

TEACHER'S MANUAL:

Linking the Skill Sheets to 21st century Skills

This short manual is intended to help teachers at institutes of higher education to effectively use the full potential of the Skill Sheets formula when dealing with the 21st Century Skill Challenge. Recently, three different frames have been introduced by different organisations: (1) The World Economic Forum introduced a Top 10 2020 Skill Orientation, (2) the Dutch ministry of education applied foundational skills and development lines, (3) the European Commission defined five categories for a new skill agenda for Europe. There is considerable overlap between each of these classifications, but also differences. The Skill Sheets in principle cover all relevant dimensions of skill formation and training, as introduced by these organizations.

To make the link between these three approaches and the Skills more concrete – and help teachers to define learning goals and implement specific skill sheets in teaching – we (1) first explain how the link between 21st century skill and the Skill Sheets formula can be made and (2) where in an educational set-up specific skill sheets can be applied. Where to start depends on the level of the students and the organization of the course. The third column in the below tables is intended to give teachers concrete clues on how to start a more focused learning trajectory. But remember: the integrative formula of the Skill Sheets implies that you can start training anywhere anytime – depending on your didactical aims and the expectations of the students.

[1] According to: the World Economic Forum

2020 Skill Orientation	The link with the Skill Sheets	Where to begin?
1. Complex problem solving	The skill sheets formula is now specially aimed at taking complex problems into account; they require thinking and research in terms of 'paradoxes' and 'dilemmas' which lead to inquisitive approaches, not necessarily to clear solutions.	Begin with a discussion on the nature of the problems that society faces: simple-wicked →A7 The format (on the website) Then discuss the kind of research orientation needed: → A1; →A6; →A7
2. Critical thinking	Critical thinking is required for complex issues, but uninvolved 'distant' critical thinking is less required. So research skills (including integrity and techniques of critical thinking) should best be combined with other forms of constructive communication. The skill sheets also has many skill sheets dedicated to critical reading and listening as input for critical writing and presenting.	Discuss the challenges of the present society: see the document on the Skill Sheets Website: → The challenges Read the 'ten principles of critical research' →A1 (p.36) Then consider the individual traits needed for critical thinking: → Your personal aim: A3 → Your Integrity and biases: A16 → How you deal with biases of yourself: → B3 → ... and of others: →C4, C7, C9 → While asking the right questions: → D4
3. Creativity	Creativity is not necessarily based on 'out of the box' thinking without any	Creativity follows the reflective cycle in a particular sequence:

	requirements; Creativity is related to the issue of thinking in 'paradoxes' as well as being motivated (willing) and critical to work hard on 'new' solutions.	<p>→A4; →B3</p> <p>But should be fed by close reading and listening to other ideas (broadening your mind):</p> <ul style="list-style-type: none"> → A15 (asking the right questions) → B8 (mindmaps) → E7 (rewriting) → G3 (brainstorming)
4. People management	People management is not only related to group dynamics (G-series), but is also fed by individual skills such as listening, speaking and self-management	<p>Start with G1 and then followed by a selection of the G-series in particular</p> <ul style="list-style-type: none"> → G3, G8, G13, G14 <p>People management also depends on constructive communication:</p> <ul style="list-style-type: none"> → D1, F1 → F9 (body language)
5. Coordinating with others	The challenge is not only to develop constructive group dynamics as a process, but also to focus on impactful results. The G-series is leading, but the impact question can only be resolved when the problem becomes clearer (A-series) and the group process is also needed to get a better understanding of the problem.	<p>Read G-series; start with G1; then focus on more practical problems and finishing projects</p> <ul style="list-style-type: none"> → G7, G8, G11, G12, G13, G14 <p>Research orientation:</p> <ul style="list-style-type: none"> → A8 (action research) → A9 (steps) → A19 (barter)
6. Emotional intelligence	The combination of heart-head-hands requires emotional intelligence. Emotional intelligence is however also related to 'societal' and general forms of intelligence. The principles of learning and flow (cf. Format) are introduced to help students understand what defines an intelligent approach to life-long learning	<p>Awareness: understand the importance of emotional intelligence in learning loops:</p> <ul style="list-style-type: none"> → Format: concept of flow <p>Read and discuss introduction to the B-series; focus on the 'synthesis challenge': how to combine heart-heads and heads:</p> <ul style="list-style-type: none"> → B1 <p>Define your mindset:</p> <ul style="list-style-type: none"> → B4 <p>Define the group context in which you have to develop emotional intelligence: e.g. by discussing the conditions of freeriding:</p> <ul style="list-style-type: none"> → G1
7. Judgment and decision-making	Judgment requires solid research and argumentation skills and a clear thinking on the reliability of sources and arguments. Decision-making then requires either clear procedures to work towards outcomes, but in case of more	<p>Start with an understanding of the problem you would like to address:</p> <ul style="list-style-type: none"> → read the Challenges (website) <p>Then define whether your sources are reliable and what to do about that:</p>

