Skills and knowledge

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Who needs what, when?

PowerPoint will be available. Notes under each slide ▼
Defining the terms

Product of learning
- How?

‘Content’ of learning
- Facts = What?
Acquiring skills and knowledge

Wow! I learnt so much

I wonder what I will learn today...
Acquiring skills and knowledge: transitions
Acquiring skills and knowledge: transitions

School: Curriculum for Excellence

- Successful learners
- Confident individuals
- Responsible citizens
- Effective contributors

UG: Graduate Attributes

- Academic excellence
- Personal development
- Active citizenship
- Critical thinking, communication

PG: Researcher Developer Framework

- Knowledge, intellectual development
- Personal effectiveness
- Research professionalism
- Engagement, influence, impact

To enable all young people to become:

Successful learners
- Inquisitive and motivated for learning
- Determined to reach high standards of achievement
- Able to work independently

Confident individuals
- Role models and leaders to others
- Able to manage their own learning
- Able to solve problems

Responsible citizens
- Respectful of the views of others
- Able to work independently

Effective contributors
- Creative and innovative thinkers
- Able to work independently

Acquiring skills and knowledge: transitions
Dunning–Kruger effect
Not knowing what you don’t know

Perceived Ability

Actual Test Score

Bottom Quartile  Second Quartile  Third Quartile  Top Quartile
Acquiring skills and knowledge

Skills?

BLOOMS TAXONOMY

KNOWLEDGE
- Recall of information;
- Discovery; Observation;
- Listing; Locating; Naming

COMPREHENSION
- Understanding; Translating;
- Summarising; Demonstrating;
- Discussing

APPLICATION
- Using and applying knowledge;
- Using problem solving methods;
- Manipulating; Designing; Experimenting

ANALYSIS
- Identifying and analyzing patterns;
- Organisation of ideas;
- Recognizing trends

SYNTHESIS
- Using old concepts to create new ideas;
- Design and invention; Composing; Imagining;
- Inferring; Modifying; Predicting; Combining

EVALUATION
- Assessing theories; Comparison of ideas;
- Evaluating outcomes; Solving; Judging;
- Recommending; Rating
How important is knowledge?

“University Challenge is all about accumulated knowledge and you either have that or you don’t.” Daisy Christodoulou

“Are London taxi drivers particularly clever?”
### Applying Bloom’s taxonomy: lexicon

<table>
<thead>
<tr>
<th>Cognitive area</th>
<th>Verbs</th>
<th>Instructions</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6 Evaluation</strong></td>
<td>justify, support, value</td>
<td>“What criteria would you use to assess……..?”</td>
<td>![Image]</td>
</tr>
<tr>
<td>Developing opinions, judgements, decisions</td>
<td>predict, suggest, construct</td>
<td>“What would you predict from….?”</td>
<td>![Image]</td>
</tr>
<tr>
<td><strong>5 Synthesis</strong></td>
<td>predict, suggest, construct</td>
<td>“What evidence is there that…?”</td>
<td>![Image]</td>
</tr>
<tr>
<td>Combining ideas to form a new whole</td>
<td>classify, compare, distinguish</td>
<td>“Calculate the mean area of …”</td>
<td>![Image]</td>
</tr>
<tr>
<td><strong>4 Analysis</strong></td>
<td>demonstrate, illustrate, find out</td>
<td>“Explain what happens to … when…”</td>
<td>![Image]</td>
</tr>
<tr>
<td>Separating a whole into component parts</td>
<td></td>
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<tr>
<td><strong>3 Application</strong></td>
<td>define, list, name</td>
<td>“Identify this...”</td>
<td>![Image]</td>
</tr>
<tr>
<td>Use of facts, principles, rules</td>
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</tr>
<tr>
<td><strong>2 Comprehension</strong></td>
<td>describe, summarise, restate</td>
<td>“Explain what happens to … when…”</td>
<td>![Image]</td>
</tr>
<tr>
<td>Organisation and selection of ideas</td>
<td></td>
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</tr>
<tr>
<td><strong>1 Knowledge</strong></td>
<td>define, list, name</td>
<td>“Identify this...”</td>
<td>![Image]</td>
</tr>
<tr>
<td>Identification and recall</td>
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</tbody>
</table>
Acquiring skills and knowledge: transitions
Teaching knowledge & skills

