State of the art in ‚Feedback‘

WP6 D1a. Report literature review

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Feedback

Information provided by an agent regarding aspects of one's performance or understanding e.g.:

- Teacher provides corrective information or encouragement
- Peer provides an alternative strategy
- Self assessment provides gap between current and desired performance
- Experience provides information what work or not
- Book provides information to clarify ideas or the correctness of a response

Information on the gap between observed and desired performance (Sadler, 1989)

External feedback in education (teachers and peers) should build on the **internal feedback** students already generate themselves when they assess their own work (Butler, 1995)

The course structure and teacher regulation can be seen as a type of feedback. This external regulation can provide more or less 'constructive friction' to the learning process. (Vermunt, 1999).

Four **levels of feedback** (Hattie, 2007)

1. Feedback about the self: personal evaluations about the learner, e.g. "You are a bright student"
2. Feedback about the task: how well tasks are understood or Performed "You need to include a physical examination."
3. Feedback about the process: processes needed to understand or perform tasks, e.g. "You need to listen to the patient worries in the way described in the rubric to achieve the desired response of the patient
4. Feedback about self-regulation: how to improve self-regulation, e.g "You already know the key features of the opening of an argument. Check to see whether you have incorporated them in your first paragraph

Driver of feedback

Boud & Molloy, 2012\2013:

Both students and teachers agree on the importance of feedback, but although teachers believe that they spend a lot of time giving feedback, they perceive that students take little notice of it. Students, on the other hand, generally feel that they receive too little feedback.

With this in mind, it would be helpful to rethink feedback from:

1) a teacher's act to a student's act in which teachers are involved. (from unilateral to co-constructed; from monologue to dialogue).
2) the almost exclusive use of teachers to that of many others (from single source to multiple sources).
3) an act of students as individuals to one that necessarily involves peers (from individualistic to collectivist).
4) a collection of isolated actions to a planned sequence of development over time (from single items to curriculum).

Positioning learners as key drivers of their own learning, generating and requesting their own feedback, empowers students beyond the immediate task and does not create false expectations that courses cannot deliver.

Feedback orientation & receptivity

Feedback orientation (Smither, 2005)

More general and durable than receptivity, a 'quasi-trait' that remains fairly consistent in one individual across settings and with different supervisors.

Linderbaum & Levy, 2010; Mills 2023:

Feedback Orientation Scale, a 20-item instrument that measures feedback orientation with four factors:

1. Utility: *belief* that feedback is useful, 'instrumental' to development
2. Accountability: sense of obligation to *act* on feedback
3. Social awareness: perception of external pressure to respond
4. Feedback self-efficacy: individuals' *confidence* in managing received feedback

Feedback receptivity

More situational raised by specific feedback interaction (e.g. identity match with feedback giver, learner's expectation of positive vs. negative feedback in that situation)

Reflection

- Reflection is the link between receiving and using feedback (Sargeant, 2009); reflecting on experience leads to transformation, integrating knowledge, skills and attitudes.
- Reflection is essential trait of professionalism and occurs during task performance (Schön, 1983) or more separately on the object of reflection "I Reflect, Therefore I Am… a Good Professional" (Cattaneo, 2021)

Timing reflection

- Reflection-*in-action*: during task performance. For instance with think aloud (mind cognitive load)
- Reflection-*on-action*: after task is accomplished. For instance supported by videorecording
- Reflection-*for-action* (Cowan, 2017): anticipate possible scenario's\challenges, thinking out strategies to cope with them, e.g. how to monitor, when informed decision moments
- *Composting* reflection: reconsidering and building on previous reflective work

Feedback-seeking

Goal orientation theory (Dweck, 2000)

An individual's goal orientation superorganizes the affective, behavioral, and cognitive processes of motivation

