

EDUCON 2020

Notes by JHD

28-30 April 2020

Contents

1	Session TS1D (28th)	2
1.1	A Low-Cost Remote Laboratory for Photovoltaic Systems to Explore the Acceptance of the Students	2
1.2	Teaching Technical Journalism with an Engineering Foundation	2
1.3	The Institute of Coding: A University-Industry Collaboration to Address the UK’s Digital Skills Crisis	3
1.4	Transferring research on IoT Application for Smart Buildings into Engineering Education	3
1.5	Two Cs of Signals and Systems that should be taught initially in Discrete Time: Causality & Convolution	3
1.6	Sustaining complex projects by linking in- and off-curriculum elements: The BRSU Racing Engineer Certificate	3
1.7	SWitCH: A Reskilling Program in Information Technology	4
2	30 April 2020	5
2.1	Perception of the gender gap in computer engineering studies: a comparative study in Peru and Argentina	5
2.2	Stack Overflow — Informal learning and the global expansion of professional development and opportunities in programming?	5

Chapter 1

Session TS1D (28th)

1.1 A Low-Cost Remote Laboratory for Photovoltaic Systems to Explore the Acceptance of the Students

Aranzazu D. Martin, Juan M. Cano, Jesus R. Vazquez, Diego A. López-García; Universidad de Huelva, Spain.

Almost completely inaudible pre-recorded presentation. It seemed to be some remote laboratory.

1.2 Teaching Technical Journalism with an Engineering Foundation

Karl N. Kirschner, Susanne Keil, Katharina Seuser, Christine Siefer; University of Applied Sciences Bonn-Rhein-Sieg, Germany.

Project-based: two multimedia articles and one social media piece. Also mobile and smartphone reporting. Also students do peer feedback. Team-teaching: including two journalism professors and a freelance journalist. We do English-language communication, vital in STEM. Karl (first presenter) teaches in English. There are technical staff, so the reports are fact-checked and we discourage sensationalism. The role of journalism has changed from “gate keeping” to “gate watching”. Financing and channels are changing. Hence core skills include critical thinking, writing, source management, collaboration etc. Slide on gender balance, seem to do better than Guardian, which does better than SD Zeitung.

Motivation The good students actually get to publish in TechJ, which is great for their CV.

1.3 The Institute of Coding: A University-Industry Collaboration to Address the UK's Digital Skills Crisis

James H. Davenport, Tom Crick, Rachid Hourizi; University of Bath, UK; & Swansea University, UK.

JHD's slides are at <http://people.bath.ac.uk/masjhd/Slides/IoC-EDUCON2020version3.pdf>.

Q This is very specialist: what about generalists

A Yes, Degree Apprenticeships can be very specialist, e.g. Software Engineering for Safety-Critical, but in Theme 3 we have courses with much wider aims, "Python for Social Scientists" and "Cybersecurity for all".

1.4 Transferring research on IoT Application for Smart Buildings into Engineering Education

Myriam Guedey, Anke Pfeiffer, Dieter Uckelmann; University of Applied Sciences Stuttgart, Germany.

Information Logistics course provides some background, but we also have many IoT projects, especially energy usage for public buildings, with the campus as testbed. There have been several theses, but students study with the complexity of setting up the environment: hardware and software. Hence a model for Research-based learning (slide 6). Wants partners for an EU project if you have IoT laboratories.

1.5 Two Cs of Signals and Systems that should be taught initially in Discrete Time: Causality & Convolution

Ipek Saraç Heinz; Heilbronn University of Applied Sciences, Germany. Reality is digital, but textbook is analogue (good point!). Talks about how to teach causality and convolution.