	complex problems decision making requires monitoring and evaluation techniques that progress during the project. Group dynamics should allow for mutual learning based on trusted relationships.	<ul style="list-style-type: none"> → E6, A16, A20, D2 Then apply specific skills in the G-series help to come to good decisions: <ul style="list-style-type: none"> → G5, G10, G11
8. Service orientation	The service orientation of people needs to be related to the actual problems they would like to address and the way they operate in groups. It also involves serious thinking about your integrity as an individual and a researcher.	Start with general challenges: <ul style="list-style-type: none"> → G10 Then link this to your personal challenges: <ul style="list-style-type: none"> → B2 → A16
9. Negotiation	Negotiations is not about 'getting it your way', but about 'getting the right answers and approaches' to a real problem; the skill sheets defines the preconditions for this in a basic understanding of the negotiation dynamics as well as what individual and leadership attitudes are to come to relevant outcomes	Start with the basics <ul style="list-style-type: none"> → G6 Then move back to the reason why you want to negotiated about a topic in the first place: <ul style="list-style-type: none"> → Content: B2 → Group dynamics: G2 → Research ambitions; A12, A14
10. Cognitive flexibility	This skill is primarily linked to research and study skills. It starts with an understanding of the kind of cognition needed to address issues and a general 'tolerance' for ambiguity in case more than one approach seems relevant.	Read the principles of research and self-management: <ul style="list-style-type: none"> → A1, B1 Understand the importance of 'failure' for learning and personal development: <ul style="list-style-type: none"> → A8. A4. A14, A19 → B3, B10 And how to organize this in a group: <ul style="list-style-type: none"> → G3 (brainstorming) → D8 (feedback)

[2] According to: Dutch Ministry of Education (21st century skills)

Skill Orientation	Link with the Skill Sheets	Where to begin?
Foundational literacy core skills:		
1. Numerical literacy	"There are lies, bigger lies and statistics"; the numerical society creates insights, but also 'fake news'	Read the challenges (p.3 and skill website) Zoom in on: <ul style="list-style-type: none"> → A12, A20
2. Scientific literacy	There is monodisciplinary, multi-disciplinary and transdisciplinary research; objective – subjective and intersubjective research; how to make a choice?	Start with your personal researchers profile (and interests): <ul style="list-style-type: none"> → A1, A2, A3 Then think about the way science is organized and how to make use of that: <ul style="list-style-type: none"> → A7, A12

