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Professional Competencies in the Curriculum

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Contents

Appendices

1. Introduction

One of the strands of the University's Transforming Teaching Programme (TTP) was to encourage the development of Professional Competencies within students' mainstream UG and PGT curriculum, and to ensure that PGR students recognise that they are developing these Competencies through their research. Many of the learning outcomes in programmes and modules - and the forms of teaching, learning and assessment related to them – already emphasise such skills; and therefore this piece of work is mainly focussed on the identification of good practice and its dissemination through guidance and support materials. The aim is for approaches to develop and articulate the four identified Competencies to be in place by the start of the academic year 2019/2020, with the Competencies forming part of the framework for the Educational Enhancement and Assurance Review (EEAR), and to use these competencies as a basis for developing future strategies around curriculum design, learning spaces and graduate employability.

By being more explicit about the development of Professional Competencies through the curriculum we will help students to understand that through engagement with their education they are developing skills which will enhance their employability. This approach also provides further opportunities for teaching enhancement through the sharing, adoption and adaptation of good practice across our diverse portfolio of academic disciplines and research-led vocational training.

While this work has been based at UNUK, we have had regular contact with colleagues at UNMC and UNNC so that Professional Competencies within the curriculum can be promoted across all three campuses, with appropriate local variation.

2. Context

Much is currently being written about the future of work in the context of developing bio and nano-technologies, artificial intelligence and machine learning. The World Economic Forum (WEF) has coined the term 'The Fourth Industrial Revolution' (Schwab, 2016) to represent the impact that emerging technologies will have on all aspects of our lives. While the media focus on the introduction of robots into our world suggests that jobs with high levels of manual tasks are the most vulnerable to these changes, there are also suggestions and indications that traditional professions such as law, accountancy, management consultancy and medicine are already being affected (Susskind and Susskind, 2015). Nesta identify a broader range of forces that are shaping our world, but take a more optimistic view of the future of work, suggesting that while in some areas, jobs will be altered or removed, new areas of work and types of occupation will be created (Bhakshi et al., 2017).

Critics suggest that changes are being exaggerated and that ultimately the skills that students and graduates will need to develop in order to survive and thrive from now into the next 20 or 30 years are not very different to those they require now. On review, the last 30 years of UK graduate recruitment have seen evolution in terms of process, scale and approach to work, but have maintained a relatively steady state in terms of the skills required, despite a number of economic and technological changes (Thambar, 2018). While the skills and knowledge that Nottingham graduates require to pursue fulfilling and successful careers may remain familiar to us, many indications are that the context in which they will be deploying them throughout the course of their career will change significantly.

This debate is not confined to the UK and the western world. There is a view that the Fourth Industrial Revolution provides opportunities for China to thrive on the economic world stage as it deploys its capacities for entrepreneurship and innovation, novel uses of existing technologies, and use of industrial robots (Li, 2017). An analysis of Germany's "Industry 4.0" alongside "Made in China 2025" indicates that both countries have comparable ambitions to advance their technological entrepreneurship although they are operating in different socio-economic contexts (Li, 2017, Guoping et al, 2017). In Malaysia there are signs that the technology for business community recognises the opportunities and challenges that these changes present for Malaysia's economic future (Ahmad, 2016)

The University of Nottingham demonstrates success in preparing students for fulfilling futures through their academic study, co-curricular and extra-curricular experience. In the UK, our external measures (each with their limitations) of Destinations of Leavers of Higher Education (DLHE), our TEF Gold ranking, feedback on our 2016 QAA review, Longitudinal Education Outcomes (LEO) data, being highly targeted by Times Top 100 employers and named Times/Sunday Times University of the Year for Graduate Employment 2017, confirm the feedback we receive from our alumni about the impact that studying at the University of Nottingham has had on their lives. Developing and articulating Professional Competencies through the curriculum in the context of the future of work, is an important dimension of our responsibility and commitment to equip our students for their future through an outstanding student experience.

3. Identifying the Professional Competencies to develop and articulate through the Nottingham curriculum

A working group of academics, careers and employability and learning development professionals has been working together to develop the Nottingham approach since February 2017. They are named in the section on 'Sources of further information and help', with thanks for their contribution to this work.

The starting point was consideration of the ten skills the WEF have identified as necessary to thrive during the Fourth Industrial Revolution A mapping of these skills across the Nottingham student experience shows the range of settings and opportunities that we provide for our students to develop these skills.

WEF Skill		Academic Experience	Co and Extra-Curricular Experience including the NAA	Placements, Work Experience, Internships
1.	Complex Problem Solving	✓	sometimes	sometimes
2.	Critical Thinking	✓	sometimes	sometimes
3.	Creativity	✓	sometimes	sometimes
4.	People Management	sometimes	✓	sometimes
5.	Co-ordinating with others	✓	✓	✓
6.	Emotional Intelligence	sometimes	✓	✓
7.	Judgement and Decision Making	sometimes	✓	✓
8.	Service Orientation	Where relevant	✓	✓
9.	Negotiation		✓	sometimes
10.	Cognitive Flexibility	✓	sometimes	sometimes

These skills were further cross-referenced with Careers and Employability Service (CES) insight into the skills that employers currently require when recruiting graduates and the skills that those recruiters who are looking ahead indicate will be sought in the future. Complex Problem Solving, Critical Thinking and Creativity are skills that students develop through their academic study. It is important that students are helped to understand that the development of these skills will enable them to succeed in their studies as well as preparing them for their future careers.

We have therefore identified the following four Professional Competencies to be additionally articulated and developed through the University of Nottingham Curriculum:

- **Professional Communication**
- **Co-ordinating with Others**
- **Reflection**
- **Digital Capabilities**

4. An Outline of the Professional Competencies

	Definition	Sample Activities	Desired Outcomes
Professional Communication	Ability to communicate effectively and appropriately, selecting the appropriate register for the intended audience. This could be through a variety of means, including, where appropriate, oral presentations and communication in other languages	• Briefing reports • Projects • Placements • Blogs • Poster presentations • Presentations • Individual or Group, to audience • Video • Webinar • Leading a seminar	• An understanding of the differing professional expectations and (behaviours) • Development of own professional communication style • Ability to communicate in a positive and impactful way • Clear articulation of position • Structured and relevant content • Effective delivery (e.g. use of visual aids, use of time) • Appropriate written electronic communications
Co-ordinating with Others	Working inclusively and effectively together to achieve a common goal. Being able to influence and persuade where appropriate	• Group projects • Seminars • Placement/Project learning • Group presentations	• Understanding your impact within the team and of the team, and making a contribution. • Recognising the contributions of others • Commitment to a common purpose
Reflection	To give serious thought and consideration in order to develop enhanced understanding and insight	• Post activity reflection e.g. logs, tutor meetings • Self-evaluation • Action Planning	• Greater self-awareness, including consideration of ethical issues and integrity • Willingness to receive and act on feedback • To be a reflective practitioner • To have a sense of professional identity, where appropriate
Digital Capabilities (informed by Jisc definitions)	• Information, data and media literacies • Digital learning and development • Digital participation • ICT proficiency • Creative production (where appropriate • Digital identity and well-being	• Projects that involve the use of appropriate presentation and statistical software. • Using digital resources • Presenting & interacting over digital platforms	• Understanding the most effective digital platform for purpose • Confident to interact with others through digital platforms • Agility and willingness in embracing existing and emerging digital communications and technologies

5. Developing and Articulating the Professional Competencies

Appendix 1 summarises some examples of good practice across the institution for each of the competencies in a number of disciplinary settings. This is not an exhaustive list and further examples are available by making contact with the relevant Faculty Careers and Employability Consultant listed in Appendix 3. It is expected that students will have the opportunity to develop each competency at least once during their course, ideally on multiple occasions and with some progression of developmental opportunity as they move through their course. This is left to the discretion of programme leaders, given the diversity of the Nottingham curriculum offer.
However, colleagues are encouraged to review their current curricula, modules and learning outcomes to identify areas where students are developing these competencies. Where they are already in place then it will be helpful to review the extent to which students are made aware of the skills they are developing which are relevant to their future career. Where opportunities to develop competencies could be stronger, it is intended that the examples of good practice and 'sources of help' provide support in order for that work to take place. The sources of help include links to the work of the Transforming Teaching Project and the University's Educational Enhancement Group to support typically challenging areas in assessment.

