educators aren't adept at teaching the soft skills vital for success today, people don't always stay with the organizations that have paid for their training, and learners often can't apply classroom lessons to their jobs.	Review (?)	The way forward, say business professors Mihnea Moldoveanu and Das Narayandas, lies in the "personal learning cloud" the fast-growing array of online courses, interactive platforms, and digital tools from both legacy providers and upstarts. The PLC is transforming leadership development by making it easy and affordable to get personalized, socialized, contextualized, and trackable learning experiences.	Qualitative
PROBLEMS OF TRAINING OF LEADERS IN PUBLIC GOVERNANCE AND ADMINISTRATION IN DIGITAL ECONOMICS (42)	2019	Fedorova, Y (Fedorova, Yu)[ 1 ] ; Babenko, K (Babenko, K.)[ 2 ] ; Malykhina, Y (Malykhina, Ya)[ 3 ] ; Yarmosh, O (Yarmosh, O.)[ 2 ] ; Malykhina, V (Malykhina, V)[ 3 ]					
Graduate readiness for the employment market of the 4th industrial revolution The development of soft employability skills (43)	2019	Teng, WL (Teng, Weili)[ 1 ] ; Ma, CW (Ma, Chenwei)[ 2 ] ; Pahlevansharif, S (Pahlevansharif, Saeed)[ 3 ] ; Turner, JJ (Turner, Jason James)[ 3 ]	361 predominantly Chinese undergraduate students at two universities	Examine student perspectives of their university experience in terms of the soft employability skills they develop; second, how prepared those students feel for the future employment market and finally investigate whether there are differences in perceptions between Chinese and Malaysian students given their different educational experience	Online survey	The results, analysed using factor analysis and confirmatory factor analysis, indicated that the university curriculum develops student soft skills, particularly in the Malaysian university and supports the relationship between soft skill and student preparedness for employment. The results also indicate that compared with the respondents from the Chinese university, the Malaysian university respondents were more likely to be positive to statements concerning their respective university's ability to develop their soft skills.	Qualitative



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Improvement of the Development System of The Personnel of Organizations of the Oil and Gas Sector of the Economy (44)	2019	Vinichenko, MV (Vinichenko, Mikhail V.); Chulanova, OL (Chulanova, Oxana L.); Klementyev, DS (Klementyev, Dmitry S.); Rybakova, MV (Rybakova, Marina, V); Malyshev, MA (Malyshev, Maksim A.); Shalashnikova, VJ (Shalashnikova, Valentina Ju); Korosteleva, DA (Korosteleva, Darla A.)	Focus Group	Issues of improving the efficiency of the organization of the oil and gas sector of the economy through improving the system of personnel development	Online survey; Likert method	Managers of organizations should pay closer attention to the development of management personnel. It is more technological to work with promising employees of the management cohort, focusing on the development of his soft skills. It is necessary to improve the personnel evaluation system in the formation of a personnel reserve, to improve the socio-psychological climate in the team, motivational mechanisms, to ensure career growth. The harmonious development of all elements of the staff development system will serve as a pledge to improve the competitiveness of the organization.	Quantitative (Likert Method)
Extraction of Core Competencies for Big Data: Implications for Competency-Based Engineering Education (45)	2019	Gurcan, F (Gurcan, Fatih)[1]	Online job advertisements (?)	Big data industry is an innovative and dynamic working environment based on highly qualified workforce. As the big data phenomenon advances, the demands of the industry for the workforce having these skills and competencies have increased considerably in recent times. Accordingly, the engineering education programs today need to adapt these skills and competencies into their programs	Modeling analysis of online job advertisements using Latent Dirichlet Allocation	Domain-specific competencies, developer competencies, soft competencies, business-oriented competencies and analytical competencies are discovered, which revealed that big data competencies contain a wide spectrum of knowledge domains and skill sets based on a multidisciplinary background. The findings of the study are very critical to guide the industry, academia, and big data communities for bridging the gap between the requirements of the industry and the engineering education programs.	Quantitative

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The use of Open Badges in library and information science education in Estonia (46)	2019	Virkus, S (Virkus, Sirje)[ 1,2 ]	N/A	This paper discusses the planning and implementation of Open Badges in library and information science education at Tallinn University in order to foster and personalise student learning.	Systematic Review of Literature	Based on recent experience, it can be said that Open Badges are valuable tools in the assessment process which will give a more holistic picture of educational achievement of the learner. Multiple learning pathways within the course provided learners opportunities to choose their personal learning path according to their personal learning goals, learning style, interests and other preferences. Open Badges also allowed to recognize 'soft skills' or literacies. Open Badges could be also a useful tool to assess students' information literacies in different contexts.	Qualitative
Preparing students for university studies and beyond: a micro-credential trial that delivers academic integrity awareness (47)	2019	Ruddy, C (Ruddy, Christine)[ 1 ] ; Ponte, F (Ponte, Frank)[ 1 ]	N/A	The development of an academic integrity awareness micro-credential for new student entrants to university.	N/A	The trial of this micro-credential provides students with foundational skills in understanding the academic world, subsequently providing the advantage required for a successful transition to industry.	Qualitative

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How do residents in urology evaluate their daily routine at work-a survey analysis (48)	2018	Necknig, U (Necknig, U.)[ 1 ] ; Borowitz, R (Borowitz, R.)[ 2 ] ; Woehr, M (Woehr, M.)[ 3 ] ; Leyh, H (Leyh, H.)[ 1 ] ; Weckermann, D (Weckermann, D.)[ 4 ]	218 residents in urology	The changing conditions in German hospitals is causing a shortage of young people. In order to identify starting point for improvements, the Bavarian association of urologists in collaboration with the German Society of Residents in Urology (GeSRU) conducted an online survey among residents in urology in summer of 2017.	Survey	Participants particularly demanded a higher degree of practical experience during their studies, as well as more teaching of soft skills. In relation to choosing their specialisation, participants considered the intern year and their clinical traineeships as crucial factors. Participants did express appreciation of their field of specialization in relation to the broad range of available treatments, the opportunity of further specialising, the clientele of patients, the opportunity of working in a small team, innovations, and the high possibilities of opening their own medical practice. On a personal level, participants specifically wished for a more structured plan relating to their further internship, involving regular meetings. They also expressed the wish for more personalised career plans, more flexible work hours, and improved advanced training, both internally and externally.	Qualitative

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Developing Soft Skills: Exploring the Feasibility of an Australian Well-Being Program for Health Managers and Leaders in Timor-Leste (49)	2018	Tsey, K (Tsey, Komla)[ 1,2 ] ; Lui, SM (Lui, Siu Man (Carrie))[ 3,5 ] ; Heyeres, M (Heyeres, Marion)[ 5 ] ; Pryce, J (Pryce, Josephine); Yan, L (Yan, Li)[ 4 ] ; Bauld, S (Bauld, Sharee)[ 2 ]	Workshop participants	The article aims to describe the Family Wellbeing Program (FWB), a program that sets out to facilitate the enhancement of soft skills and to explore the relevance and acceptability of the FWB in the context of health managers and leaders in Timor-Leste. This article presents the fundamental principles of the FWB approach to facilitating soft skills in the context of trauma-informed training for managers and leaders. It describes how a participatory social learning approach advances deep, transformative, and long-lasting impacts.	Qualitative data were gathered from workshop participants through an evaluation form with open-ended questions allowing participants to provide comments on the program and how it could be enhanced. In addition, attendees participated in an online survey, which sought to capture data relating to demographics, soft skills for managers/leaders, personal well-being, and program satisfaction.	The results show that the FWB program is both relevant and acceptable. The findings indicate that participants' understanding of concepts of management and well-being, particularly as it is applied to the workplace, was improved. This outcome is important because it highlights how the FWB program can contribute to the development of more accomplished managers and leaders in the future.	Qualitative