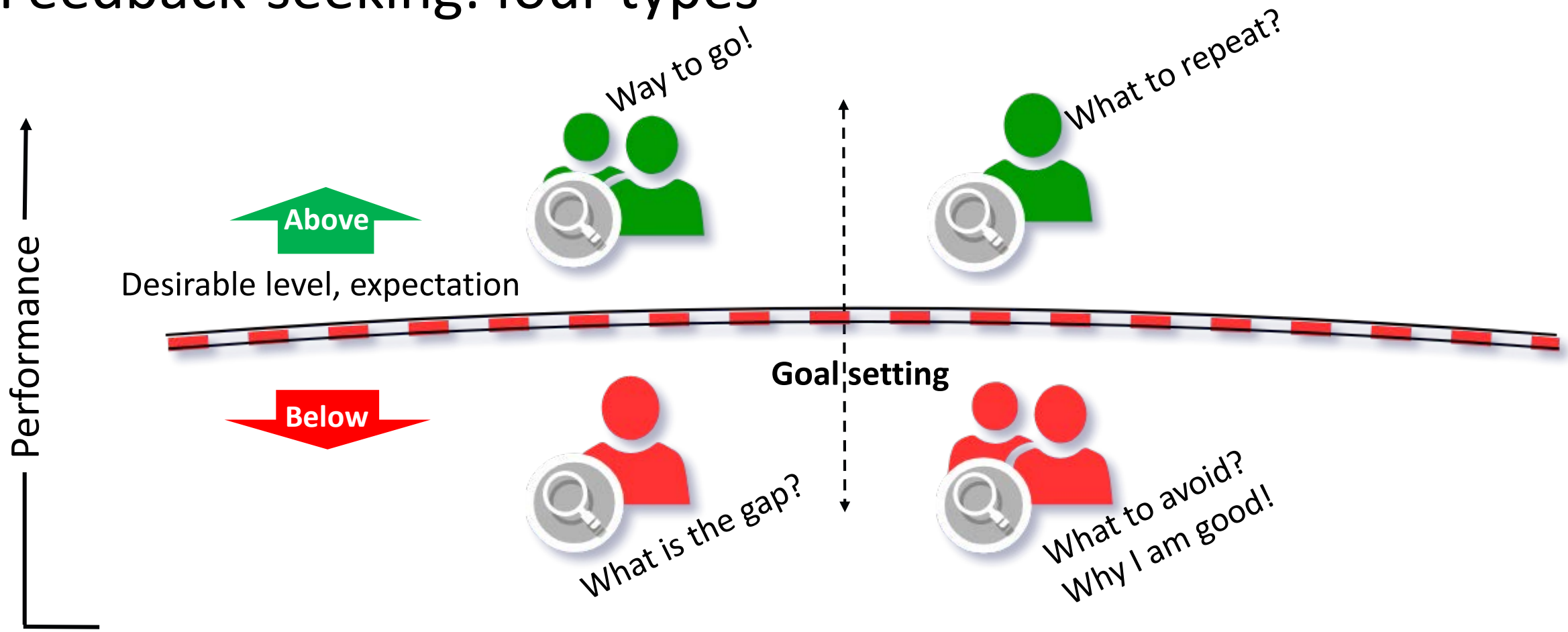
1) Learning orientation: competence malleable, internal focus on mastery
2) Performance orientation: competence fixed, external focus on social comparison
    a. Approach: proving to outperform others and gaining favorable evaluations
    b. Avoidance: avoiding negative judgements or appearing incompetent

Feedback-seeking typology (Gong, 2017):

Two dimensions:

1) Focus: self or other
2) Nature:
    a. positive: aspects that are good
    b. negative: aspects that need improvement

Feedback-seeking: four types



Goal orientation ····· **‚Learning‘** ····· **‚Performance‘**

- Motivation
- Function

- Intrinsic: mastery
- Instrumental to develop

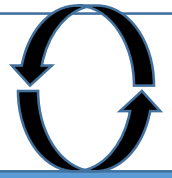
- Extrinsic: social comparison
- Looking good (ego, image)

Feedback literacy (Carless, 2018, 2023)

The understandings, capacities and dispositions needed to make sense of information and use it to enhance work or learning strategies.

Student Feedback Literacy

- Appreciate feedback
- Refine evaluative judgements
- Take action in response to feedback
- Work with emotions productively



Teacher Feedback Literacy

- Designing for uptake
- Relational sensitivities
- Managing practicalities

Appreciating Feedback (understand)

- Role in improving work:
  a) acknowledgement that expertise is not fixed, but can change
  b) disposition to use feedback to continually improve work
- Active learner role (*agency* for own change, not teacher-telling)
- Different forms and sources, appraisal of information
- Revisiting feedback

BELIEF: willingness

Making Judgments (capacity)

- Capable to make evaluative judgments about own and others work (tacit knowledge, exemplars)
- Appraisal of info feedback sources
- Active in peer feedback processes (sharing of judgements)
- Refine self-evalative capacities over time (*internal feedback*)

CAN: ability

Managing Affect (disposition)

- Maintain emotional equilibrium and avoid defensiveness
- Proactive in eliciting suggestions
- Continuing dialogue (social interaction)
- Strive for continuous improvement on the basis of internal and external feedback.