The role of the EEAR

As part of the Educational Enhancement and Assurance Review (EEAR) process, an audit of seven academic development skills and the four professional competencies, and their progressive development across the course of a student's programme, has been piloted in the School of Humanities in 2017/18.
The statements are considered by the EEAR panel, and can then be discussed during School ESE Committee deliberations, and particularly as part of School Teaching Away Day discussions to support the identification of models of good practice, as well as any gaps in provision within any specific courses.

Initial indications from this pilot suggest that this is a fruitful and productive approach which offers a mechanism for crystallizing a set of coherent narratives around professional competencies (and their role as part of a general academic development provision) which offers an important narrative for TEF provider and subject-level statements, as well as a narrative to share with applicants, current students and staff. Further work is now being undertaken to embed Professional Competencies into the EEAR process across the University.

The role of the Graduate School

The focus of the work to date has been on the development and identification of the four Professional Competencies within UG and PGT programmes. However, there are strong synergies with work being undertaken by the Graduate School and in Doctoral Training Programmes to help PGR students identify the skills and competencies that they are developing during their research and for their future careers. The national Researcher Development Framework is currently used to support this work, but there is an opportunity to also consider how the four Professional Competencies identified in this work align with this. Such work will also need to consider the nature of the activities and opportunities that PGR students have to develop these Competencies and whether there are outcomes which may be specific to PGR students.

6. Co-Curricular Development Opportunities

a) The Nottingham Advantage Award

The Nottingham Advantage Award (NAA) offers students over 200 vocationally related modules to encourage them to make the most of their time at University and gain recognition for personal and professional learning derived from co-curricular and extracurricular activities. Most modules focus on at least three of the professional competencies, thus providing opportunities for students to further develop professional competencies and reflective practice to ensure students can reflect and act on feedback through their learning and be ready for the world of work.

Beyond the strong coverage of professional competencies the award also focuses on World Economic Forum skills for the future such as Service Orientation, Judgement and Decision Making and Negotiation. Many modules are delivered or supported by employers and charities of all sizes, collaborating on projects and challenges providing value project experience and insights into the workplace.

b) The Language Centre

In order to facilitate developing new or improving existing foreign language skills as part of Professional Communication, and to support studying or working abroad, the University's Language Centre offers modules in 9 languages at a range of different levels, which can be taken either as accredited modules, evening classes, or as part of the NAA.

c) Placements and Internships

The Careers and Employability Service delivers pre- and post-placement and internship development for students participating in a placement or internship as part of their course, linked to their course or as part of the Nottingham Internship Scheme. This supports students to understand and appreciate the WEF skills that they have developed, and have the opportunity to develop further as part of their experience and to reflect on their skills development upon completion. The Postgraduate Placements Nottingham offers a range of flexible placements for postgraduate students to enable them to develop their skills further by applying them to specific projects in the workplace.

7. Sources of further information and help

The following have been included as sources of further information and support:

Appendix 1	Examples of good practice across the four Professional Competencies from a range of academic disciplines. This appendix contains 21 examples of courses (*formerly referred to as modules*) where the content and methods of learning enable students to develop and practice the Professional Competencies. The examples are drawn from across faculties, schools and disciplines, and are from various levels of study. Not all examples cover all 4 competencies
Appendix 2	A programme case study: Professional Competencies delivered within a Faculty of Arts Philosophy Programme
Appendix 3	The Jisc Definition of the six elements of digital capability
Appendix 4	A Digital Capability checklist for curriculum developers
Appendix 5	Jisc Learner profiles that offer an example of how the six elements might be interpreted and implemented. It is not intended that any one individual would have all the capabilities included in this profile
Appendix 6	A list of contacts who are happy to provide further support and information across the Professional Competencies
Appendix 7	References – for those who wish to find out more about current thinking about the future of work

University of Nottingham
UK | CHINA | MALAYSIA

Appendix 1

Examples of good practice across the four Professional Competencies from a range of academic disciplines.

PC **DC** **CO** **RE**	**1. Politics Placement** Course catalogue: POLI3083 Level 3 **Summary of Content** The module incorporates a part-time placement (1 day per week) in an external organisation. Pre-placement training workshops and tutorials are delivered. The module aims to enable the participants to develop: • **Professional communication** skills within the organisation including negotiating workload planning • **Digital capabilities** are enhanced through the use of blogs and also in the individuals workplace • **Co-ordinating with others** within the placement organisation • **Reflection** through the use of blogs to share experiences and consider alternative approaches to issues that arise during placement etc. **Assessment** 1x 3500 word business report 1x 1500 word individual reflective blog	**Politics and International Relations**

PC **DC** **CO** **RE**	**2. Professional and Academic Development** Course catalogue: BUSI1098 Level 1 **Summary of Content** The purpose of the Professional and Academic Development module is to ensure that the new NUBS UG students understand the most effective ways for them to work and engage at university, which will enable them to achieve the best they can and to develop the skills they require. The need to prepare as early as possible for future careers and to enable them to consider and research possible career pathways and opportunities will be highlighted through working with the Careers and Employability service. They will be encouraged to think closely about what it means to be a social citizen and to consider the wider community and their impact upon it. They will be encouraged to reflect on the skills learnt in each session to enable them to more clearly identify what they are learning and how to use this in the future. The module aims to enable the participants to develop: • **Professional communication** by including sessions on essay writing and presentation skills. • **Digital capabilities** are not formally developed in this module. • **Co-ordinating with others** through the group project of completing a Social Business Model Canvas. • **Reflection** through the writing of reflective journals, which are initially formative in nature, followed by a summative assessment. **Assessment** 1) Weekly reflective Journals completed on Moodle reflecting on what was covered in class, what they learnt and what they will take away from the session. First two reflections will be done in class and peer-reviewed as formative feedback then uploaded on Moodle. The following eight reflections will be a combination of four formative and four summative (150 words each reflection x 10 = 1500 words in total) (35%) 2) Skills Analysis: analysis of their current skill set at the start of the course to identify the skills they have and what they need to develop (7 skills identified x 170 words per skill = 1190 words) (25%) 3) Group project resulting in completion of a Social Business Model Canvas (1800 words) (40%)	**Nottingham University Business School**

University of Nottingham
UK | CHINA | MALAYSIA

PC DC CO RE	**3. Software Engineering Group Project** Course catalogue: COMP2002 Level 2 **Summary of Content** The module has been designed to give some experience in the various different aspects of software engineering in groups. These include running meetings, making collective decisions, time and people management, giving presentations and demonstrations, writing reports and maintaining code and document repositories. Working in groups of around five to six people, students pitch for a project (industrial or academic) and are awarded one with a supervisor who provides a description of a computer application to be designed, programmed, and documented during the course of the module. Each group meet up to twice a week, one of which may be with their supervisor and once without. In addition there are a number of introductory one hour lectures mostly covering software engineering practice. The module aims to enable the participants to develop: • **Professional communication** through regular meetings with the project sponsor/supervisor and presentation at the exhibition showcase event. • **Digital capabilities** by delivering a software engineering project to specification. • **Co-ordinating with others** through working effectively in software engineering groups and co-authoring technical reports. • **Reflection** through the development of individual CVs, a group expression of interest for projects and individual reflective report on progress, strengths and weaknesses. **Assessment** Report and exhibition showcase	Computer Science