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A decade of shaping the futures of polar early career researchers: A legacy of the International Polar Year (50)	2018	Hindshaw, RS (Hindshaw, Ruth S.)[ 1 ] ; Mariash, H (Mariash, Heather)[ 2 ] ; Vick-Majors, TJ (Vick-Majors, Trista J.)[ 3 ] ; Thornton, AE (Thornton, Alexander E.)[ 4 ] ; Pope, A (Pope, Allen)[ 5,6 ] ; Zaika, Y (Zaika, Yulia)[ 7 ] ; Lenz, J (Lenz, Josefine)[ 8,9 ] ; Nielsen, H (Nielsen, Hanne)[ 10 ] ; Fugmann, G (Fugmann, Gerlis)[ 11	N/A	The Association of Polar Early Career Scientists (APECS) is an important legacy of the International Polar Year (IPY). APECS continues to foster engagement in education, outreach and communication (EOC) activities relating to the polar regions and provide training for early career researchers (ECRs). We highlight opportunities for training, leadership and skills development, such as the annual Polar Weeks and Antarctica Day celebrations. Participation and engagement in EOC activities actively contributes to career development by enabling ECRs to develop valuable soft skills such as networking, communication and interdisciplinary knowledge.	Pilot survey	Those who organize events also gain leadership skills such as team management.	Qualitative
Developing the Creative Abilities and Competencies of Future Digital Professionals (51)	2018	Vasilieva, EV (Vasilieva, E. V.)[ 1 ]	N/A	Describes the development of recommendations for using the project thinking approach in training and university education of future digital economy specialists.	Methods used in design thinking	Recommendations for implementing the design thinking approach in academic disciplines are given through an example of a step-by-step description of a specific case. The design thinking approach aims to develop a person's creative abilities through empirical rules and experience, emotional intelligence and recognizing the value of other people's opinions.	Qualitative

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Creation of transmedia contents in the hyperconnected society. A digital ethnography with university students (52)	2018	Martinez, RA (Anguita Martinez, Rocío)[ 1 ] ; Atienza, LD (De la Iglesia Atienza, Laura)[ 1 ] ; Zamora, EG (Garcia Zamora, Eduardo)[ 1 ]	University students	We present an investigation carried out with university students of the field of social education centred on the analysis of the design, creation and broadcasting of transmedia contents. In addition, we are interested in the role that transmedia contents can play in the creation of participatory cultures and social and community development	Work that combined narrative research with digital ethnography	The main results derived from the educational development followed in the elaboration and the production of transmedia content by the students are described. And finally, a series of conclusions is also discussed, in which important issues such as the relationship between transmedia literacy, the construction of citizenship and the mediation of learning from creative experimentation.	Qualitative
Conceptual Model of Training Personnel for Small Business Services In The Digital Economy (53)	2018	Rudenkol, LG (Rudenkol, Lyudmila G.)[ 1 ] ; Larionova, AA (Larionova, Anna A.)[ 2 ] ; Zaitseva, NA (Zaitseva, Natalia A.)[ 3,4 ] ; Kostryukova, ON (Kostryukova, Oksana N.)[ 5 ] ; Bykasova, EV (Bykasova, Elena V.)[ 6 ] ; Garifullina, RZ (Garifullina, Rezeda Z.)[ 7 ] ; Safin, FM (Safin, Fadbir M.)[ 7 ]	N/A	The economy of the new generation presents innovative requirements for the training of undergraduates, the process of forming professional competencies in the educational space of the university based on new methods and digital teaching aids, which determines the relevance of the topic. The purpose of the study is to build a conceptual model of training personnel for small business services in the conditions of the formation of the digital economy.	Modeling method	The conceptual model of training of personnel for small business in the sphere of services developed by the authors in the digital economy includes such components as: the purpose, principles, methods, means, content, attestation and evaluation, the result. The practical importance of this research is that the results and proposals can be used by educational institutions, employers and professional communities.	Qualitative
Children's Acceptance of a Collaborative Problem Solving Game Based on Physical Spaces Versus Digital Learning Spaces (54)	2018	Jurdi, S (Jurdi, Sandra)[ 1 ] ; Garcia-Sanjuan, F (Garcia-Sanjuan, Fernando)[ 1 ] ; Nacher, V (Nacher, Vicente)[ 1 ] ; Jaen, J (Jaen, Javier)[ 1 ]	80 primary school children	Collaborative problem solving (CPS) is an essential soft skill that should be fostered from a young age. Research shows that a good way of teaching such skills is through video games; however, the success and viability of this method may be affected by the technological platform used	User experience and acceptance of a game, Quizbot, using three different technological platforms: two purely digital (tabletop and handheld tablets) and another based on tangible interfaces and physical spaces	Physical spaces proved to be more effective than the screen-based platforms in several ways, as well as being considered more fun and easier to use by the children	Qualitative

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Skills in demand for ICT and statistical occupations: Evidence from web-based job vacancies (55)	2018	Lovaglio, PG (Lovaglio, Pietro Giorgio)[ 1 ] ; Cesarini, M (Cesarini, Mirko)[ 1 ] ; Mercurio, F (Mercurio, Fabio)[ 1 ] ; Mezzanzanica, M (Mezzanzanica, Mario)[ 1 ]	110,000 job advertisements: nearly 6,200 were classified as ICT or statistical positions (largely dominated by software developers)	The principal aim of this paper is to describe these jobs in terms of the required skills that have emerged in the labour market from a demand perspective and to identify those skills that best distinguish statisticians from other ICT occupations	Several machine Learning Techniques	The data indicate that high-level statisticians have superior and heterogeneous professional backgrounds, linked to theoretical statistics, where analytic skills are more relevant than computing skills. Many soft and management-oriented skills were also called for, which are missing among lower level statisticians, who are restricted to more technical jobs oriented towards general computing and informatics.	Qualitative and quantitative
The need for digital and soft skills in the Romanian business service industry (56)	2018	Foerster-Pastor, US (Foerster-Pastor (Foerster-Metz), Ulrike Stefanie)[ 1 ] ; Golowko, N (Golowko, Nina)[ 1 ]	N/A	The Romanian Business Service Sector developed fast in the last decade. Today it employs more than 120 000 Head Counts and continuously grows. However, companies claim not to get the right skills from employees to pursue the digital transformation from a mere service sector towards a more value-added service.	Database: job descriptions of entry positions published in companies or job boards were analyzed within a specified period, allowing an accelerated approach to defining skills needed without a too high time delay given the rapid progressing digitalization	Key findings confirm demand for hard skills such as languages and IT skills such as Office Suits, Development Environments as well as higher demand for soft skills especially analysis and problem solving induced by digitalization.	Qualitative