FEEL: readiness

Instruments:
- Goals
- Scaffolding
- Safe environment

DIALOGUE

Taking Action (usage)

- Aware that action in reponse to feedback is imperative (closing feedback loop)
- Draw inferences for continous improvement (opportunities)
- Develop repertoire of strategies for acting on feedback

ACT: accountability

- Feedback seeking: monitoring and inquiry
- Opportunity for repetition
- Plan

Student Feedback literacy measurement (Woitt, 2023)

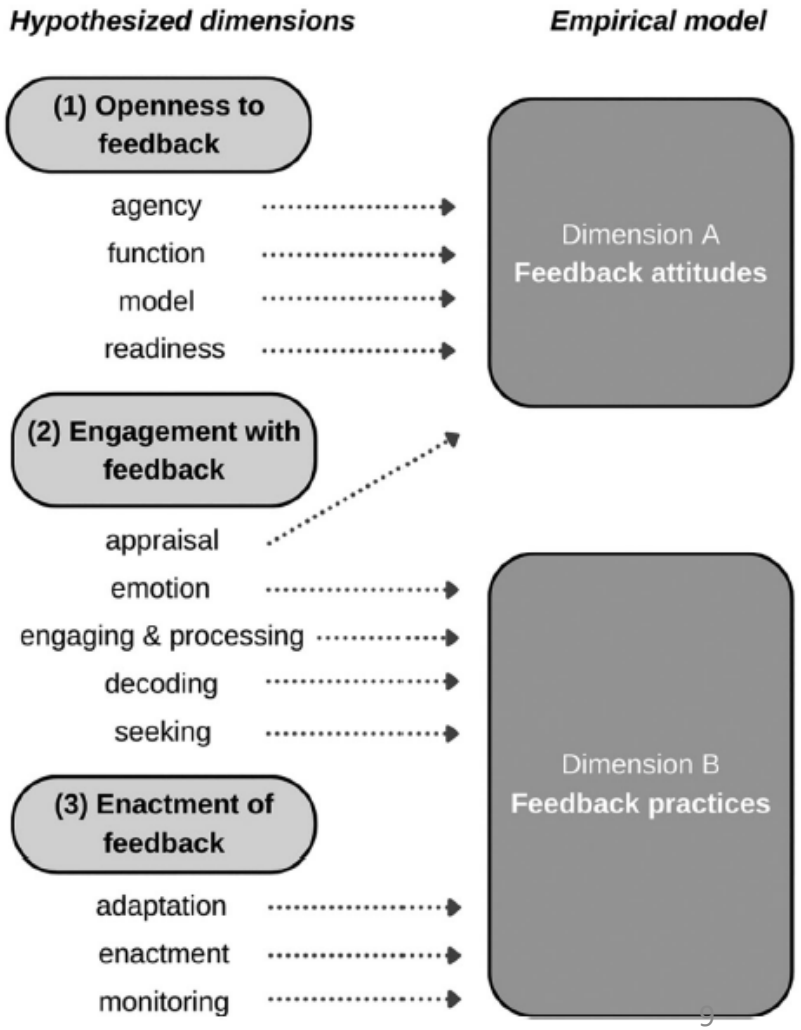
21 items with 5-point Likert scale associated with two factors

Feedback attitudes

1. I think that a feedback process is most effective if I take an active role in it.
2. I believe that I can contribute to the value of feedback processes.
3. I feel that I have a responsibility for using feedback to improve academically.
4. I believe that one of the main purposes of feedback is for me to improve in my studies.
5. I feel that feedback helps me refine my judgments on my own work.
6. I believe that feedback can come in various forms and from various sources.
7. I am interested in receiving feedback about my learning.
8. I am determined to make use of feedback for improving my studies.
9. When evaluating feedback, I keep in mind that there are different perspectives and opinions.

Feedback practices

10. If needed, I seek out further information to better understand a feedback comment
11. When dealing with feedback, I try to keep my emotional balance.
12. I handle feedback on a factual level instead of taking it personally.
13. I really take my time to reflect on feedback I have received.
14. I assess my learning progress to determine where feedback might be helpful to me.
15. I take into account multiple sources of feedback because they are useful in different ways.
16. Based on what I learn from feedback, I consider doing things differently in the future.
17. I reconsider and refine my learning strategies based on feedback.
18. I strive to make the most of the feedback I have received.
19. If given the opportunity, I revise my work based on feedback.
20. I refer to my previous feedback experiences for judging my overall progress.
21. I take feedback into account for evaluating how well I am navigating a challenge.