3. ICT literacy	ICT is a tool, a means, not an aim in itself; The skill sheets list advantages and disadvantages and shows how to profit from ICT as a researcher and how to deal with distraction (as a person)	→ A20, A21, A22
4. Financial literacy	Skilled students can reason in terms of 'budgets': financial, but also time, energy and other budgets are relevant for solid skill development. In a financial world, budgeting is an important skill	→ A11, B1, G8
5. Cultural literacy	Cultures define the context in which people have to collaborate or in which specific problems (and solutions) appear. Language skills, to a certain extent, are also part of cultural literacy. The Skill Sheets Formula is in English to create a common language for cultural exchange.	Start with discussing the general Challenge of a VUCA world → p.3 and website Then zoom in on particular cultural challenges: → Research: A6, A16, → Motivation: B2, B3 → Group culture: G1 → Leadership: G10
6. Civic literacy	In particular the collaborative approach that is integrated in the skill sheets are based on insights from civic processes, from understanding the conditions under which people effectively collaborate, form groups (as researchers, as students, as citizens) and come to results.	Start with discussing the general Challenge of a VUCA world → p.3 and website Then zoom in on all collaborative challenges: → Barter: A19 → Mindset: B4 → Feedback: B15, B16 → Communication: D1, F1 → Group formation: G1, G7
Skill development lines:		
1. Skill to collaborate	The skill to collaborate is not a luxury, but a necessity to reach more impact; motivation is enhanced and effectiveness requires collaborative mindsets (or the intention to work on that).	→ B2 (motivation) → B4 (mindset); G1 (followed by selection of G-series)
2. Skill to construct knowledge	The 21 st century challenges (also known as VUCA challenges; → Challenge) requires not only skill to acquire knowledge, but also skills to develop and construct relevant knowledge	→ A1 (followed by selection of A-series) In particular those skills that help define relevant questions (deal with biases and question heuristics →
3. Skill to apply ICT	As stated above: ICT is primarily a tool and a condition under which other skills can develop and be trained. Under specific conditions can ICT create access to relevant knowledge.	→ As input: A10, C6, E10 → As research: A20-A22; → See the website: on how to use TED Talks (p.29) → F1 (p.325)

4. Problem solving abilities and creativity	The whole Skill Sheets formula is aimed at these intertwined ambitions; in particular series A show how problem solving abilities are at the core of the skill circle.	Understand the reflective cycle as organizing principle: → The Format Then learn how to apply this in different problem-solving sequences: → A2; A3; A4 → Mindset: A6; G10
5. Self-control and planning	Cartage in, garbage out. Self-management is part of the 'skill highway' that feed into research and all other skills. Without proper and motivated preparation, no – or only limited – learning.	Awareness: Start with → B1 Then move on to more detailed Sheets on control and planning challenges: → B9, B10, B11, B12, B13, B14

[3] According to: European Commission (New Skill Agenda for Europe)

Skill Orientation	Advised use of the Skill Sheets	Where to begin?
1. Basic skills	Link these to the 4 levels distinguished for every skill in the Skill Sheets; apply the Strength-Weakness assessment on the website	Discuss the format and philosophy of the Skill Sheets: skill circle and reflective cycle; → start with the preconditions for life-long learning (B1) → Then figure out what they have the appropriate research orientation (→A1) Then preferably students identify their strength/weakness profile and link it to the opportunity/threats they face: → Introduce learning contracts: B6, G7
2. Transversal skills	Basic series for this is Series B (self-management) and series G (work with others and engage in joint problem solving)	Start with the motivation question: → B2 then have the students fill out and discuss the mindset related skill sheets (→B3, B4, B5) Then, discuss the principles of effective team management →G1 And zoom in on various dimensions of the management process: G2, G5, G6
3. Entrepreneurial skills	Entrepreneurial skills are strongly related to active mindset and motivations as well as to the way they can be organized; the societal dimension then should be covered by the ability of the student to deal with paradoxes and complexity	Start with various mindset exercises in the skill sheets: → B2 (figure out under what conditions students want to be active) → B11 (procrastination: why do you postpone) → B15 (generating feedback) Then move to exercises on dealing with complex problem solving: → A6 (thinking hats) → A7 (simple-wicked problems)

		<p>→ Consider to confront students with the 'synthesis challenges' which are formulated in the first sheet of each series</p> <p>Then discuss/train general skills that help managing groups:</p> <p>→ D1 (constructive listening)</p> <p>→ F1 (effective presentation)</p> <p>→ G1 (effective team management)</p>
<p>4. Digital skills</p>	<p>It is important that digital skills are always related to critical thinking on how to use digital media and seen as a means and input to other skills</p>	<p>Start with awareness exercises: →A10, A20, A21, A22</p> <p>Discuss strengths/weakness and pros/cons,</p> <ul style="list-style-type: none"> ○ in general: → Table A.22 ○ for personal use: →A.10 ○ As part of a research strategy: → Table A20a