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COMPETENCE APPROACH IN PUBLIC SERVICE: WHAT KNOWLEDGE AND SKILLS DO CIVIL SERVANTS CHOOSE? (57)	2018	Vasilieva, EV (Vasilieva, Elena V.) [ 1 ]	Civil servants	Nowadays society requires new competencies of its specialists and citizens. The competencies of civil service employees must meet the requirements of the professional sphere and take into account the demands of the digital economy. The purpose of the study is to determine the key competencies of civil servants required in the conditions of digital transformation of the civil service, and to make recommendations for their development through the introduction of a competence-based approach to the assessment and formation of personnel, diversification of training areas, covering the issues of training in the workplace, exchange of experience and knowledge with colleagues, the introduction of modern analytical tools to support the functions of recruiting, building career tracking and individual competence development of the employee.	Survey	The results indicate the inertia of the public civil service system in the field of talent management and career tracking, insufficient or complete lack of interest in new formats of communication and training to form soft skills.	Qualitative



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Concurrent direct assessment of foundation skills for general education (58)	2018	Rhodes, A (Rhodes, Anthony)[ 1 ] ; Danaher, M (Danaher, Maurice)[ 2 ] ; Kranov, AA (Kranov, Ashley Ater)[ 3,4 ]	Groups of students (?)	There is considerable agreement around the foundation skills required by employers that will enable graduates to integrate and devise promising solutions for the challenges faced by knowledge and globalized societies. These are life skills (communication skills, teamwork and leadership skills, language skills in reading and writing and information literacy), transferable skills (such as problem-solving, including critical thinking, creativity and quantitative reasoning) and technology skills (search for knowledge and build upon it). Foundation skills, however, are recognized to be difficult both to teach and assess. This paper aims to describe a performance assessment method to assess and measure these skills in a uniquely concurrent way - the General Education Foundation Skills Assessment (GEFSA).	The GEFSA framework comprises a scenario/case describing an unresolved contemporary issue, which engages student groups in online discussions, and a task-specific analytic rubric to concurrently assess the extent to which students have attained the targeted foundation skills.	Results obtained from the rubric for each foundation skill were analyzed and interpreted to ensure robustness of method and tool usability and reliability, provide insight into, and commentary on, the respective skill attainment levels and assist in establishing realistic target ranges for General Education student skill attainment. The results showed that the method is valid and provides valuable data for curriculum development.	Qualitative

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FACTORS WITH INFLUENCE ON THE ADOPTION OF THE FLIPPED CLASSROOM MODEL IN TECHNICAL AND VOCATIONAL EDUCATION (59)	2018	Villalba, MT (Teresa Villalba, M.)[ 1 ] ; Castilla, G (Castilla, Guillermo)[ 1 ] ; Redondo-Duarte, S (Redondo-Duarte, Sara)[ 1 ]	625 teachers (434 from Spain, 121 from Hungary and 61 from the Czech Republic) from schools participating or somehow associated to the project.	The aim of this work is to explore which factors impact on the adoption of the flipped classroom in vocational education to pave the way for the schools which want to apply this model.	Questionnaire	Empirically validated factors for the adoption of the flipped classroom in technical schools are presented. In addition, descriptive analysis results from a sample of 625 vocational education teachers confirmed that the countries involved in the survey fulfill the factors needed for the adoption of the flipped classroom in vocational education schools. Another important result is that, according to the surveyed teachers, the flipped classroom is a strongly practice-oriented method very suitable for vocational education.	Quantitative
Holistic competency development and the significance of learning domains in audiovisual archiving education (60)	2018	Gracy, KF (Gracy, Karen F.)[ 1 ]	N/A	Audiovisual archivist training requires a three-pronged approach that combines competencies drawn from the cognitive, affective, and psychomotor learning domains, blending conceptual, historical, and theoretical knowledge and soft skills such as communication and project management with training in hand and other sensory skills. Audiovisual education programs tend to be less explicit about requirements in expert handling and repair work (often referred to in the conservation profession as "hand skills"), sensory skills, and soft skills, however	Paper?	The need for making affective and psychomotor educational objectives more explicit in program curricula and requirements. In particular, learning objectives in the psychomotor domain have been neglected, which is problematic for a field that requires professionals to possess significant manual dexterity and sensory skills. This paper also makes the case for the design of a field-wide competency framework that accurately reflects the roles of the three learning domains and makes them equally essential for professional preparation in the audiovisual archiving profession.	Qualitative

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Team dynamics feedback for post-secondary student learning teams (61)	2018	O'Neill, TA (O'Neill, Thomas A.)[ 1 ]; Deacon, A (Deacon, Amanda)[ 1 ]; Gibbard, K (Gibbard, Katherine)[ 1 ]; Larson, N (Larson, Nicole)[ 1 ]; Hoffart, G (Hoffart, Genevieve)[ 1 ]; Smith, J (Smith, Julia)[ 1 ]; Donia, BLM (Donia, B. L. M.)[ 2 ]	Team members?	Team CARE is a free, online, survey-based assessment that allows team members to rate their team's health and functioning in four key categories (communicate, adapt, relate and educate), as well as provide written feedback about the team's functioning to add nuance and supplemental context to the numeric scores. Team members completing the assessment receive a report documenting their team's scores on the variables measured. We report on data from student learning teams suggesting that the variables in the team CARE model are reliable, and that they are correlated with team performance outcomes	Online Survey	The findings suggest that team CARE is perceived to be valuable, useful and easy to use. Recommendations for practice are detailed, including sample assessment schedules for teams with differing life spans.	Qualitative and Quantitative

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Innovative management strategies for building and sustaining a digital initiatives department with limited resources (62)	2018	Miller, A (Miller, A.)[ 1 ]	N/A	The purpose of this paper is to offer and explore innovative strategies for building and sustaining digital initiatives at information organizations.	Concept of strategic and collaborative management practices led by an experienced project manager cross-trained in management, technical and soft skills enables the successful development and sustainability of digital initiatives. A cross-trained librarian's management practices of leading the Digital Scholarship Initiatives at a particular university will be examined as a case study and aided with literature supporting the need for digital initiatives leaders to have training beyond the credentials of librarian, curator, archivist or historian in the technologically savvy twenty-first century ecology of information centers.	The innovative strategies implemented in the case study yielded increases in the number of hours of digital lab usage, digital projects developed, seminars or workshops presented, attendance of library hosted events, number of programs implemented and awareness on campus, all with limited staff and funding. The variety and level of production and marketing is instrumental to the growth and sustainability of digital initiatives.	Qualitative
Comparison of Live Versus Online Instruction of a Novel Soft Skills Course in Mongolia (63)	2017	Mahadevan, A (Mahadevan, Aditya)[ 1 ] ; Strehlow, MC (Strehlow, Matthew C.)[ 2 ] ; Dorjsuren, K (Dorjsuren, Khandregzen)[ 3 ] ; Newberry, JA (Newberry, Jennifer A.)[ 2 ]	Enrollment in the online and classroom courses was 89 students and 291 students	To evaluate the efficacy of an online versus classroom platform to deliver a novel soft skills course in Mongolia.	Surveys and multiple-choice question tests	The study compared two cohorts of Mongolian college students who took either an online or classroom-based soft skills course, and it was found that knowledge gain was significantly higher for the classroom group, while comfort and satisfaction with individual course topics was comparable.	Qualitative