Student Feedback literacy measurement (Dawson, 2023)

24 items with 6-point Likert scale associated with five factors

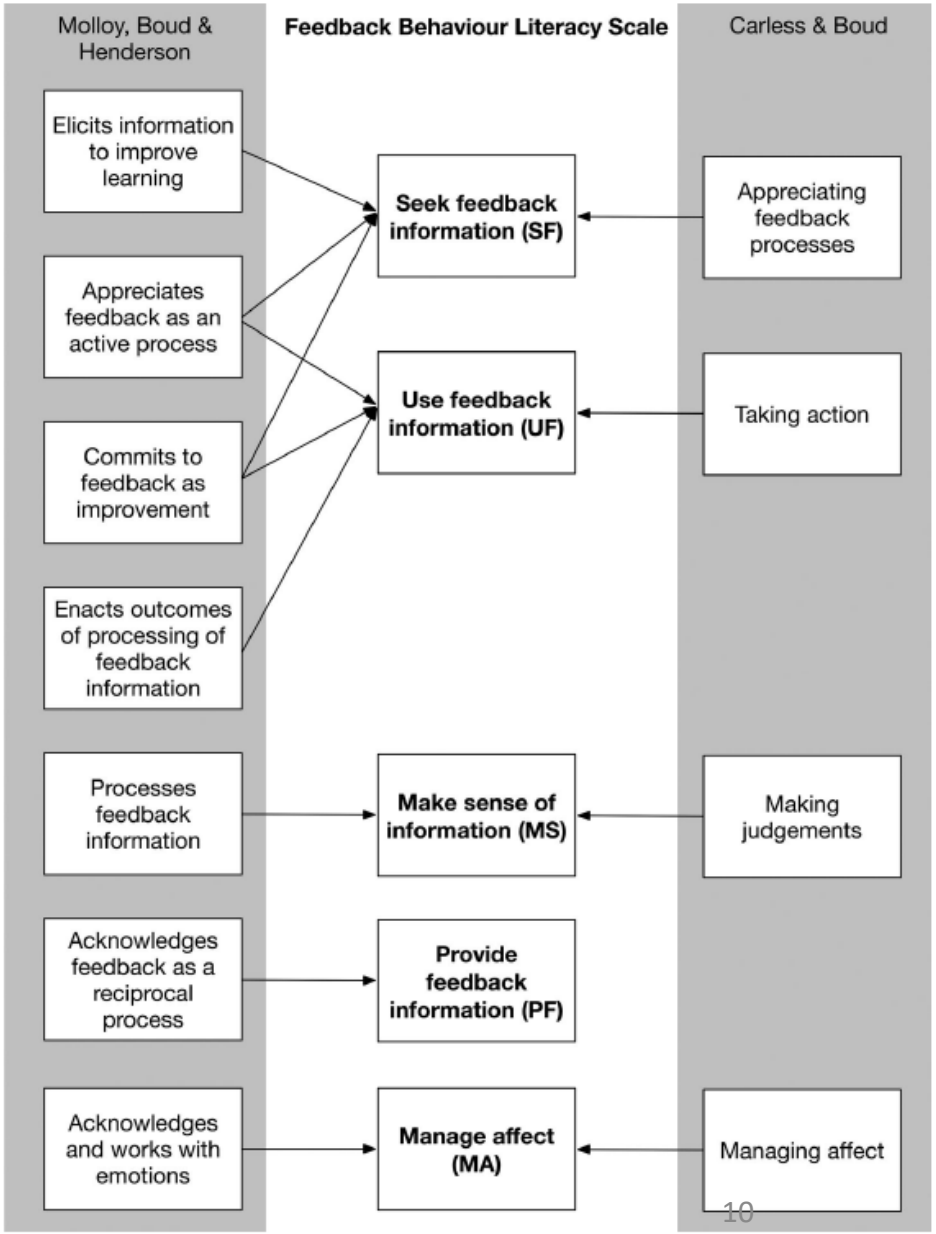
Seek feedback information (SF)
1. I reflect on the quality of my own work and use my reflection as a source of information to improve my work.
2. I seek out examples of good work to improve my work.
3. When other people provide me with input about my work I listen or read thoughtfully.
4. When I am working on a task, I consider comments I have received on similar tasks.
5. I ask for comments about specific aspects of my work.

Make sense of information (MS)
6. I carefully consider comments about my work before deciding if I will use them or not.
7. When receiving conflicting information about my work from different sources, I make a judgement about what I will use.
8. When deciding what to do with comments, I consider the credibility of their sources.
9. I consider how comments relate to criteria or standards.

Use feedback information (UF)
10. I check whether my work is better after I have acted on comments.
11. I use comments on my work to refine my understanding of what good quality work looks like.
12. When receiving comments I plan how I will use them to improve my future work, not just the immediate task.
13. I keep comments on previous work to use again in the future.
14. When I receive comments from others, I use them to improve what I'm working on at the time.