PC **DC** **CO**	**4. Vocational Mathematics** Course catalogue: MATH4045 Level 4 **Summary of Content** This module provides students with many of the skills that employers seek in graduates: understanding of work-related demands and of real-world problems, flexibility, proficient oral and written communication, and teamwork. This module involves the application of mathematics to a variety of practical, open-ended problems, typical of those that mathematicians encounter in industry and commerce. Specific projects are tackled through workshops and student-led group activities. The real-life nature of the problems requires students to develop skills in model development and refinement, report writing and teamwork. Students will have an opportunity to apply a variety of mathematical methods and knowledge learned in previous courses taken at level 1 and level 2. The module aims to enable the participants to develop: • **Professional communication** through the development and communication of the methodology and general outcomes of directed group project studies orally; and through compact and concise written reports • **Digital capabilities** through the development of information and communication skills in providing high quality written and oral reports and effective use of appropriate software in the modelling and development of a substantive project brief. • **Co-ordinating with others** by demonstrating the effective use of a collective group activity to enhance the overall level of project achievements. **Assessment** Written group reports and oral group presentations	**Mathematics**

PC **DC** **CO** **RE**	**5. Professional Skills for Bioscientists** Course catalogue: BIOS2023 Level 2 **Summary of Content** This module aims to give students opportunities to acquire some of the professional competencies employers are interested in as well as an opportunity to reflect on the module and make an action plan. A significant part of the module is a problem based learning activity in which students work in groups to solve a problem over a number of weeks and present their solutions and recommendations to the problem. Part of the assessment of this module is a reflection on their performance in the PBL as well as other sessions such as networking with alumni and considering career profiles. The students produce a video reflection of the module – and accompany this with an action plan based on their video reflection. The module aims to enable the participants to develop: • **Professional communication** through the presentation of group work and production of a newspaper article • **Digital capabilities** • **Co-ordinating with others** through problem based learning group work • **Reflection** through the identification of possible future career pathways reflecting on learning and wider experiences **Assessment** • Portfolio including CV, personal development plan and 2-4 min video • Problem based learning (either a group poster, 15 min group presentation or 2 page individual report • Formative newspaper article communications piece	**Biosciences**

PC **DC**	**6. Practical Methods and Seminars in Psychology** Course catalogue: PSGY1001 Level 1 **Summary of Content** This module has been designed to provide an integrative approach to psychology through the use of scientific method, enabling students to critically assess previous research and to design conduct, analyse and report their own studies. Ten laboratory classes, of three hours duration each, address several different psychological topics using a range of investigative procedures, primarily based on the experimental method. Students work individually or sometimes in pairs/small groups designing studies, and collecting and analysing data. Written course-work submitted for assessment must however be done individually. To undertake these studies students are instructed in the use of experimental design and analysis software (SPSS/PASW, PsychoPy, Excel), and will be introduced to web-based resources. An additional 2 hours per week of seminar-type/workshop classes (timetabled locally) will be taught providing key skills in visual data presentation (preparing graphs & tables), research skills, writing skills, and other transferable skills. The module aims to enable the participants to develop: • **Professional communication** through key skills in visual data presentation (preparing graphs & tables), research skills, writing skills, and other transferable skills. • **Digital capabilities** through the use of experimental design and analysis software (SPSS/PASW, PsychoPy, Excel), and will be introduced to web-based resources. **Assessment** Exam, lab report, Excel/SPSS assignment, Moodle quizzes and research participation	**Psychology**

DC **CO**	**7. Applied Econometrics 2** Course Catalogue: ECON2006 Level 2 **Summary of Content** An introduction to theory and practice of Econometrics focussing on practical issues relation to data modelling, specification and testing. Lectures, practical workshops using STATA and tutorials are all used to deliver the material. The module aims to enable the participants to develop: • **Digital capabilities** through an ability to understand verbal, graphical, mathematical and econometric representation of ideas and analysis – evaluating, analysing and presenting quantitative data effectively. • **Co-ordinating with others** to produce a group report. **Assessment** Exam 1 1x 2000 word Econometrics Group coursework	**Economics**
PC **CO** **RE**	**8. Legal Research: Placement with Citizens Advice Bureau** Course Catalogue LAWW3074 Level 3 **Summary of Content** Students undertake initial training to become a Gateway Assessor and then will volunteer at the CAB under supervision. The module aims to enable the participants to develop: • **Professional communication** through dealing with the public in the CAB setting • **Co-ordinating with others** within the organisation team with diversity of experiences and backgrounds • **Reflection** through the learning journal and ongoing supervision within CAB **Assessment** 1x Learning journal with reflective element 1x Research Essay	**Law**

PC **DC** **RE**	**9. New Venture Creation** Course Catalogue BUSI4532 Level 1 **Summary of content** Students will engage in the practical elements of innovation and enterprise activity and develop the knowledge and skills to understand how to turn good ideas into viable businesses. The module aims to enable the participants to develop: • **Professional communication** use of relevant business communications using a variety of media • **Digital capabilities** are enhanced through analysing a range of business data and sources of information • **Reflection** through developing self-awareness/sensitivity in terms of people and cultures **Assessment** Exam 1 1x1500 individual report 1xintegrative learning barometer (250 words per submission).	**NUBS**
PC **DC** **CO** **RE**	**10. Creativity and Collaboration for Professional Musicians** Course Catalogue MUS12034 Levels 2 and 3 **Summary of content** The module offers an opportunity to undertake a collaborative performance-related project of your own devising. By exploring dialogues between disciplines, you will complete a collaborative project in response to a 'real world' creative brief (of the kind issued by funding agencies, arts organisations and other cultural venues). You will engage in joint rehearsal and planning sessions as well as group workshops to discuss your projects and to experiment with different creative approaches. You will also study salient repertoire and approaches from the past in the context of contemporary music-making, and explore how to utilise these and build upon them in today's world. The module aims to enable the participants to develop: • **Professional communication** through responding to a real world creative brief • **Digital capabilities** engage in rapidly changing music technologies • **Co-ordinating with others** due to the collaborative nature of the brief • **Reflection** as the assessment includes a self-reflective diary **Assessment** This module is offered at both level 2 and level 3 10-15 min's audio or video document or equivalent activity devised in a collaborative manner Self-reflective diary documenting the collaborative process (2,500/3,500 words)	**Music**

PC **DC** **CO** **RE**	**11. Communicating Philosophy** Course Catalogue PHIL3015 Level 3 **Summary of content** This module will teach students how to communicate philosophy through a variety of different mediums, assessing them in each. We will look at how philosophy can be communicated through legal documentation, press releases, handouts, lesson plans, webpages, funding bids and posters (with optional presentations). A number of the sessions will be delivered by professionals from outside the University, with support from the module convener. Seminars will be used to develop each of the items for assessment. Students will be invited to draw upon their prior philosophical learning to generate their assessments, except in the case of handout where they will be set a specific philosophical task and asked to complete some (very basic) independent research. The module aims to enable the participants to develop: • **Professional communication** as students have to write through a professional medium such as a press release or funding bid • **Digital capabilities** through the assessment below • **Co-ordinating with others** the ability to meet external professionals and discuss themes • **Reflection** underpins the module **Assessment** Part of the assessment involves designing webpages and using presentation software	**Philosophy**

PC **CO** **RE**	**12. Reading, Writing and Speaking Religion** Course Catalogue THEO1019 Level 1 **Summary of Content** This course provides understanding and analysis of primary texts in world religions, and in a range of broader abilities necessary for university level study, including bibliographical and footnoting skills, the use of scholarly journals and monographs, argumentation and essay writing. It combines lectures and practical exercises with small group seminars in which students learn collaboratively to read and engage with texts from non-western religious traditions. The module aims to enable the participants to develop: • **Professional communication** through engaging in discussion and debate about texts • **Co-ordinating with others** by communicating coherently with others and working collaboratively • **Reflection** by engaging and comparing a variety of religious texts **Assessment** 1 x 1 hour 30 minute exam	**Theology and Religious Studies**
DC	**13. Veterinary Personal and Professional Skills 1** Course Catalogue VETS1005 Level 1 **Content Summary** A compulsory facilitated 2 hour small group teaching session that is a Critical review of Learning materials. It covers different types of information and their reliability and ease of use, from textbooks to journal articles and websites. The students have an opportunity to sign up for a taught session on Microsoft Word, PowerPoint and Excel. The module aims to enable the participants to develop: • **Digital capabilities** via reviewing websites, presenting using video or Powerpoint and potentially taking part in a Microsoft session. Students will also develop a leaflet via Word or Publisher Computer programmes. **Assessment** The students do a group online presentation, using either video or PowerPoint which submitted for review by peers. The coursework, worth 5% of the module, involves use of Word or Publisher Computer programs to develop a leaflet on one of 5 set titles. This is required to be submitted electronically and in hard copy.	**Veterinary Medicine**