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Soft Skills in an Online Class (64)	2017	Moore, KA (Moore, Kimberly A.)[ 1 ] ; Pearson, BJ (Pearson, Brian J.)[ 2 ]	Students	The development of course content and assignments focused on basic horticultural knowledge and theory (hard skills) in an online setting is relatively straightforward and uncomplicated. However, it is slightly more challenging to improve a student's soft skills like communication, problem solving, critical observation, and professionalism in an asynchronous online classroom environment	Assignments, data to interpretation, online scholars ignite assignment	Weekly online tasks, and reminders help to develop professionalism and time management skills in addition to organization skills. It is impossible to cover all soft skills in any class but by offering various assignments and assessments, many soft skills are potentially improved.	Qualitative
escapED: A Framework for Creating Educational Escape Rooms and Interactive Games For Higher/Further Education (65)	2017	Clarke, S (Clarke, Samantha)[ 1 ] ; Peel, DJ (Peel, Daryl J.)[ 2 ] ; Arnab, S (Arnab, Sylvester)[ 1 ] ; Morini, L (Morini, Luca)[ 1 ] ; Keegan, H (Keegan, Helen)[ 1 ] ; Wood, O (Wood, Oliver)[ 1 ]	N/A	Game-based learning (GBL) is often found to be technologically driven and more often than not, serious games for instance, are conceptualised and designed solely for digital platforms and state of the art technologies. To encourage a greater discussion on the potential benefits and challenges of a more holistic approach to developing GBL that promote human centered interactions and play for learning, the authors present the escapED programme.	Pilot study	The authors present a discussion on the use of the escapED framework so far and plans for future work and evaluation in order to provide engaging alternatives for learning and soft skills development amongst higher education staff and students.	Qualitative

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MOOCS AND SOFT SKILLS: A COMPARISON OF DIFFERENT COURSES ON CREATIVITY (66)	2017	Cinque, M (Cinque, Maria)[ 1 ]	N/A	The development of soft skills in undergraduate students is a key factor to ensure an effective transition from university to the labour market. The eLene4work project, carried out between 2014 and 2017, focused on the selection and definition of these soft skills, including digital soft skills.	MOOCs (Massive Open Online Courses) and OERs (Open Educational Resources)	This paper reports the results of the work carried out by the project partners during the selection and classification of MOOCs. Furthermore, the comparison of different MOOCs on creativity, based on distinctive pedagogical approaches and involving different types of activities and assessment tools, highlights some important trends in the ways used to foster students' learning behaviours and different patterns of engagement.	Qualitative
MOOC DESIGN AND HERITAGE EDUCATION. DEVELOPING SOFT AND WORK-BASED SKILLS IN HIGHER EDUCATION STUDENTS (67)	2017	Poce, A (Poce, Antonella)[ 1 ] ; Agrusti, F (Agrusti, Francesco)[ 1 ] ; Re, MR (Re, Maria Rosaria)[ 1 ]	N/A	To develop design and realization skills in Educational science students.	To create cultural and heritage education courses for primary school in training and in service teachers	N/A	Qualitative
The Potential of Virtual Environments to Support Soft-Skill Acquisition for Individuals with Autism (68)	2017	Gallup, J (Gallup, Jennifer)[ 1 ] ; Little, ME (Little, Mary E.)[ 2 ] ; Serianni, B (Serianni, Barbara)[ 3 ] ; Kocaoz, O (Kocaoz, Onur)[ 4 ]	young adults with an autism spectrum disorder (ASD)	The phenomenon of online gaming to describe the social interactions of young adults with an autism spectrum disorder (ASD) as they socialize and develop relationships within virtual environments.	A phenomenological study was employed using multi-sourced data	Findings support a recognition and reciprocation of emotions, friendship development, and role identification. Additionally, the findings support skills required to be successful in postsecondary situations, specifically aligned with science, technology, engineering, and mathematics (STEM).	Qualitative

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What does patient feedback reveal about the NHS? A mixed methods study of comments posted to the NHS Choices online service (69)	2017	Brookes, G (Brookes, Gavin)[ 1 ] ; Baker, P (Baker, Paul)[ 2 ]	Contributors posting comments (228 113 comments) about the NHS between March 2013 and September 2015.	To examine the key themes of positive and negative feedback in patients' online feedback on NHS (National Health Service) services in England and to understand the specific issues within these themes and how they drive positive and negative evaluation.	Computer-assisted quantitative and qualitative studies	Although technical competence constitutes an undoubtedly fundamental aspect of healthcare provision, staff members were much more likely to be evaluated both positively and negatively according to their interpersonal skills. Therefore, the findings reported in this study highlight the salience of such 'soft' skills to patients and emphasise the need for these to be focused upon and developed in staff training programmes, as well as ensuring that decisions around NHS funding do not result in demotivated and rushed staff.	Quantitative and qualitative
More than counting pixels - perspectives on the importance of remote sensing training in ecology and conservation (70)	2017	Bernd, A (Bernd, Asja)[ 1,2 ] ; Braun, D (Braun, Daniela)[ 3 ] ; Ortmann, A (Ortmann, Antonia)[ 4 ] ; Ulloa-Torrealba, YZ (Ulloa-Torrealba, Yrneh Z.)[ 2 ] ; Wohlfart, C (Wohlfart, Christian)[ 5 ] ; Bell, A (Bell, Alexandra)[ 6,7 ]	Students and professionals in different fields	As remote sensing (RS) applications and resources continue to expand, their importance for ecology and conservation increases - and so does the need for effective and successful training of professionals working in those fields	Online survey	Most participants perceive their RS education as useful for their career, but express a need for more training at university level. Hands-on projects are considered the most effective learning method. Besides methodological knowledge, soft skills are clear gains, including problem solving, self-learning and finding individual solutions, and the ability to work in interdisciplinary teams.	Qualitative
Serious games on environmental management (71)	2017	Madani, K (Madani, Kaveh)[ 1 ] ; Pierce, TW (Pierce, Tyler W.)[ 2 ] ; Mirchi, A (Mirchi, Ali)[ 3,4 ]	N/A	Serious environmental management games can improve understanding of practical environmental sustainability challenges by offering opportunities to obtain first-hand experiences that may be otherwise too costly, difficult or dangerous to reproduce in reality.	Standardized methodology to reduce disparities in testing procedures	SGs have been shown to possess numerous qualities that have been connected with improved learning experiences and cognitive development, but research must continue to study the SGs' efficacy. Shortcomings found with games reviewed are that few evaluate or explain pedagogical foundation, and many are hard to implement or not accessible.	Qualitative