Provide feedback information (PF)
15. When commenting on the work of others, I provide constructive criticism.
16. I comment on other people's work when I am invited to.
17. When commenting on other people's work I refer to standards or criteria.
18. I offer to provide feedback to my peers.
19. I try to be very clear when providing feedback comments to others.

Manage affect (MA)
20. I am open to reasonable criticism about my work.
21. I deal well with any negative emotional responses I have to feedback information.
22. When a feedback message is valuable but upsetting or annoying, I still find a way to make use of it.
23. Critical comments motivate me to improve my work.
24. I make use of critical comments even if they are difficult to receive.



Self-regulation

Self-regulatory learning theory (Pintrich, 2000)

An active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment.

Table 1. Conceptual framework of self-regulation.

	Areas for regulation			
Phases	Cognitive	Affective	Behavioural	Contextual
Forethought, planning and activation	Target goal setting Prior content activation Metacognitive knowledge activation	Goal orientation adoption Efficacy judgments Ease of learning judgments, perception of task difficulty Task value activation Interest activation	Time and effort planning Planning for self-observations of behaviour	Perceptions of task Perceptions of content
Monitoring	Metacognitive awareness and monitoring of cognition	Awareness and monitoring of motivation and affect	Awareness and monitoring of effort, time use, need for help Self-observation of behaviour	Monitoring changing task and content conditions
Control	Selection and adaptation of cognitive strategies for learning, thinking	Selection and adaptation of strategies to manage motivation and affect	Increase/decrease effort Persist/give up Help-seeking behaviour	Change or renegotiate task Change or leave context
Reaction and reflection	Cognitive judgments Attributions	Affective reactions Attributions	Choice behaviour	Evaluation of task Evaluation of context

Pro-active deliberate launch

Consciously following processes

Deploying available strategies (profit-costs)

Evaluation and appraisal

(Spooner, 2022)

Feedback & self-regulation

Self-regulated learning is an important element of learning from simulations (McAlpin, 2023; Vermunt, 2023).

Feedback principles that support self-regulation (Nicol, 2006)

1. Clarify what good performance is (goals, expected standards with exemplars, rubrics, discussion, own criteria)-**Feed-Up**
2. Facilitate self-assessment (reflection, evaluate each other's work, request the kinds of feedback they would like, portfolio)
3. Deliver high quality feedback information (timely, *unambiguous, specific, transferable*, regular, relation to a limited number of prioritized criteria, corrective advice)-**Feed-Back**
4. Encourage dialogue (stimulate a response, collate feedback for peer or teacher managed discussion)
5. Encourage positive motivation and self-esteem (many low-stakes assessment tasks, with feedback geared to providing information about progress)
6. Provide opportunities to close the gap (between current and desired performance, two-stage assignments where feedback on stage one helps improve stage two, model strategies, action points)-**Feed-Forward**
7. Use feedback to improve teaching (information to teachers to shape teaching)

Awareness of Human tendencies

It is important to be aware of some human tendencies that can influence goal setting, seeking and responding to feedback and reflecting on one's own performance (learner) and observation and coaching (teacher)

Human tendencies:

a) Our cognition: Dual process theory

The cognitive processes that underlie our decisions can be divided into two distinct types (Kahneman, 2015):

1. Fast thinking: fast, automatic and intuitive thinking based on patterns and heuristics. It is efficient because it works quickly and with little effort.
2. Slow thinking: slow, deliberate and analytical thinking. It requires conscious effort and attention to detail.

We tend to make decisions using 'System 1 fast thinking'.

a) Our emotions (McConnell, 2012):

Psychlological immune system: protection for negative emotions (Gilbert, 2000),

Stages of grief: anger-denial- bargaining- depression- acceptance

SHARING & DISCUSSING

Cognitive tendencies that adapt feedback:

- Hot cognitions: emotion, arousal. self-serving bias, positive performance is attributed to internal, ability factors, performance failures, to external, situational factors.
- Cold cognitions: analytic confirmation bias: test hypotheses in one-sided way

Confidence- allow to hear threatening feedback <> can lessen credibility of external feedback, influenced by experience- double edged sword: frequency independ of quality