Existing ‘knowledge’

Expanded ‘knowledge’

New ‘knowledge’
Teaching knowledge & skills

Variables include:
- staff
- disciplines
- levels
### Teaching knowledge & skills

#### The skills matrix

<table>
<thead>
<tr>
<th>Coordinator</th>
<th>Programmes</th>
<th>Delivery of knowledge and skills needs <strong>planning and communication</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>New 2015-16</td>
<td>DL</td>
<td>Animal Behaviour</td>
</tr>
<tr>
<td>New 2016-16</td>
<td>DL</td>
<td>Animal Biology</td>
</tr>
<tr>
<td>New 2015-15</td>
<td>TS, CD</td>
<td>Behavioural Biology</td>
</tr>
<tr>
<td>New 2016-15</td>
<td>TS, CD</td>
<td>Biological Sciences</td>
</tr>
<tr>
<td>RSB Accr</td>
<td>JF</td>
<td>Biology</td>
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<tr>
<td>RSB Accr</td>
<td>CT</td>
<td>Conservation Biology</td>
</tr>
<tr>
<td>RSB Accr</td>
<td>CT</td>
<td>Ecology</td>
</tr>
<tr>
<td>RSB Accr</td>
<td>GN</td>
<td>Environmental Science</td>
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<tr>
<td>New 2016-17</td>
<td>LP</td>
<td>Environmental &amp; Forest Management</td>
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<tr>
<td>W/D 2016-17</td>
<td>SC</td>
<td>Forest Sciences</td>
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<tr>
<td>W/D 2016-17</td>
<td>SC</td>
<td>Forestry</td>
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<tr>
<td>RSB Accr</td>
<td>DF</td>
<td>Marine Biology</td>
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<tr>
<td>MB</td>
<td>Plant and Soil Sciences</td>
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<tr>
<td>RSB Accr</td>
<td>AS</td>
<td>Biology</td>
</tr>
</tbody>
</table>

New or updated (N) or withdrawn (W) or a repeat (R).

Course coordinator(s):

<table>
<thead>
<tr>
<th>Skill Category</th>
<th>Skill Type</th>
<th>Skill Descriptor</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Chemistry</td>
<td>Chemical terminology (e.g., molecules, reactions, first order kinetics, absorption spectra)</td>
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<tr>
<td>2</td>
<td>Chemistry</td>
<td>Model molecules, anthropological changes, mineralogy, soil water movement</td>
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<tr>
<td>3</td>
<td>Chemistry</td>
<td>Predictive methods, purification and characterisation techniques (e.g., determine melting points, colorimetry, titrations)</td>
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<tr>
<td>4</td>
<td>Chemistry</td>
<td>Perform basic chemistry procedures (e.g., simple solutions, pipetting, suction filtration, enzyme assays)</td>
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<tr>
<td>5</td>
<td>Chemistry</td>
<td>Express relevant biological reactions in chemical terms</td>
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</tbody>
</table>

Delivery of knowledge and skills needs **planning and communication**
The delivery of knowledge and skills occurs **within the context of graduate attributes**.