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Professors' and Students' Perception of the Advantages and Disadvantages of Project Based Learning (72)	2017	Mihic, M (Mihic, Matej)[ 1 ] ; Zavrski, I (Zavrski, Ivica)[ 1 ]	Students	Requirements of the job market have substantially changed in the recent years while the teaching methods have remained largely the same. Employers find the graduates lacking in teamwork, communication and other soft skills as well as in engineering thinking, engineering intuition and higher order thinking and problem solving skills. Project based learning (PBL) appears to provide an alternative teaching process capable of addressing these employers' needs.	Online survey, semi-structured interviews and an ABC method questionnaire	Research findings from this paper may be used to determine which aspects of PBL are most suited for engineering education and conversely, which should be focused on the most. On the other hand, it is useful to know which disadvantages and barriers to implementation are the most significant and which need to be overcome first to enable PBL implementation.	Qualitative
SIMULATING CONFLICTS TO LEARN HOW TO MANAGE THEM: THE ACCORD (73)	2017	Marocco, D (Marocco, Davide)	N/A	Online role-play simulation game has recently received more attention in the training and education fields as a mechanism for providing generative learning in simulated contexts. Simulations can provide a solid platform upon which role-play games can be created and used to promote soft skills development. This form of active learning provides a unique tool for training people in different contexts that may be able to benefit from the availability of open source e-learning tools due to a common lack of access to affordable training and developmental resources.	ENACT is a simulation tool being developed to provide an affordable and accessible means for schools, enterprises, professional training and sport contexts to access on-line training to enhance their "soft skills", and in particular negotiation competence.	ACCORD project aim at applying such simulation-based technology for enhancing multicultural negotiation skills in teachers.	Qualitative



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Modes of soft skills learning: a case of university information professionals' in Pakistan (74)	2017	Ahmad, S (Ahmad, Sajjad)[ 1 ] ; Ameen, K (Ameen, Kanwal)[ 2 ] ; Ullah, M (Ullah, Midrar)[ 3 ]	All the UIPs working in the central libraries of the general public sector 33 universities in Pakistan, with nearly a population of 560.	To investigate the university information professionals (UIPs) preferred modes of soft skills learning and differences in their opinions based on gender, designations and experience.	Questionnaire was used for data collection	Findings showed that "mentoring sessions by experts" was the most preferred mode of soft skills learning followed by "learning from colleagues". It showed that UIPs preferred to learn soft skills from experts and colleagues. Independent-samples t-test results found that "mentoring session by experts" was more preferred by females than males. Overall results indicated that from UIPs' perspective, soft skills should be taught to the musing face-to-face methods.	Quantitative
Simulating the global workplace for graduate employability (75)	2017	Schech, S (Schech, Susanne)[ 1 ] ; Kelton, M (Kelton, Maryanne)[ 1 ] ; Carati, C (Carati, Colin)[ 2 ] ; Kingsmill, V (Kingsmill, Verity)[ 3 ]	Students	Higher education institutions increasingly recognise the need to develop both disciplinary knowledge and soft skills to foster the employability of their graduates. For students in International Studies programmes, the workplace opportunities to develop soft skills relevant to their intended professions are scarce, costly and unavailable to many.	Multi-layered in-person simulation within an academic context	Students' reflections on the model indicate that this model can foster a range of generic soft skills that enable them to apply their academic knowledge, collaborate with a culturally diverse group and work in a digital world. To refine this blended learning model, more attention needs to be paid to designing appropriate evaluation tools and harnessing cultural diversity more effectively.	Qualitative

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Training of new managers: why are we kidding ourselves? (76)	2017	Yearley, T (Yearley, Timothy)[ 1 ]	20 managers?	The purpose of this paper is to provide an update on a longitudinal research study that examines the content delivery of courses provided by private training providers (PTPs) for first level managers (FLMs). It measures, against a contemporary soft skill model, the relevance of "off the shelf" training which is aimed at FLMs managerial soft skills, as opposed to "technical" or "hard skill" training.	developing a multi-dimensional best practise core soft skills framework, pilot study conducted as desk research using various online and direct marketing channels	Studies have revealed surprising omissions and contrary positions when it comes to teaching FLMs non-technical skills. On some PTP courses there appeared contrary positions taken up on key managerial concepts such as leadership. In both research phases, "delegation" is an area which FLMs receive significant training. The activity of delegation is an example of top down management used to demonstrate command and control paradigms within the workplace, and fails to take into account todays cultural behavioural shifts. There is also a total lack of acknowledgement on the impact technology is having on a younger generation of managers interpersonal and intrapersonal skills.	Qualitative and Quantitative
Where to Locate? A Project-Based Learning Activity for a Graduate-Level Course on Operations Management (77)	2017	Berbegal-Mirabent, J (Berbegal-Mirabent, Jasmina)[ 1 ] ; Gil-Domenech, D (Gil-Domenech, Dolors); Alegre, I (Alegre, Ines)	Students of a course on operations management, included in the master's degree in engineering management and production systems taught at the Universitat Internacional de Catalunya	Location decisions represent an integral part of firms' strategic planning process. Because these decisions have a significant impact on the organization, location analysis is a recurrent topic on operations management courses.	real-life situation, with students asked to decide where to locate a specific new public service in the city of Barcelona, Spain.	The results suggest that the proposed project based activity helps students to improve relevant skills needed by project managers. By providing students with the opportunity to take part in a location decision that simulates a real-life situation, the activity enhances students' experience-based learning.	Qualitative
Education and Training for Library Management (78)	2017	Holley, RP (Holley, Robert P.)[ 1 ]	N/A	Evaluation of the relative structural advantages and disadvantages of classroom and online education.	?	?	Qualitative

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The Semiology of Motor Disorders in Autism Spectrum Disorders as Highlighted from a Standardized Neuro-Psychomotor Assessment (79)	2016	Paquet, A (Paquet, Aude)[ 1,2,3,4,5,6 ] ; Olliac, B (Olliac, Bertrand)[ 6,7 ] ; Bouvard, MP (Bouvard, Manuel-Pierre)[ 8,9 ] ; Golse, B (Golse, Bernard)[ 1,2 ] ; Vaivre-Douret, L (Vaivre-Douret, Laurence)[ 1,2,3,4,5,10,11 ]	34 children with ADS	Altered motor performance has been described in Autism Spectrum Disorders (ASD) with disturbances in walking; posture, coordination, or arm movements, but some individuals with ASD show no impairment of motor skills. The neuro-developmental processes that underpin the performance of neuro-psychomotor functions have not been widely explored, nor is it clear whether there are neuro-psychomotor functions specifically affected in ASD.	standard evaluations for diagnosis (psychiatric; psychological; psychomotor) were supplemented by a standardized assessment battery for neuro-developmental psychomotor functions (NP-MOT).	The results of manual and digital gnosopraxia tests point to a planning deficit in children with autism. A gesture programming deficit is also highlighted by the poor results in manual praxis, and by failures in the M-ABC tests despite prior training of the child. However, concerning global motor function, a significant difference was observed between children with and without ID. Our findings suggest a semiology of tone deregulation between proximal versus distal muscles, indeterminate tonic laterality, postural control deficit (proprioceptive), impairment of inter-hemispheric coordination (corpus callosum), and neurological soft signs such as dysdiadochokinesia, which leads us to hypothesize a general impairment of motor functions.	Qualitative ??
Learning From Simulation Design to Develop Better Experiential Learning Initiatives: An Integrative Approach (80)	2016	Canhoto, AI (Canhoto, Ana Isabel)[ 1 ] ; Murphy, J (Murphy, Jamie)[ 2 ]	N/A	Simulations offer engaging learning experiences, via the provision of feedback or the opportunities for experimentation. However, they lack important attributes valued by marketing educators and employers.	Experiential learning initiative, the Google Online Marketing Challenge	The article concludes with the following recommendations for marketing educators engaged in experiential learning: students need to plan, execute, and assess their actions, which requires the provision of feedback mechanisms as part of the experience; the experience should be gamified to increase engagement; developers need to provide guidance and support, to both students and educators, to reduce extraneous cognitive load; the initiative needs to develop digital marketing literacy, as well as soft skills.	Qualitative