University of Nottingham
UK | CHINA | MALAYSIA

PC CO RE	**14. The Professional Midwife in Contemporary Society** Course Catalogue MIDW3010 Level 3 **Content Summary** The module aims to enable students in their transition to becoming a qualified midwife and to recognise the principles and application of midwifery leadership. The module utilises a range of student led learning activities to encourage students to work inclusively, to influence and persuade where appropriate and work collaboratively in achieving a common goal. The module incorporates a variety of management, leadership and professional development activities to encourage and enhance the student's coordination with others. Students work in small groups on the variety of tasks including discussion activities, allocating tasks and working together to achieve outcomes. The module aims to enable the participants to develop: • **Professional communication** via a mock NMC Fitness to Practise Hearing whereby students work in groups and act as panel members in deciding the outcome of a fabricated professional registrant who is charged with professional misconduct • **Co-ordinating with others** via an inter-professional Group Leadership activity with the 162 Regiment Royal Logistics Corps, whereby third year undergraduate students work in groups with postgraduate healthcare students to successfully complete an outdoor Army leadership exercise. Also, a problem based learning activity whereby third year students, in groups, work collaboratively to set up a freestanding midwifery led unit and experience Recruitment and Selection from the perspective of the employer and prospective employee. • **Reflection** via a Webfolio, reflecting on how engagement with the module content has assisted with professional development, identifying future professional development needs and how the module has positively impacted upon their employability skills. **Assessment** <u>Formative assessment:</u> • planned management and leadership classroom and outdoor group activities, including feedback presentation. • student engagement in a range of professional recruitment and selection activities, whereby student groups work together in allocated 'Human Resource' groups to manage a midwifery unit, including planning and staging individual student interviews. Students interview each other for professional job roles. <u>Summative assessment</u>: submission of a Webfolio (described above)	**Health Sciences**

PC	**15. Communicating Neuroscience** Course Catalogue LIFE3024 Level 3 **Content Summary** This part of the module is concerned with communicating, criticising and summarising current research in neuroscience. Special emphasis will be given to constructive criticism that takes into account the complexity, and sometimes contradictory, results in the field. Students will also practice providing constructive feedback to their peers. The module aims to enable the participants to develop: • **Professional communication** as students will learn to summarise and communicate scientific findings to different audiences (general vs scientific), using different platforms. They will learn to provide constructive criticism and gain an understanding of some of the difficulties surrounding interpretation of the scientific literature. Students will also gain skills in producing abstracts, critiques, lay commentaries and a mini-review. They will also have the opportunity to develop skills in providing constructive feedback. **Assessment** Formative: Students will have the opportunity to take part in multiple peer-assessment activities where they will have the opportunity to provide and receive peer-feedback for the scientific summary, lay commentary and critique.	Life Sciences

PC **CO**	**16. Foundation Biological Sciences** Course Catalogue LIFEF001 Level 0 **Content Summary** Students work within small groups to learn and teach each other about one aspect of the module content. This activity is described as 'peer learning exchange' because students have responsibility for finding the content and for presenting it in a way that their peers can understand. Students are also required to individually write a summary of the whole topic i.e. not just what they covered in their own presentation but what they learnt from their peers during their presentations. The module aims to enable the participants to develop: • **Professional communication**: Students must communicate effectively with their peers to devise a presentation. They will also develop presentation skills • **Co-ordinating with others:** Students work in pairs / groups of three to prepare and deliver a 10 minute group presentation. **Assessment** Students are assessed individually on their presentation skills. The presentation is marked against three criteria: presentation; organisation and content. In addition, they each prepare a one page synthesis which includes content from all of their peers' presentations. The synthesis is marked using similar criteria to those used to mark exam essays: coverage of topic; knowledge and understanding; balance and breadth; relevance and quality of written communication	**Life Sciences**

RE	**17. Blended Learning Curriculum (Person Centred Nursing Care: Delivery & Decision Making), BSc Nursing** Course catalogue NURS2005 Level 2 **Content Summary** Blended Learning: Students work through a 'cycle' of learning approaches; lectures for all students, specifically designed online learning activities and smaller facilitated groups (approximately 30 students) organised in the specialisms of nursing (i.e. child, adult, mental health). The curriculum philosophy emphasises students as partners in the learning process, employing a blended learning approach to build flexibility The module aims to enable the participants to develop: • **Reflection** via discussion based seminar groups using a range of activities to promote reflection, for example posing questions relating to care studies viewed in the online learning, debating ethical issues based on a podcast reviewed in the online learning. **Assessment** Reflective components are prominent within essay based assessments that require the students to explore their individual values and experiences, their practice placements and the theory.	Health Sciences
RE	**18. Personal and Professional Effectiveness, BSc Nursing** Course catalogue NURS1001 (adult), NURS1002 (mental health), NURS1003 (children) Level 1 **Content Summary** Teaching Reflective Models In seminar groups students are required to write a brief factual account of a video scenario (based on documentary of relevant practice e.g. Panorama), students are then asked to return to the video and write a reflective account. They are supported to compare and contrast these accounts by the facilitator. The learning is consolidated by a presentation of reflective models following this exercise to help students develop theoretical context. The module aims to enable the participants to develop: • **Reflection** through the practice of writing and comparing reflective accounts, and input on reflective models. **Assessment** Essay based on reflection of experience from nursing placement	Health Sciences

PC **DC** **RE**	**19. Group Design and Make** Course catalogue MECH4015 Level 4 **Content Summary** The project involves 2 or more students, working as a team to design, manufacture and develop a product. Starting from the design brief prepared by the supervisor, the group will be required to devise and evaluate alternative design concepts, undertake the detailed engineering analysis and mechanical design, manufacture a prototype, evaluate its performance and undertake development work to improve it. Assessment of the financial viability and marketability of the product will be a major requirement. The module aims to enable the participants to develop: • **Professional communication** by communicating effectively with all stakeholders in a team environment and by delivering a presentation • **Digital capabilities** by developing a project using a professional design process • **Reflection** by evaluation of techniques to make value-based decisions in complex scenarios and throughout the coursework **Assessment** 1 x business plan 1 x personal contribution 1 x progress report 1 x deliverables assignment 1 x presentation 1 x final submission	**Mechanical Engineering**
PC **CO** **RE**	**20. Design Project** Course catalogue CHEE3006 Level 3 **Summary Content** Students undertaking this module will complete a group design project focused on system-level process plant design. The module is student-led under the guidance of the module convenor and a group of academic staff. The module aims to enable the participants to develop: • **Professional communication** by showcasing their work at the end of the course and communicating their project findings in a professional manner • **Co-ordinating with others** by planning, prioritising and organising the project in a team • **Reflection** by understanding quality assurance issues and applying these to continuous improvement **Assessment** 2 x coursework completed by the group 1 x showcase event	**Chemical & Environmental Engineering**

PC **CO** **RE**	**21. Construction Practice** Course Catalogue CIVE3018 Level 3 **Summary Content** Students work on a scaled-down construction project by going through the stages of design appreciation, construction planning and scheduling, organisation of work, execution of the construction phase and review. The main phase involves the construction phase and takes place in a time-limited 'field course' environment at a residential facility that offers the resources needed for carrying out the construction work. There is some advance preparatory work and post-construction phase reporting required to complete the module. The module runs with the support of industrial partners who help guide the student teams. The module aims to enable the participants to develop: • **Professional communication** by completing the project in a field course environment and working alongside industrial partners • **Co-ordinating with others** by working in teams made up of approximately 18 people in a field course environment • **Reflection** by submitting coursework reviewing the process **Assessment** 1 x field course assignment coursework 1 x review coursework	**Civil Engineering**

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Appendix 2

A programme case study: Professional Competencies delivered within a Faculty of Arts Philosophy Programme

The following pages outline a sample curriculum for a student in the Faculty of Arts who begins on the Arts Foundation Year programme, and then progresses to a three-year BA Philosophy undergraduate programme, and concludes by taking an MA in Philosophy. During this route, the student encounters a number of modules and learning opportunities that promote all four Professional Competencies in an incremental and developmental way to produce a graduate with a refined and highly desirable set of skills for the workplace.