<table>
<thead>
<tr>
<th>Graduate attributes</th>
<th>School leaver</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
<th>4th year</th>
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</thead>
<tbody>
<tr>
<td><strong>Academic excellence</strong></td>
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</tr>
<tr>
<td>1. In-depth and extensive knowledge, understanding and skills at international- recognised levels in their chosen discipline(s)</td>
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<td>2. A breadth of knowledge, understanding and skills beyond their chosen discipline(s)</td>
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<td>3. An ability to participate in the creation of new knowledge and understanding through research and inquiry</td>
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<td>4. A contextual understanding of past and present knowledge and ideas</td>
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<td>5. An intellectual curiosity and a willingness to question accepted wisdom and to be open to new ideas</td>
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<tr>
<td><strong>Critical thinking and effective communication</strong></td>
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<tr>
<td>6. A capacity for independent, conceptual and creative thinking</td>
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<td>7. A capacity for problem identification, the collection of evidence, synthesis and dispassionate analysis</td>
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<td>8. A capacity for attentive exchange, informed argument and reasoning</td>
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<td>9. An ability to communicate effectively for different purposes and in different contexts</td>
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<td>10. An ability to work independently and as part of a team</td>
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<td>11. A diverse set of transferable and generic skills</td>
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<td><strong>Learning and personal development</strong></td>
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<td>12. An openness to, and an interest in, life-long learning through directed and self-directed study</td>
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<td>13. An awareness of personal strengths and weaknesses</td>
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<tr>
<td>14. A capacity for self reflection, self discovery and personal development</td>
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<td><strong>Active citizenship</strong></td>
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<td>15. An awareness and appreciation of ethical and moral issues</td>
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<td>16. An awareness and appreciation of social and cultural diversity</td>
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<td>17. An understanding of social and civic responsibilities, and of the rights of individuals and groups</td>
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<tr>
<td>18. An appreciation of the concepts of enterprise and leadership in all aspects of life</td>
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<td>19. A readiness for citizenship in a civilised and inclusive society</td>
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</tbody>
</table>
26. A University of Aberdeen education will enable graduates to become: Academically excellent; Critical thinkers and effective communicators; Open to learning and personal development and Active citizens. In what ways does this course support the development of the University’s Graduate attributes? Please indicate below under the following headings:

**Academically Excellent:**
- All aspects of the course promote extensive knowledge, understanding and skills relating to biological sciences.
- Participation in seminars and workshops promotes an understanding of how research contributes to the acquisition of knowledge.
- Critical appraisal of course material promotes an understanding of how the quality of academic material.

**Critical Thinkers And Effective Communicators:**
- The seminars and workshops promote both independent and collaborative thinking, a capacity for problem identification, the collection of evidence, synthesis and dispassionate analysis, a capacity for attentive exchange of views, informed argument and reasoning, an ability to communicate effectively with student peers and academic staff and an ability to work both independently and as part of a team.
- The specific skills of effective communication are taught within the course.

**Open To Learning And Personal Development:**
- An awareness of personal strengths and weaknesses and a capacity for self reflection, self discovery and personal development are promoted through collaborative participation in group work (seminars and workshops) and regular feedback on completed in-course

**Active Citizens:**
- An awareness and appreciation of social and cultural diversity and the rights of individuals and groups is promoted through collaborative exercises (seminars, workshops and some coursework tasks) where students of different backgrounds (race, culture, religion) often work together.

When we are designing new courses, delivery of knowledge and skills is part of the SENAS proposal
Teaching knowledge & skills

Student Careers and Skills

Undergraduate Skills Programme (USP)

Use the Undergraduate Skills Programme to develop your academic, personal and professional development skills, improve your marks, impress potential employers, and network with other Warwick students.

Stand out from the crowd: identify, develop and know how to articulate what you have to offer.

Learn at your own pace, where, when and how you want to. Just choose which parts of the programme suit you best.

The USP is free and available to all undergraduates at Warwick.

What we offer:
- Face-to-face: academic study skills advice
- Undergraduate Skills workshops
- Workshops summer 2017
- Warwick Skills Portfolio Award

Developing your academic, personal and professional development skills

Academic skills:
- Writing essays and assignments
- Referencing and avoiding plagiarism
- Making presentations
- Research skills
- IT

All academic skills topics

Personal and professional development skills:
- Knowing yourself
- Organising yourself and time
- Thinking about a career
- Oral communication
- Written communication

All personal and professional development skills topics

For any queries on the Undergraduate Skills Programme email: skills@warwick.ac.uk

Undergraduate Research Scholarship Scheme (URSS)

Want to know how you can get involved in undertaking original research and getting some experience as a researcher at the University?

- Undergraduate Research Scholarship Scheme (URSS)

Related links
- myAdvantage
- Warwick Skills Leadership Scheme
- Warwick Advantage
- Warwick Volunteers
- Unitemps - temping opportunities
- International Office: Immigration advice
- Academic office: Student Records

Contact us:
Let’s not forget about wisdom

Knowledge → Wisdom