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Evaluation of a Soft Skills Training Program (81)	2016	Charoensap-Kelly, P (Charoensap-Kelly, Piyawan)[ 1 ] ; Broussard, L (Broussard, Lauren)[ 2 ] ; Lindsly, M (Lindsly, Mallory)[ 2 ] ; Troy, M (Troy, Megan)[ 2 ]	N/A	This study was conducted to determine the effectiveness of a soft skills employee training program	Face-to-face vs. online	Results showed that neither participants' willingness to learn nor delivery methods affected comprehension. However, both variables had significant effects on the reported behavioral change. This training is effective in teaching employees how to "flex" their personal styles and to improve their relationships with each other.	Qualitative
The power of online genetic algorithm in stealth assessment for school readiness (82)	2016	Suleiman, I (Suleiman, Iyad)[ 1 ] ; Arslan, M (Arslan, Maha)[ 2 ] ; Alhaji, R (Alhaji, Reda)[ 3 ] ; Ridley, M (Ridley, Mick)[ 1 ]					
The way forward with dental student communication at the University of the Western Cape, Cape Town, South Africa (83)	2016	Maart, R (Maart, R.)[ 1 ] ; Mostert-Wentzel, K (Mostert-Wentzel, K.)[ 2 ]	57 clinical teachers	Dental students are extensively trained to provide dental treatment to their patients during the undergraduate programme. However, no or little time is spent on the training of basic communication skills	Mixed-methods research design; questionnaire, online survey	Clinical teachers agreed that communication skills training and clinical assessment in the dental curriculum are important. The study raised awareness among faculty members about the importance of communication skills and ensured initial buy-in for the development of such a course.	Qualitative and Quantitative
3D printing to simulate laparoscopic choledochal surgery (84)	2016	Burdall, OC (Burdall, Oliver C.)[ 1 ] ; Makin, E (Makin, Erica)[ 1 ] ; Davenport, M (Davenport, Mark)[ 1 ] ; Ade-Ajayi, N (Ade-Ajayi, Niyi)[ 1 ]					
Enhancing the employability of IT graduates in Vietnam (85)	2016	Thang, PVM (Phan Vo Minh Thang)[ 1 ] ; Wongsurawat, W (Wongsurawat, Winai)[ 2 ]	More than 500 IT graduates from different higher education institutions in Vietnam	The purpose of this paper is to identify the key determinants of employability of information technology (IT) graduates in Vietnam and examines their impact on self-perceived employability and the duration of the job search.	Online survey	The self-perceived employability of IT graduates in Vietnam was determined by graduates' English language skills, soft skills, adaptability skills, the quality of the institution's IT program and job seeking efforts. Results also indicated that work experience, professional competencies and employability made the job search duration shorter, but job seeking efforts made job search duration longer.	Quantitative and Qualitative

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The application of peer teaching in digital forensics education (86)	2016	Govan, M (Govan, Michelle)[ 1 ]	N/A	The field of digital forensics requires a multidisciplinary understanding of a range of diverse subjects, but is interdisciplinary (in using principles, techniques and theories from other disciplines) encompassing both computer and forensic science. This requires that practitioners have a deep technical knowledge and understanding, but that they are also able to explain the underlying theory that supports their analytical conclusions.	?	?	Qualitative
Developing Open Badges: a comprehensive approach (88)	2015	Devedzic, V (Devedzic, Vladan)[ 1 ] ; Jovanovic, J (Jovanovic, Jelena)[ 1 ]	Male patient	Apart from animal testing and clinical trials, surgical research and laparoscopic training mainly rely on phantoms. The aim of this project was to design a phantom with realistic anatomy and haptic characteristics, modular design and easy reproducibility. The phantom was named open-source Heidelberg laparoscopic phantom (OpenHELP) and serves as an open-source platform.	N/A	The OpenHELP phantom proved to be feasible and accurate. The phantom was consecutively applied frequently in the field of computer-assisted surgery at our institutions and is accessible as an open-source project at <a href="http://www.open-cas.org">www.open-cas.org</a> for the academic community.	Qualitative

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Teaching and Developing Social and Emotional Skills with Technology (89)	2015	Slovak, P (Slovak, Petr)[ 1 ] ; Fitzpatrick, G (Fitzpatrick, Geraldine)[ 1 ]	N/A	Supporting social interactions is a long-term focus for Human Computer Interaction (HCI) and Computer Supported Cooperative Work (CSCW). However, understanding how social and emotional skills are learned, and how this process can be supported by technology, is an important but underresearched area in HCI so far.	Review existing approaches to social and emotions skills learning (SEL) in other fields, with a specific focus on SEL in education, in which a large number of evidence-based programs is widely deployed.	Overall, our key argument is that much existing HCI work could be used in support of social and emotional skills learning in education, and possibly other domains, but that the topic has not been explored so far. We also highlight how the focus on supporting SEL would bring novel opportunities and challenges for HCI, as well as provide a basis for a strong HCI research agenda in this space.	Qualitative
Assessing the suitability of student interactions from Moodle data logs as predictors of cross-curricular competencies (90)	2015	Iglesias-Pradas, S (Iglesias-Pradas, Santiago)[ 1 ] ; Ruiz-de-Azcarate, C (Ruiz-de-Azcarate, Carmen)[ 2 ] ; Agudo-Peregrina, AF (Agudo-Peregrina, Angel F.)[ 1 ]	Interaction data logs in a Master's Degree program students	The last years have witnessed the emergence of new educational disciplines that can take advantage of the information retrieved by technology-based online education in order to improve instruction, such as learning analytics.	Analysis of Moodle interaction data logs in a Master's Degree program at Universidad a Distancia de Madrid (UDIMA)	The results from the study question the suitability of a general interaction-based approach and show no relation between online activity indicators and teamwork and commitment acquisition.	Quantitative?
Among expectations and reality - young workers' soft skills (91)	2015	Jasinska, M (Jasinska, Magdalena)[ 1 ] ; Podgorska, K (Podgorska, Karolina)[ 1 ]	Focus Groups organised in each partner country	Many documents issued by the European Union and Human Resources experts point out that so called, "soft" skills are closely connected with employability, particularly of young people entering the labour market. Nevertheless, at present, EU countries use different methodologies and approaches to the teaching and development of those skills, which leads to a mismatch between academic education and requirements of the labour market.	ICT tools	The most interesting findings such as definitions of soft skills, list of most important ones, difficulties in their development and possibilities to solve problem of lack of those skills are described, not only from the perspective of student/young employee, but also employers and academic teachers.	Qualitative