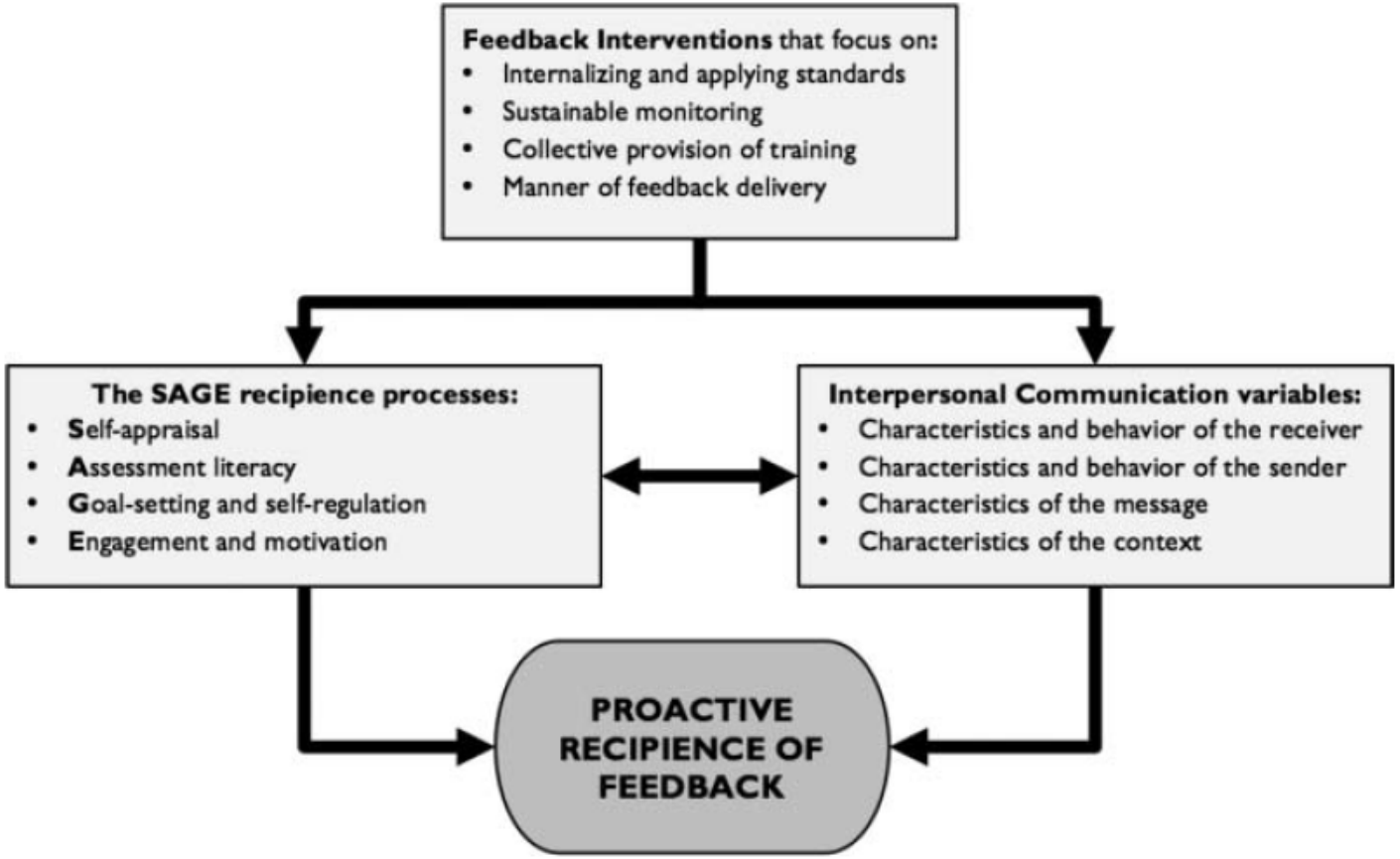
Taxonomy of recipience processes: SAGE (Winstone, 2017)

Self-appraisal
Process of making judgments about oneself, one's traits, or one's behavior. Assessing own malleable strengths and weaknesses and reducing reliance on the educator

Assessment literacy
Processes of understanding the grading process and of applying this understanding to make academic judgments of one's work and performance.

Goal-setting and self-regulation
Process of explicitly articulating desired outcomes; Process of monitoring and evaluating one's own progress and strategic approaches to learning.

Engagement and motivation
Being enthusiastic about and open to receiving performance information: a) being committed to change and devellop, b) paying attention to the feedback and being prepared to consider it.



Motivation

Self-determination theory (Ryan, 2017):

Individuals are motivated to grow and change by fulfilling three innate psychological needs:

1. Need for autonomy (feeling self-endorsed and self-governed)
2. Need for relatedness (feeling loved and connected), and
3. Need for competence (feeling effective and capable).

Simulation

Simulation-based learning

In simulation-based learning traditions, feedback is often referred to as debriefing, which takes place after the simulated action.