Year 0: Foundation Year

On the Foundation Year, students on track for any Arts and Humanities pathway are taught together on a set of cross-disciplinary modules that introduce them to all four Professional Competencies and their role in Higher Education.

Professional communication

Students are encouraged to develop communication skills, 'find their own voice', listen carefully and critically, and respond appropriately:

- **The Project:** students present the results of a mini research project to their peers.
- **Critical Thinking and Reflective Learning**
  - Finding your voice session which helps students to own and express their views to peers
  - The Great Debate in which students prepare for a debate an issue
- **Language and Culture**
  - Students have a 10 minute assessed presentation on a 'cultural controversy'

Digital capabilities

Students learn to be confident and competent with standard digital facilities: email, Word, Powerpoint and Moodle. As much as possible of the assessment for the programme is produced and submitted electronically. In addition, certain modules require other capabilities:

- **Critical Thinking and Reflective Learning**
  - This module includes an online learning forum
  - There is specific teaching on the use of presentation software like Powerpoint and Prezi
- **Narrative and Creativity**
  - This module develops student capabilities in a range of social media, blogging and other online tools, including: Twitter, YouTube, Pinterest, Wordpress, Snapchat, Tumblr, Instagram and Soundcloud

  - Students need to engage with picture-, video- and audio-editing software
  - Students are introduced to the digital facilities at Kings Meadow Campus and the Digital Humanities Centre

- **Media and Visual Culture**
  - A range of media (digital and other) are explored in this module
  - The module includes consideration of ethical issues raised by the use of digital media

Coordinating with others

All Foundation modules involve a large proportion of group work: there are numerous group tasks across the modules, some of which involve students coordinating and planning outside class. There are two assessed group tasks, a group poster in **Important Thinkers through History** and a group presentation in **Media and Visual Culture.**

Reflection

From the start, students are encouraged to reflect on their learning (academic and other) and on the process of learning, both individually and together. This is achieved in particular by the assessed workbooks in the **Narrative and Creativity** and **The Project** modules. In addition, there is specific teaching on what 'reflection' means and an assessed reflective learning journal in the **Critical Thinking and Reflective Learning** module – which has reflection as a core part of the module.

Students who pass the Foundation Year programme then progress on to the BA in their chosen subject area:

Year 1: BA Philosophy

Reasoning and Argument (Professional Communication): A large part of this first year module is devoted to how to find an appropriate 'academic' voice; how to pick the correct level to write at; how to be concise and clear; and also how to curate, distill and rationalize the vast amount of information they come across.

Philosophy and the Contemporary World (Co-ordinating with Others): This module exposes students to the most recent and controversial topics in the contemporary world. A principle aim of the module is to work with others in groups within lectures (Philosophy have developed the term 'Leminar') to discuss contemporary issues: e.g. rights of asylum seekers, post-truth, Fundamentalism, transgender discrimination, Liberal Education – so that students learn to work and communicate with those they might not agree with. This module also requires students to learn about chilly climates, implicit bias, stereotype threat both in and outside University life.

Year 2: BA Philosophy

Placement Module (Reflection; Professional Communication, Digital Capabilities): Students keep a reflective blog, so they learn how to reflect and communicate through digital means, and give a presentation at the end of the module. Part of the module involves students learning about presentation skills, and how to present themselves in a professional work environment. For example, there is a discussion about the types of interviews they may have to undertake. This module also discusses workers' rights, work and the law, the 'gig' economy, and gender discrimination in the workplace.

Year 3: BA Philosophy

Communicating Philosophy (Professional Communication; Reflection; Co-ordinating with Others, Digital Capabilities): This unique module involves different professionals talking to the students – a teacher, a lawyer, a third sector worker, someone who designs academic posters, someone who creates press releases, etc. The student then has to produce an assessment related to that topic. Students then learn about writing and communicating in many different professional environments – e.g. writing a legal brief, designing a lesson plan. The seminars for this module provide students with an opportunity to share drafts of their work with one another and get feedback. Students also refine their skills in communicating philosophical ideas using social media, and are given further training around twitter campaigns, snapchat, and blogs.

Year 4: MA Philosophy

Alongside a suite of advanced modules in Philosophy that further refine all four professional competencies, the student can enrol on the Faculty-wide MA module, **Arts in Society**, which uses diverse approaches to demonstrate the value of the arts and humanities to modern life. The module emphasises how concepts and practices from Archaeology, Area Studies, Classics, English, History and Modern Languages can be used at an advanced, professional level to organise, engage, entertain, educate and communicate across society, and transform the lives of individuals and communities. The module uses all four competencies to enable students to realise the potential of their education and to apply their skills as arts and humanities scholars:

- **Professional Communication**: students develop a portfolio using blogs, vlogs, podcasts or posters to promote their subject area and their skills to academic, professional and public audiences.

- **Digital Capabilities** are built through a series of online activities, where students construct professional and academic profiles, build networks and undertake research within digital repositories and data sources

- **Co-ordinating with Others**: students develop a collaborative project grant proposal to a funding body, working with academics and local communities to use the arts and humanities to address social, political and cultural issues within Nottingham

- **Reflection** is facilitated through workshops and joint initiatives with the Careers and Employability Service, which supports students to consider how their skills and abilities can be mobilised and adapted for a range of careers across multiple employment sectors.

Appendix 3

The Jisc definitions of the six elements of digital capability

Further information and resources related to the JISC digital literacy work can be found at:

https://www.jisc.ac.uk/guides/developing-students-digital-literacy

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Building digital capabilities: The six elements defined

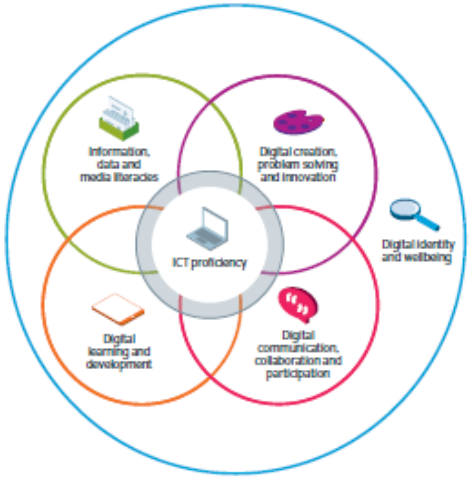
Using this framework

The framework has most often been used by digital leaders and staff with an overall responsibility for developing digital capability in their organisation. However, it can be used by staff in any role and by students in any educational setting. Uses of the framework include:

- To support discussion and build consensus about the capabilities required in a digital organisation, perhaps in order to develop a local framework or a locally adapted version of this framework
- To plan or review staff/educational development, for example ensuring that framework elements are included in professional development activities for teaching staff
- To plan or review a curriculum, though note that this generic model will need to be adapted carefully to the demands of the subject area and course outcome One approach has been to produce each element as a prompt card with ideas for digital activities on the reverse. Another has been to encourage staff and students in a faculty or school to devise their own version of the framework for use in the curriculum
- To structure and signpost development opportunities, for example developing playlists of digital content mapped to the framework, or signposting a workshop programme
- To design digital badges and award them to staff and/or students undertaking certain development activities or demonstrating certain practices
- To map digital expertise across different staff roles within a team, department, or the organisation as a whole, identifying gaps and recognising where digital expertise adds value

For more information on all related resources please see the **Building digital capability project page** (http://ji.sc/building-digicap)