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System Level Approach for Computer Engineering Education (92)	2015	Rashid, M (Rashid, Muhammad)	Students of computer engineering	The capstone design course is a culminating course that offers opportunities for students to acquire technical and soft skills in the context of a design project. Conventional curricula and lecture-based teaching methodologies are facing problems to address the challenges posed by industry-oriented projects.	Coherent delivery of core concepts and systematic laboratory sessions	Problem-based learning addresses the technical skills (such as problem formulation and system design) as well as the soft skills (such as communication skills, working in teams, lifelong learning and ethical/professional responsibility). The Digital System Design course in the Computer Engineering discipline serves as a case study. Assessment through student feedback and the analysis of quantitative data shows a significant improvement in student outcomes.	Quantitative and Qualitative
Design of a General Purpose 8-bit RISC Processor for Computer Architecture Learning (93)	2015	Zavala, AH (Hernandez Zavala, Antonio)[ 1 ] ; Nieto, OC (Camacho Nieto, Oscar)[ 3 ] ; Ruelas, JAH (Huerta Ruelas, Jorge A.)[ 1 ] ; Dominguez, ARC (Carvallo Dominguez, Arodi R.)[ 2 ]		Computers are becoming indispensable for manipulating most everyday consumer products, ranging from communications and domestic electronics to industrial processes monitoring and control. High performance computer design is not only subject to the technology used for its implementation, it is also a matter of efficient training.		This work shows the design of an 8-bit RISC soft-core processor dedicated to a complete understanding of computer architecture. We consider this Processor an effective hands-on training solution for the comprehension of a computer from its lowest level up to testing.	
Assessing Creativity in Engineering Students: A Comparative Between Degrees and Students in First and Last Year (94)	2015	Garcia-Garcia, MJ (Jesus Garcia-García, Maria)[ 1 ] ; Gonzalez-García, C (Gonzalez-García, Concepcion)[ 1 ] ; Fernandez, LJ (Fernandez, Luis J.)[ 2 ] ; Casado-Sanchez, JL (Casado-Sanchez, Jose-Luis)[ 2 ] ; Muneta, LM (Martinez Muneta, Luisa)[ 3 ]	Students from degrees in engineering in the Universidad Politecnica of Madrid (UPM)	An online open access test (CREAX self-assessment) has been used in this work so that students from degrees in engineering in the Universidad Politecnica of Madrid (UPM) could self-assess their creative competence after several classroom activities	Different groups from the first year course have been statistically compared using data from their assessment	Only one difference was detected concerning sex in one of the degrees. Among degrees, the higher marks obtained by students who had done specific exercises for the development of creativity in class is highlighted. Finally, a significantly high mark was observed in students during their last year of degree with respect to first year students.	Qualitative

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ONLINE COLLABORATIVE LEARNING ELEMENTS TO PROPOSE AN ONLINE PROJECT BASED COLLABORATIVE LEARNING MODEL (95)	2015	Razali, SN (Razali, Sharifah Nadiyah)[ 1 ] ; Shahbodin, F (Shahbodin, Faaizah)[ 1 ] ; Hussin, H (Hussin, Hanipah)[ 2 ] ; Bakar, N (Bakar, Norasiken)[ 1 ]	N/A	Interest in collaboration is a natural outgrowth of the trend in education toward active learning. Many researchers have found that the advantages of collaborative learning; improves academic performance, promotes soft skills development (i.e., communications, collaboration, problem-solving and critical thinking skills), and increases satisfaction in the learning experience. Nevertheless, several studies have reported the complete opposite	Document Review	The outcome of this work suggests that (i) the learning interaction factor consists of learner-learner interaction and learner-teacher interaction elements, (ii) the elements of the learning design factor are content, process, evaluation, and time constraint, and (iii) usability, accessibility and stability are the ingredients of the learning environment factor.	Qualitative
WHAT GENERAL COMPETENCIES ARE REQUIRED FROM THE CZECH LABOUR FORCE? (96)	2014	Balcar, J (Balcar, Jiri)[ 1 ] ; Janickova, L (Janickova, Lenka)[ 1 ] ; Filipova, L (Filipova, Lenka)[ 1 ]	Employers in general	Knowledge of employers' requirements on competencies of job applicants is highly important in the process of human capital accumulation. This paper focuses on the general competencies since they can be applied in a wide range of jobs or tasks and increase an individual's employability.	Econometric analysis based on job interviews	The results of our probit regressions proved that the requirements on examined general skills significantly differ according to the education required and some categories of NAGE and ownership of the firms.	Quantitative



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EDUCATION AND TRAINING IN MEDICAL IMAGING FOR CONVENTIONAL AND PARTICLE RADIATION THERAPY THROUGH THE EC FUNDED ENVISION AND ENTERVISION (97)	2014	Cirilli, M (Cirilli, M.)[ 1 ] ; Dosanjh, M (Dosanjh, M.)[ 1 ]	N/A?	A key challenge in particle therapy today is quality assurance during treatment, which needs advanced medical imaging techniques. This issue is tackled by the EC funded project ENVISION, an R&D consortium of sixteen leading European research centres and one industrial partner, co-ordinated by CERN.	ENVISION serves as a training platform for the ENTERVISION project, a Marie-Curie Initial Training Network aimed at educating young researchers in online 3D digital imaging for hadron therapy.	Its multi-disciplinary training programme of ENTERVISION includes a diversified portfolio of scientific courses, complemented by specific courses aimed at developing soft skills. The ENTERVISION researchers will also benefit from the involvement in the research activity of ENVISION, and in the European Network for Light Ion Hadron Therapy (ENLIGHT). The trainees are encouraged to build a multidisciplinary network which will not only help them with their future careers but ultimately improve the transfer of knowledge and collaboration between the various disciplines of cancer treatment.	Qualitative
Talking about Code: Integrating Pedagogical Code Reviews into Early Computing Courses (98)	2013	Hundhausen, CD (Hundhausen, Christopher D.)[ 1 ] ; Agrawal, A (Agrawal, Anukrati)[ 1 ] ; Agarwal, P (Agarwal, Pawan)[ 1 ]	N/A	Given the increasing importance of soft skills in the computing profession, there is good reason to provide students with more opportunities to learn and practice those skills in undergraduate computing courses	Developed an active and collaborative learning approach for computing education called the Pedagogical Code Review (PCR)	Our results provide evidence that PCRs can promote positive attitudinal shifts, and hone skills in critical review, teamwork, and communication. Based on our findings, we present a set of best practices for implementing PCRs.	Qualitative
Breast Augmentation with Extra-projected and High-Cohesive Dual-Gel Prosthesis 510: A Prospective Study of 75 Consecutive Cases for a New Method (the Zenith System) (99)	2012	Riggio, E (Riggio, Egidio)	?	Extra-projected Natrelle 510 belongs to a new generation of silicone breast implants. A single-surgeon prospective study set out to investigate the device's features, outcomes, and complications, and devise a proper measurement method based on the zenith system.	?	Greater skills are required through the learning curve, patient education, case selection, planning using the nipple-vertex relationship (the zenith system), and improved surgical manipulation. Indications and contraindications were analyzed. Cosmetic results were compliant with different breast shapes, and excellent for the breast with poor projection, in thin subjects, and those with low BMI. Ptotic breast should require a larger amount of pexy, 510 did not lift the breast enough.	Quantitative