There are many different models for debriefing, which vary in their structure, the timing of the feedback and the way in which they lead to a conversation (Sawyer, 2016)

Endacott, 2019: a systematic review of frameworks used for debriefing team-based simulations

The most important elements for effective, transferable learning from simulation-based training are: having explicit performance goals, receiving immediate, accurate feedback and repeatedly performing the assigned task (Issenberg, 2005)

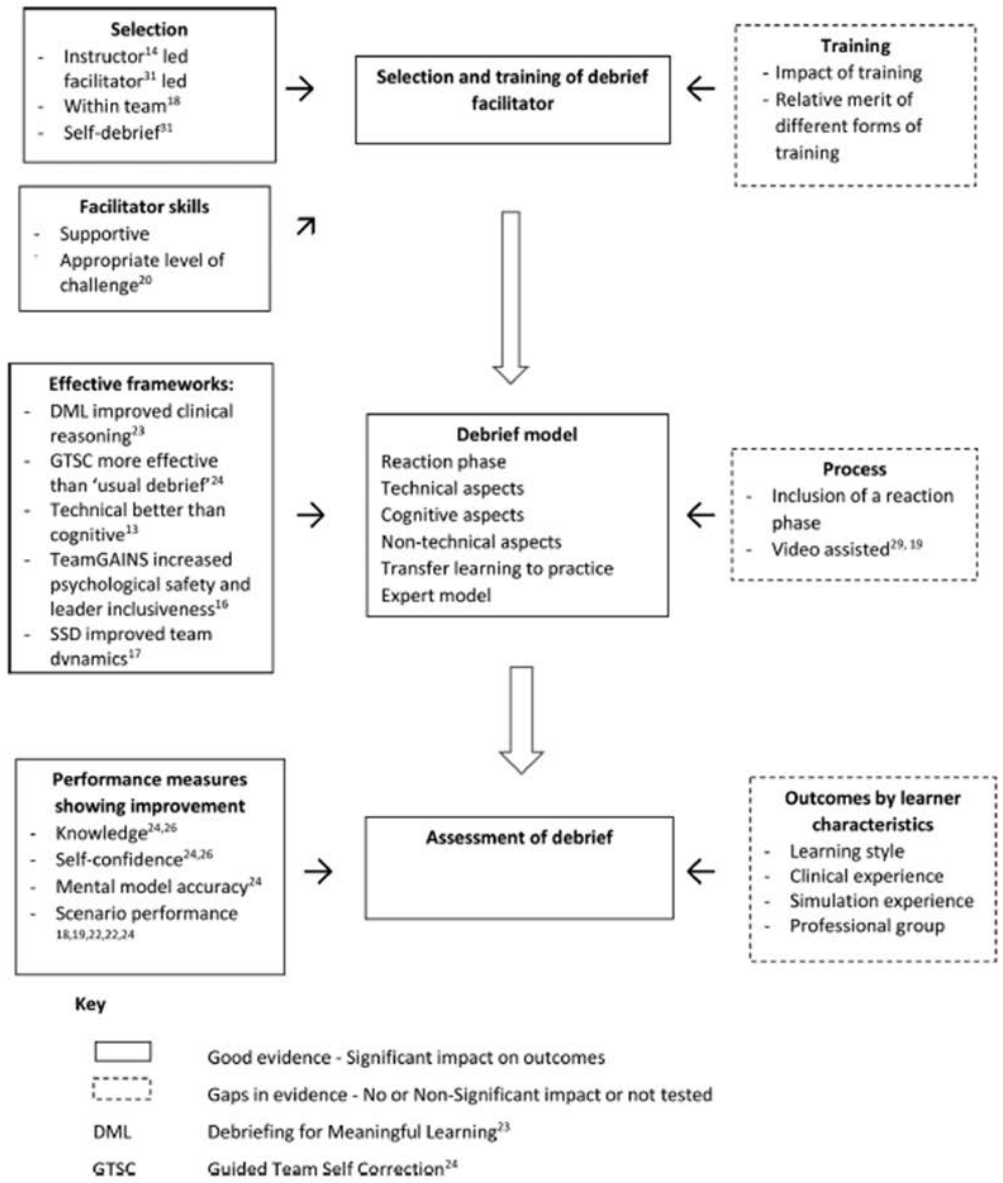


Figure 2 Evidence and evidence gaps for decisions about debrief.

Sytematic review Endacott, 2019

Preferences for feedback

Generation Z nursing students (born between 1995 and 2010) prefer in skillslab training feedback that is immediate, constructive and guided by the instructor. Overall, constructive feedback is perceived as the most important attribute (Licas, 2024).