Digital capabilities: The six elements



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ICT proficiency (Functional skills)	
ICT proficiency	**The use of ICT-based devices, applications, software and services.** The confident adoption of new devices, applications, software and services and the capacity to stay up to date with ICT as it evolves. The capacity to deal with problems and failures of ICT when they occur, and to design and implement ICT solutions. An understanding of basic concepts in computing, coding, and information processing.
ICT productivity	**The use of ICT-based tools to carry out tasks effectively, productively, and with attention to quality.** The capacity to choose devices, applications, software and systems relevant to different tasks, having assessed their benefits and constraints; to adopt and where necessary adapt digital tools to personal requirements such as accessibility. The capacity to work fluently across a range of tools, platforms and applications to achieve complex tasks. An understanding of how digital technology is changing practices at work, at home, in social and in public life.
Information, data and media literacies (Critical use)	
Information literacy	**The capacity to find, evaluate, manage, curate, organise and share digital information.** The capacity to interpret digital information for academic and professional/vocational purposes, and to review, analyse and re-present digital information in different settings. A critical approach to evaluating information in terms of its provenance, relevance, value and credibility. An understanding of the rules of copyright and open alternatives eg creative commons; the ability to reference digital works appropriately in different contexts.
Data literacy	**The capacity to collate, manage, access and use digital data** in spreadsheets, databases and other formats, and to interpret data by running queries, data analyses and reports. The practices of personal data security. An understanding of how data is used in professional and public life; of legal, ethical and security guidelines in data collection and use; of the nature of algorithms; and of how personal data may be collected and used.
Media literacy	**The capacity to critically receive and respond to messages in a range of digital media** - text, graphical, video, animation, audio - and to curate, re-edit and repurpose media, giving due recognition to originators. A critical approach to evaluating media messages in terms of their provenance and purpose. An understanding of digital media as a social, political and educational tool, and of digital media production as a technical practice.
Digital creation, problem solving and innovation (Creative production)	
Digital creation	**The capacity to design and/or create new digital artefacts and materials** such as digital writing; digital imaging; digital audio and video; digital code, apps and interfaces, web pages. An understanding of the digital production process, and basics of editing and coding.
Digital research and problem-solving	**The capacity to use digital evidence to solve problems and answer questions**, to collect and collate new evidence, to evaluate the quality and value of evidence, and to share evidence and findings using digital methods. An understanding of digital research methods; an understanding of different data analysis tools and techniques.
Digital innovation	**The capacity to adopt and develop new practices with digital technology** in different settings (personal and organisational; social and work-based); to use digital technologies in developing new ideas, projects and opportunities. An understanding of innovation, enterprise and project management in digital settings.

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Digital communication, collaboration and participation (Participation)	
Digital communication	**The capacity to communicate effectively in digital media and spaces** such as text-based forums, online video and audio, and social media; to design digital communications for different purposes and audiences; to respect others in public communications; to maintain privacy in private communications; to identify and deal with false or damaging digital communications. An understanding of the features of different digital media for communication, and of the varieties of communication norms and needs.
Digital collaboration	**The capacity to participate in digital teams and working groups**; to collaborate effectively using shared digital tools and media; to produce shared materials; to use shared productivity tools; to work effectively across cultural, social and linguistic boundaries. An understanding of the features of different digital tools for collaboration, and of the varieties of cultural and other norms for working together.
Digital participation	**The capacity to participate in, facilitate and build digital networks;** to participate in social and cultural life using digital media and services; to create positive connections and build contacts; to share and amplify messages across networks; to behave safely and ethically in networked environments. An understanding of how digital media and networks influence social behaviour.
Digital learning and development (Development)	
Digital learning	**The capacity to participate in and benefit from digital learning opportunities;** to identify and use digital learning resources; to participate in learning dialogues via digital media; to use learning apps and services (personal or organisational); to use digital tools to organise, plan and reflect on learning; to record learning events/data and use them for self-analysis, reflection and showcasing of achievement; to monitor own progress; to participate in digital assessment and receive digital feedback; to manage own time and tasks, attention and motivation to learn in digital settings. An understanding of the opportunities and challenges involved in learning online; an understanding of own needs and preferences as a digital learner (eg access, media, platform and pedagogy).
Digital teaching	**The capacity to support and develop others in digitally-rich settings,** to teach, to work in a teaching or curriculum team, to design learning opportunities, to support and facilitate learning, to be pro-active in peer learning, all while making effective use of the available digital tools and resources. An understanding of the educational value of different media for teaching, learning and assessment; an understanding of different educational approaches and their application in digitally-rich settings.
Digital identity and wellbeing (Self-actualising)	
Digital identity management	**The capacity to develop and project a positive digital identity or identities and to manage digital reputation** (personal or organisational) across a range of platforms; to build and maintain digital profiles and other identity assets such as records of achievement; to review the impact of online activity; to collate and curate personal materials across digital networks. An understanding of the reputational benefits and risks involved in digital participation.
Digital wellbeing	**The capacity to look after personal health, safety, relationships and work-life balance in digital settings;** to use digital tools in pursuit of personal goals (eg health and fitness) and to participate in social and community activities; to act safely and responsibly in digital environments; to negotiate and resolve conflict; to manage digital workload, overload and distraction; to act with concern for the human and natural environment when using digital tools. An understanding of the benefits and risks of digital participation in relation to health and wellbeing outcomes.

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Appendix 4

A digital capability checklist for curriculum developers

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Digital capability checklist for curriculum developers

This is a checklist for curriculum teams who are working to embed digital capabilities into a course or subject area. It covers a range of issues that are investigated in more detail in the learner profile on the Jisc digital capabilities framework. The checklist can be used to assess how well a course of study is preparing learners with the kind of capabilities and practices outlined in the learner profile.

The main users of this checklist will be curriculum teams and the staff who support them, for example with expertise in e-learning, information and digital literacies, educational development and innovation, the student experience etc.

For more information on all related resources please see the Building digital capability project page http://ji.sc/building-digicap.

Digitally capable learners should be able to...	What does this mean in the context of your course?	How in your course do learners encounter, practice and get feedback on this?
Use digital tools appropriate to their subject area		
Use digital tools effectively to achieve subject-related goals		
Find, evaluate and manage digital information		
Use digital media to learn and to present the outcomes of learning		
Find, analyse and use digital data		
Create digital artefacts		
Use digital tools to gather and assess evidence, reach decisions and solve problems		
Take part in authentic digital research or professional practice		
Communicate digitally		
Collaborate digitally including with learners in other settings		
Build and participate in digital networks		
Develop digital learning skills and habits eg note-making, referencing, tagging, curation, review		
Support, mentor, coach or develop others using digital media or resources		
Develop and manage their digital identity		
Consider their digital safety, privacy, health and wellbeing		

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Appendix 5

The Jisc digital capability learner profile

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Learner profile

This is a version of the Jisc **'Six elements of digital capabilities'** (http://ji.sc/digicap_ind_frame) model, specifically addressing the capabilities of learners. No one individual will have all of the capabilities included in this profile: it is intended to demonstrate how new areas of practice are emerging, and how individuals might use their digital skills in different areas of their designated roles.

The profile provides enough detail to support practical interventions with learners. It is not written in learner-facing language, and is not in this version designed for use by learners directly (for example to assess their own digital capabilities and confidence). The profile can be adapted to suit the needs of different learners in different settings.

The profile might be used in the following ways:

- Embedding digital capabilities into a curriculum (a separate **checklist** (http://ji.sc/digicap_checklist_dev) is available for curriculum teams, based on this profile). The profile can be used directly by a curriculum team to identify suitable learning outcomes and activities, to cover a range of the digital capability elements
- Developing local versions of the framework, ideally in collaboration with learners and curriculum staff. These local versions might be adapted to the needs of a whole organisation, and worded in appropriate, learner-facing language. They might be specific to a division of the organisation such as a faculty, college, school, subject area, and worded in language appropriate to those subjects
- Designing or curating resources for use by learners outside of the curriculum, such as guides, workshops, activities, playlists of content. This could be done by learner representatives such as student union reps, learner voice reps or digital champions

The profile is only intended as one example of how the six elements might be interpreted and implemented. It is one of a number of profiles based on the 'Six elements' model. For more information on all profiles and other related resources please see the **Building digital capability project page** (http://ji.sc/building-digicap).