1.6 Sustaining complex projects by linking in- and off-curriculum elements: The BRSU Racing Engineer Certificate

Dirk Reith¹, Christian Blume¹, Martina Grein¹, Tobias Haedecke², Daniel Könemann¹, Michael Malschuetzky¹

1: Bonn-Rhein-Sieg University of Applied Sciences, Sankt Augustin, Germany; 2: BAHSYS GmbH, Barlog Group, Overath, Germany [BRSU = Bonn-Rhein-Sieg University, I think]

Formula Student events for electric cars. This works from freshman to graduates, and leads to the “certificate”. The static events are essentially the examinations. I think I understood him to say that there was substantial alumni involvement. The students get one semester’s work of credit from this, which we think is absolutely justified.

Q Duration.

A It happens alongside regular studies, for 2–3 years. Takes time to master. In The Netherlands, there is a reserved year/term for this.

Q Externally accredited?

A Not as such, but widely recognised.

1.7 SWitCH: A Reskilling Program in Information Technology

Ángelo Martins¹, Emanuel Silva¹, Isabel Azevedo^{1,3}, Nuno Bettencourt^{1,2}

1: Institute of Engineering of Porto — Polytechnic of Porto (ISEP/IPP); 2: Interdisciplinary Studies Research Center (ISRC); 3: Games Interaction and Learning Technologies (GILT)

Porto is a growing ICT hub. 18K needed in Portugal by 2021. Joint Industry/University initiative. 1-year postgraduate studies program for (preferably) STEM graduates, and one-year paid internship for successful candidates. Tught (2 semesters) proves SE and soft skills. Companies provide internships and “product owners”. Many similar activities, but few provide internships. Grades drive pecking order for placement. Quizzes/exams are 1/3, Oral assessment and work analysis is 2/3. 96% success rate. Scalability is a challenge (30 in runs 1 and 2, but 60 in run 3). Covid-19 is a challenge, but fortunately teams were already made and bonded. First semester would have been more challenging.

Chapter 2

30 April 2020

2.1 Perception of the gender gap in computer engineering studies: a comparative study in Peru and Argentina

Alicia García-Holgado [Spain], Claudia Deco [Argentina], Norka Bedregal-Alpaca [Peru], Cristina Bender [Argentina], Klinge Orlando Villalba Condori [Peru]
UNESCO initiative, 5SDG.

Rosario Computer Science: 34 students, various ages.

Peru Computer Science and Systems Engineering. 41 students.

Use GENCE 2.0 questionnaire¹. Voluntary anonymous participation. Peruvian women almost totally disagree with “women have more problems than men in programming”. Women and men in Argentina differ, but not Peruvians, in “academic dimension”. Note that Argentina is one of the most equal countries in Latin America. Peru has one of the widest education gaps.

Q Comparisons with Spain?

A Initially Spain looks like Argentina. But there are many factors. The Engineering society is one (? Professional Society, or colloquial usage).

2.2 Stack Overflow — Informal learning and the global expansion of professional development and opportunities in programming?

Markus Nivala, Alena Sereenko, Tanya Osborne, Thomas Hillman; University of Gothenburg, Sweden.

¹New to JHD, details in [GHDBA⁺20].

Education policy wants to foster programming skills across the population. Informal online learning is very common in computing. Hence we study Stack-Overflow in computing. We used Stack Overflow Developer Survey (SODS). In 2018, N=98855². Cross-correlated against Human Development Index and Gender Development Index. Also WEF Global Gender Gap report 2018. Put %age female was 9% in USA (highest!), India and Pakistan were 7%, UK 6% etc. Could find no correlations between this and HDI or GDI. Average is 24% female in ICT graduates (but India 79%, Turkey 54%). In general many correlations had significant exceptions.

Only 41% considered formal education to be important to career success. Correlation between experience and salary is low. Access to formal education affects participation in SO (JHD? is this SO, or just SODS). Speaker wondered if this was due to English familiarity.

Q–JHD You mentioned low participation of women, but is that participation in SO, or just the survey?

A Just the survey. But there is confirmatory evidence elsewhere for this gender %age — see paper [NSOH20].³

²US 20k, India 14K, Germany, UK both 6K etc.

³Looking at that, JHD assumes he was referring to [VCS12]. That was published in 2012, which was a long time ago in the life of Stack Overflow (founded 2008).

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