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Disparity between College Preparation and Career Demands for Graduating Engineers (100)	2012	Baytiyeh, H (Baytiyeh, Hoda)	188 engineers who graduated from universities in Lebanon	The engineering profession has traditionally been a technical field based on theoretical and scientific discipline. In addition to the technical knowledge and hard skills, engineers must acquire sufficient soft skills in personal and interpersonal behavior to meet current employment market standards.	Research questions, Online survey	Although participants reported that they possessed adequate theoretical knowledge and technical skills, noticeable weaknesses in creativity and innovation were found. Interpersonal and personal skills in leadership, management, and multidisciplinary teamwork were the most overlooked aptitudes in college despite their importance in work settings.	Qualitative
Critical reflections on the benefits of ICT in education (101)	2012	Livingstone, S (Livingstone, Sonia)	N/A	In both schools and homes, information and communication technologies (ICT) are widely seen as enhancing learning, this hope fuelling their rapid diffusion and adoption throughout developed societies. But they are not yet so embedded in the social practices of everyday life as to be taken for granted, with schools proving slower to change their lesson plans than they were to fit computers in the classroom.	N/A	The difficulty in establishing traditional benefits, and the uncertainty over pursuing alternative benefits, raises fundamental questions over whether society really desires a transformed, technologically mediated relation between teacher and learner.	Qualitative
A semantic analysis approach for assessing professionalism using free-form text entered online (102)	2011	Blake, R (Blake, Roger)[ 1 ] ; Gutierrez, O (Gutierrez, Oscar)[ 2 ]	Undergraduate business majors	This paper presents the results of an experimental study to measure professionalism for the purpose of assessing a professional development program. Soft skills such as professionalism are increasingly recognized as important, yet measuring and assessing these skills, typically best acquired experientially, has remained challenging	Professional development program for undergraduate business majors known as the Management Achievement Program (MAP)	The method demonstrated in this paper has several advantages over existing methods for assessment, which can be costly, require considerable time and training, and are often tied to subjective interpretation.	Qualitative

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Role Engagement and Anonymity in Synchronous Online Role Play (103)	2011	Cornelius, S (Cornelius, Sarah)[ 1 ] ; Gordon, C (Gordon, Carole)[ 1 ] ; Harris, M (Harris, Margaret)[ 1 ]	N/A	Role play activities provide opportunities for learners to adopt unfamiliar roles, engage in interactions with others, and get involved in realistic tasks. They are often recommended to foster the development of soft skills and a wider perspective of the world.	Case study of a role play	The findings suggest that role engagement and anonymity are important components for success in synchronous online role play. Evidence is presented that provides an insight into the factors which encourage role engagement, including prior experiences and contributions from peers. The impact of anonymity is also explored since many participants did not regard the study environment as real and attempted to identify their peers.	Qualitative
Authoring and Delivering Personalised Simulations - an Innovative Approach to Adaptive eLearning for Soft Skills (104)	2010	Gaffney, C (Gaffney, Conor)[ 1 ] ; Dagger, D (Dagger, Declan)[ 1 ] ; Wade, V (Wade, Vincent)[ 1 ]	N/A	This paper examines the personalization of online training simulations which are a key modern approach in computer aided education. More specifically it focuses on the difficulties involved in authoring personalized training simulations.	Personalized online simulations; ACTSim	This paper details the twin challenges in composing content for both educational simulations and personalization. It also describes ACTSim, a new and unique composition tool that supports the rapid development of personalized training simulations. In particular ACTSim focuses on situational simulations for inter personal dialogue, so called soft skills. This paper concludes with a series of evaluations of the composition tool and of courses developed using the composition tool.	Qualitative

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Investigation of potential operation issues of human-system interface in Lungmen Nuclear Power Project (105)	2005	Chuang, CF (Chuang, CF); Chou, HP (Chou, HP)	Operators of Taipower Company in Taiwan	The Lungmen Nuclear Power Project (LMNPP) with 1350 MWe twin units is the first advanced boiling water reactor (ABWR) project owned by the Taipower Company in Taiwan. Video display units are the main human-system interface for operators to manipulate, i.e., so-called "soft" control, and to know the status of the equipment and plant information. Several concerns arise when compared to hard controls. These concerns led us to conduct an investigation of the operator's performance and the potential issues regarding the operator's teamwork.	N/A	The results of the investigation show that the most important task is to establish an intensive training program that addresses the knowledge and skill requirements of the operators to meet the task characteristics and the responses of the plant processes.	Qualitative
Back to basics: Managing gunshot injuries in East Timor (106)	2005	Guest, GD (Guest, GD); Soldanha, S (Soldanha, S); Walbheim, T (Walbheim, T)	41 patients	The management of patients following severe trauma requires a combination of skills. Among these are accurate clinical assessment, basic resuscitation measures, basic general surgical skills and techniques, good decision making and team leadership. More technically advanced imaging and investigations are often useful and can enhance clinical assessment but should not replace the basic elements.	All injuries were documented with digital photography	In the present series of gunshot injuries managed with limited resources a good outcome was achieved with the application of basic principles. The present series emphasizes the importance of basic trauma management as outlined in courses such as Emergency Management of Severe Trauma and the use of basic surgical techniques as taught during the Advanced Surgical training program.	Qualitative

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StoryNet: An educational game for social skills (107)	2004	Schafer, L (Schafer, L); Stauber, A (Stauber, A); Bokan, B (Bokan, B)		This paper presents an approach combining concepts of digital storytelling and games with experiences in the field of social competence. This type of system has potential use for training seminars on soft skills and interpersonal communication			Qualitative
Anytime, anywhere (108)	2001	Powell, W (Powell, W)	N/A	Some trainers will never be completely satisfied with e-learning, but advancements in wireless technology, online universities, and computer simulations are bound to excite even staunch traditionalists. T+D's associate editor Powell looks at some amazing technologies and learning opportunities that are being dangled before our fingertips.	N/A	N/A	Qualitative
Revisit, Reform, and Redesign: A Novel Dissection Approach for Demonstrating Anatomy of the Orbit for Continuing Professional Development Education (109)	2020	Cotofana, S (Cotofana, Sebastian)[ 1 ]; Gavril, DL (Gavril, Diana L.); Frank, K (Frank, Konstantin)[ 2 ]; Schenck, TL (Schenck, Thilo L.)( 2 ]; Pawlina, W (Pawlina, Wojciech)[ 1 ]; Lachman, N (Lachman, Nirusha)[ 1 ]	participants from dermatology, plastic surgery, and general practice	Advanced postgraduate medical education for health-care professionals is constantly evolving. Understanding facial anatomy and especially its vascular system is crucial when performing soft tissue filler injections to avoid adverse events including tissue loss or irreversible blindness. Standard anatomical resources often fall short of elucidating clinically relevant concepts in more highly specialized areas of interest.	A novel dissection approach for demonstrating the anatomy of the lateral orbit was presented at scientific meetings to participants from dermatology, plastic surgery, and general practice; Online Survey	The results of the survey reveal a high educational impact and a high clinical relevance of the novel dissection approach. In addition, the majority of respondents (97.7%; n = 51) felt that the exposed anatomical structure of the orbit and face improved their ability to safely perform cosmetic procedures on the face. More experienced respondents who had previously attended at least five cadaveric dissections were more likely to strongly agree that reviewing anatomy through this novel dissection approach increased their confidence in avoiding periorbital vascular danger zones.	Qualitative