ICT proficiency	
ICT proficiency	**A digitally capable learner will:** Use ICT-based devices (laptops, tablets, smartphones, desktop computers, digital instruments and equipment); use a mouse, keyboard, touch screen, voice control and other forms of input; use screens, audio headsets and other forms of output; use digital capture devices such as a camera, video camera, audio recorder. Use basic productivity software (text editing, presentation, spreadsheets, image editing); use a web browser and search engines. Use email and other digital communication services eg text, photo sharing, video conferencing. Sign on to and use the university/college digital systems; sign on to and use a range of personal digital services such as social media, online shopping, sharing sites. Adopt new devices, applications, software and services and stay up to date with ICT as it evolves. Know the limits of his/her digital proficiency and how to ask for help. **At higher levels a digitally capable learner will:** Use a wide range of digital apps, services, plug-ins to achieve daily tasks; be comfortable with different devices, interfaces and platforms. Keep digital devices safe from malware; manage security and privacy settings in digital services. Explore digital technologies, tools and services thoroughly to understand their functions and uses. Find solutions and work-arounds when things go wrong. Understand basic concepts in computing, coding, and software/app development.
ICT productivity	**A digitally capable learner will:** Download and upload materials to the internet or cloud or institutional shared spaces; organise, manage and back up digital files. Choose software/apps and services to suit task requirements; work effectively across different software/apps and services to achieve learning-related tasks; find digital solutions. Adapt and personalise software/apps and services to personal preferences and needs (eg adaptive/assistive features). Use digital tools to fit learning around other demands and make learning time more efficient, eg use calendars, task lists, project and time management apps, contact databases, collation/curation tools. Choose new devices and software/apps/services - including plug-ins and upgrades - based on assessing their value. **At higher levels a digitally capable learner will:** Easily adopt, adapt and update technologies. Develop a personal digital environment from a range of tools and services. Understand how digital technology is changing practices at work, in education, and in social life.
Information, data and media literacies (critical use)	
Information literacy	**A digitally capable learner will:** Find relevant digital information using search engines, indexes or tag clouds; use appropriate search terms; find information in wikis, blog posts, scholarly journals, e-books and on the open web. Organise and manage digital information using various file spaces and folders, bookmarks, reference management software and tagging. Judge whether digital information is trustworthy and relevant; distinguish different kinds of information eg academic, professional, personal and political. Use information for answering questions, solving problems, informing practice and writing assignments. Share information with tutors, peers and others relevant to learning. Know and follow the rules of copyright; use only legal sources; understand and avoid plagiarism. **At higher levels a digitally capable learner will:** Use curation tools such as pinboards, social bookmarking, personal aggregators to bring information together in new ways; record and review information for future access and use. Share information publically to pursue learning and personal interests. Use copyright alternatives such as creative commons licensing; use appropriate referencing for all digital information sources.

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Data literacy	**A digitally capable learner will:** Manage, access and use digital data in spreadsheets and other media. Understand how to interpret data relevant to the subject of study. Record and use personal data to support learning and personal development. Ensure personal data is secure and use privacy settings appropriately. **At higher levels a digitally capable learner will:** Follow appropriate ethical, legal and security guidelines when using data. Analyse data in databases and spreadsheets by running queries, data analyses and reports. Understand how data is used to construct arguments, critique specific uses of data; understand the nature of algorithms; be able to carry out statistical tests on data.
Media literacy	**A digitally capable learner will:** Make sense of messages in a range of digital media – text, graphical, video, animation, audio and multimedia. Access digital media for entertainment and enjoyment as well as for learning. Appreciate how digital messages are designed eg for particular audiences, purposes and effects. Know and follow the rules of copyright and plagiarism as they apply to digital media; use only legal sources of digital content; know about and use alternatives such as creative commons licensing; use appropriate referencing for digital media; understand and avoid plagiarism. **At higher levels a digitally capable learner will:** Critically assess digital media and messages for provenance, purpose and production values. Use a range of digital media editing tools; understand some technical aspects of digital media production. Understand how digital media are reshaping social and political discourse, and personal life. Share and distribute digital media for others to access.
Digital creation, problem solving and innovation (creative production)	
Digital creation	**A digitally capable learner will:** Design new digital materials eg posts, podcasts, web pages, wiki entries, digital video, digital stories, presentations, infographics. Capture, edit and produce digital media eg video and audio. **At higher levels a digitally capable learner will:** Create, share and showcase digital artefacts with an awareness of audience and purpose. Code and design apps/applications and interactive elements. Design digital games, virtual environments and interfaces.
Digital research and problem solving	**A digitally capable learner will:** Make decisions and solve problems based on digital evidence. Collect data using digital tools relevant to the subject area eg data capture, video, audio. Access and use data sets relevant to the subject area. Design and administer online surveys. Analyse data using simple qualitative and quantitative tools. **At higher levels a digitally capable learner will:** Analyse data using advanced tools and techniques. Interpret findings. Generate new questions or address new challenges in the subject area using digital methods. Share specialist (scholarly or professional) ideas in a range of digital media eg open theses, blog posts.
Digital innovation	**A digitally capable learner will:** Adopt new digital tools for learning and new ways of learning in digital settings. **At higher levels a digitally capable learner will:** Use digital technologies to develop new ideas, projects and opportunities. Promote new digital tools and opportunities to others. Act as a digital change agent or champion.

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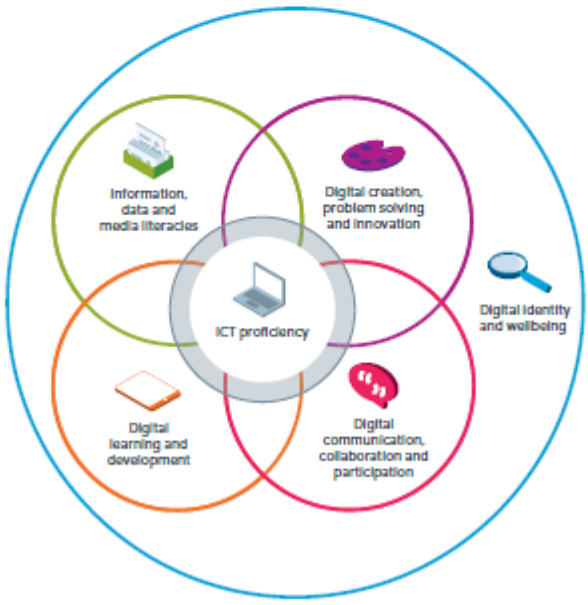
Digital communication, collaboration and participation (participating)	
Digital communication	**A digitally capable learner will:** Participate in a range of digital communication media eg email, presentations, blog posts, video conference, photo sharing, text, Twitter, online forums, understanding the differences between these media. Understand and respect the different norms of communicating in different spaces eg personal, social, academic, professional. Communicate respectfully and inclusively, recognising that digital media can be used to intimidate, shame and harass other people. Identify and deal with false or damaging digital communications. **At higher levels a digitally capable learner will:** Initiate and facilitate digital communications relevant to learning and to the subject studied. Design digital communications for different purposes e.g to persuade, inform, entertain, guide and support.
Digital collaboration	**A digitally capable learner will:** Work in digital teams, groups and projects to produce shared outcomes or meet shared goals. Use collaborative tools eg file sharing, shared writing/drawing tools, project management tools, shared calendars and task lists. Participate in collaborative online environments eg webinars, discussion groups, flash meetings. **At higher levels a digitally capable learner will:** Initiate and facilitate digital collaborations. Collaborate comfortably across cultural, national and/or subject specialist boundaries.
Digital participation	**A digitally capable learner will:** Participate in a range of online networks related to personal interests and/or the subject studied. Share digital resources eg links, bookmarks, images, text. Participate actively in discussion forums: post reviews, comments, 'likes' etc. Build and manage online contacts. **At higher levels a digitally capable learner will:** Build networks and collaborative opportunities eg facilitate online exchanges, answer questions, collate answers, welcome new participants, launch new sites/groups, open up new connections and conversations. Understand how digital media and networks influence social behaviour.
Digital learning and development (development)	
Learning (self-development)	**A digitally capable learner will:** Identify, choose and participate in digital learning opportunities eg online courses, podcasts, tweetfests. Identify, choose and use digital learning resources eg quizzes, online tutorials, simulations, open lectures. Adapt digital tools/materials to suit his/her learning preferences and access needs. Use digital media to take part in learning conversations with tutors and other students. Use digital tools (personal or organisational) to organise, plan and reflect on learning eg mind-mapping, note-taking. Record learning events/outcomes and use them for self-analysis, reflection and showcasing of achievement eg in an e-portfolio or learning blog. Use digital tools to take notes, annotate, collate and curate learning materials, review and revise learning. Undertake self-assessment of learning needs; participate in other forms of digital assessment; receive and respond to feedback in digital forms. Manage learning time and tasks; manage attention, engagement and motivation to learn in digital settings.
Teaching (developing others)	**A digitally capable learner will:** Work collaboratively and supportively with other learners, using digital technologies where appropriate. Share digital know-how and expertise with others. **At higher levels a digitally capable learner will:** Develop digital guidance or learning materials for other learners. Act as a formal digital coach, mentor or champion.

Digital identity and wellbeing (self-actualising)	
Digital identity management	**A digitally capable learner will:** Manage and maintain profiles and make sure they are suitable for different networks eg personal, professional, academic. Attend to digital reputation when posting and communicating online. Understand how personal data is collected and used in different systems and use privacy settings appropriately. Maintain a current digital CV or portfolio of work. Make sure outcomes of learning and other achievements are accessible in digital forms (eg via an e-portfolio, digital CV, personal website). **At higher levels a digitally capable learner will:** Use blogging and/or micro-blogging. Analyse digital impact, footprint and reputation using analytics or other tools. Link and curate personal identities carefully eg Twitter stream published on personal blog.
Digital wellbeing	**A digitally capable learner will:** Use digital technologies in ways that support personal development, well-being and safety, and respect the wellbeing and safety of others. Act positively against cyberbullying and other damaging online behaviours. Consider the rights and wrongs and the possible consequences of online behaviour. Use digital tools and media in ways that are aligned with personal values and goals. Use digital media to access services, monitor health conditions, and participate in the community. Recognise that digital information and media can cause distraction, overload and stress, and disconnect when necessary. Manage online and real-world interactions in ways that support healthy relationships.

Digital capabilities: the six elements



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Appendix 6

Contacts for further information and support

Name	Role	School/ Professional Service	Area of support
Caroline Anderson C.Anderson@nottingham.ac.uk	Assistant Professor in Foundation Science	School of Life Sciences	Offer support about how to develop activities which support reflective practice as well as how to support peer-to-peer learning.
Mark Bradley mark.bradley@nottingham.ac.uk	Associate PVC Education and the Student Education, Faculty of Arts	Faculty of Arts/School of Humanities	Advice on using PCs within EEARs; mapping PCs developmentally across a programme
Katherine Martin Katherine.martin@nottingham.ac.uk	Assistant Professor in Accountancy	NUBS	TBC
Joel Segal Joel.segal@nottingham.ac.uk	Associate Professor in Manufacturing Engineering	Department of Mechanical, Materials and Manufacturing Engineering	Has experience with mapping learning outcomes to skills development/professional competencies as specified by accrediting bodies
Oranna Speicher Oranna.speicher@nottingham.ac.uk	Director of the Language Centre, Assistant Professor in German	CLAS	Aligning Language Learning Outcomes with Professional Competencies
Julian Tenney Julian.tenney@nottingham.ac.uk	Learning Innovation Team Leader	LRLR	Julian leads the Learning Content Team in Learning Technology and can provide assistance with anything around Digital Competencies in general, and all aspects of media production and web development more specifically
Carmen Tomas carmen.tomas@nottingham.ac.uk	Assessment Adviser	LRLR	The development of assessment and feedback practice in relation to the competencies

Name	Role	School/ Professional Service	Area of support
Judith Wayte Judith.wayte@nottingham.ac.uk	Placement Manager	Biosciences	Support to increase the number of students taking a 1 year placement, designing reflective activities for students around action planning
Paul Charman Paul.charman@nottingham.ac.uk	Deputy Director	Careers and Employability Service (CES)	Identifying additional activities and student signposting to the NAA
Julie Blant Julie.blant@nottingham.ac.uk	Postgraduate Careers Manager	CES (NUBS)	Supporting the development of Professional Competencies in the curriculum through joint messaging and presentation, articulating benefits to students, making links to the NAA and pre and post placement and internship preparation, sourcing further example of existing good practice.
Rachel Curley Rachel.curley@nottingham.ac.uk	Faculty Careers and Employability Consultant	CES (MHS)	
Suzanne McGregor suzanne.mcgregor@nottingham.ac.uk		CES (Arts)	
Pauline Maden pauline.maden@nottingham.ac.uk		CES (Science)	
Gillian Murchie Gillian.murchie@nottingham.ac.uk		CES (Social Sciences)	
Andrew Smith Andrew.smith2@nottingham.ac.uk		CES (Engineering)	
Nalayini Thambar Nalayini.thambar@nottingham.ac.uk	Director of Careers and Employability	CES	Clarification, discussion, presentation and contextualisation of this work
Professor Fon Sim Ong FonSim.Ong@nottingham.edu.my	Vice Provost for Teaching and Learning	UNMC	
Professor May-Tan Mullins May.tan-mullins@nottingham.edu.cn	Vice Provost for Teaching and Learning	UNNC	

Name	Role	School/ Professional Service	Area of support
Stephanie Sun / Leaf YE stephanie.sun@nottingham.edu.cn leaf.ye@nottingham.edu.cn	Placement/internship Officer	Careers UNNC	Support placement/ internship activities, designing reflective activities for students around action planning
Rejoyce Wang rejoyce.wang@nottingham.edu.cn	NAA Officer	Careers UNNC	Identifying additional activities and student signposting to the NAA
Demi Qiu demi.qiu@nottingham.edu.cn	Deputy Director	Careers UNNC	Clarification, discussion, presentation and contextualisation of this work
Alicia Ch'ng Lay Im Alicia.Chng@nottingham.edu.my	Head	Careers Advisory Service UNMC	Clarification, discussion, and collaboration with the aim of supporting the development of professional competencies in the curriculum Review, identify and develop new NAA modules which incorporate professional competencies; offer pre and post internship preparation in collaboration with academics as well as plan appropriate activities/workshops to support professional competencies in the curriculum

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Appendix 7

References

- Ahmad, I.A. (2016) Is it the dawn of Industrial Revolution 4.0 in Malaysia? *Foresight Magazine* http://www.myforesight.my/wp-content/uploads/2016/12/MyForesight_Mag_04-2016_.pdf [accessed 23 July 2018]
- Bakshi, H., Downing, J., Osborne, N. & Schneider, P. (2017) *The Future of Skills: Employment in 2030*, London: Pearson & Nesta, https://www.nesta.org.uk/publications/future-skills-employment-2030 [accessed 24 January 2018]
- Li,L (2017) "China's manufacturing locus in 2025: With a comparison of "Made-in-China 2025" and "Industry 4.0" *Technological Forecasting & Social Change*, https://doi.org/10.1016/j.techfore.2017.05.028 [accessed 23 July 2018]
- Li Guoping, Hou Yun, Wu Aizahi, 2017. Fourth Industrial Revolution: technological drivers, impacts and coping methods. Chinese Geographical Science, 27 (4): 626-637. https://doi.org/10.1007/s11769-017-0890-x [accessed 23 July 2018]
- Susskind, R., Susskind, D. (2015) *The Future of the Professions: How Technology will Transform the Work of Human Experts,* Oxford: Oxford University Press
- Schwab, K. (2016) *The Fourth Industrial Revolution,* London: Penguin
- Thambar, N. (2018) The Robots are Coming! The response of Careers Professionals to the future of the graduate job, *Journal of the National Institute for Career Education and Counselling* 40: 54 – 61