Table 1
Theoretical Underpinnings of the Attributes of Feedback and the Corresponding Levels

Attributes and Levels	Definition	Theoretical Basis
Timing		
Immediate	Feedback is given to a learner as quickly as the situation allows to assimilate information.	Dempsy and Wager (2012)
Delayed	Feedback is given to a learner after a specified programming delay interval during instruction or testing portion.	
Type		
Reinforcing	A type of positive feedback which reinforces a behavior, and it is achieved with positive language and affirmative and optimistic words to provide information on what was well done.	Hattie & Timperley (2012)
Corrective	A type of feedback that explains the areas that were poorly performed and the areas needing improvement.	
Constructive	A type of feedback that enables students to reflect on their performance, to identify aspects of performance that was good, and to identify areas for improvement.	Duffy (2013)
Method		
Demonstrate	It involves an expert performing a task while students observe and build a conceptual model of the process required to accomplish the task.	Collins and Smith (2012)
Guide	It involved providing support or guiding students in performing a task.	Palincsar and Browns (2011)
Question	It encourages students to verbalize their knowledge and thinking or explicitly state their reasons or problem-solving processes in a domain.	Collins and Smith (2012)
Source		
Instructor	It is the richest source of targeted content in the classroom.	Paulus (2012)
Peer	It refers to other learners providing feedback to others by commenting on their work.	Smith (2012)

Feedback and guidance

The Royal College of Physicians and Surgeons of Canada's coaching mode (Richardson, 2024)

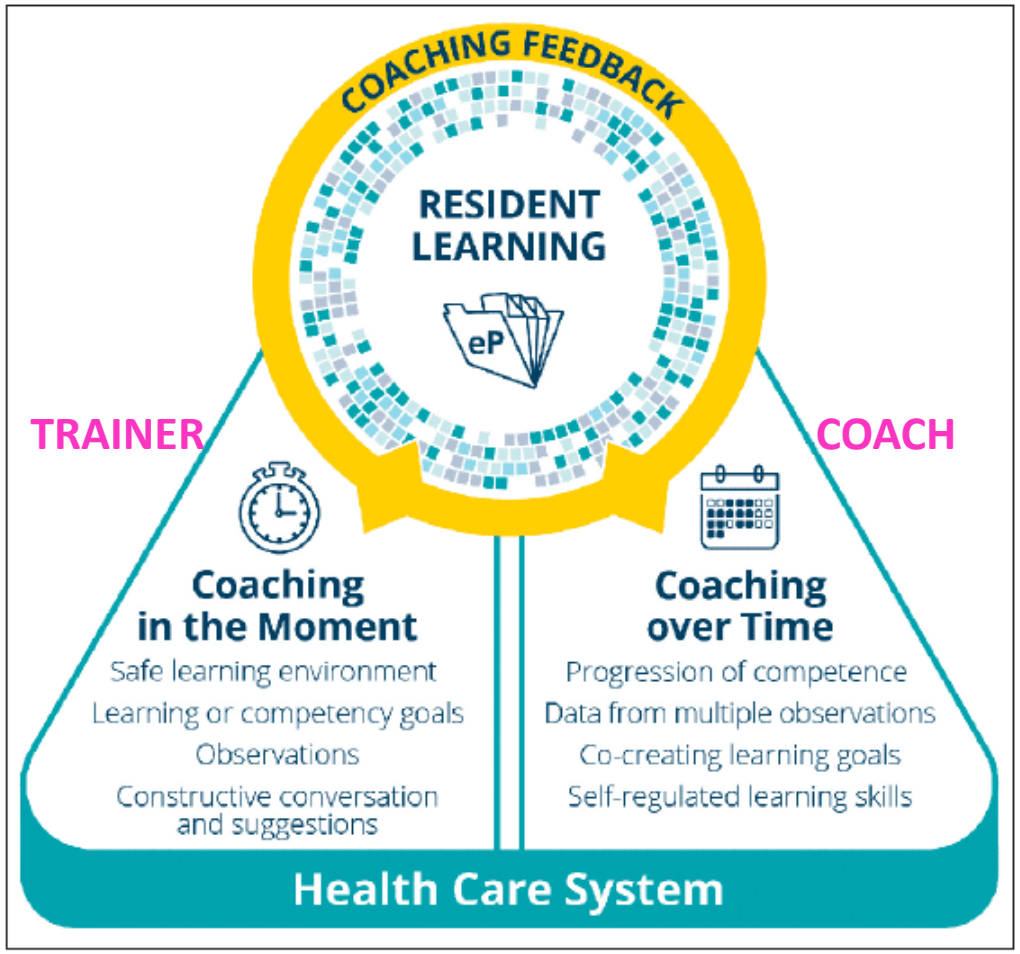
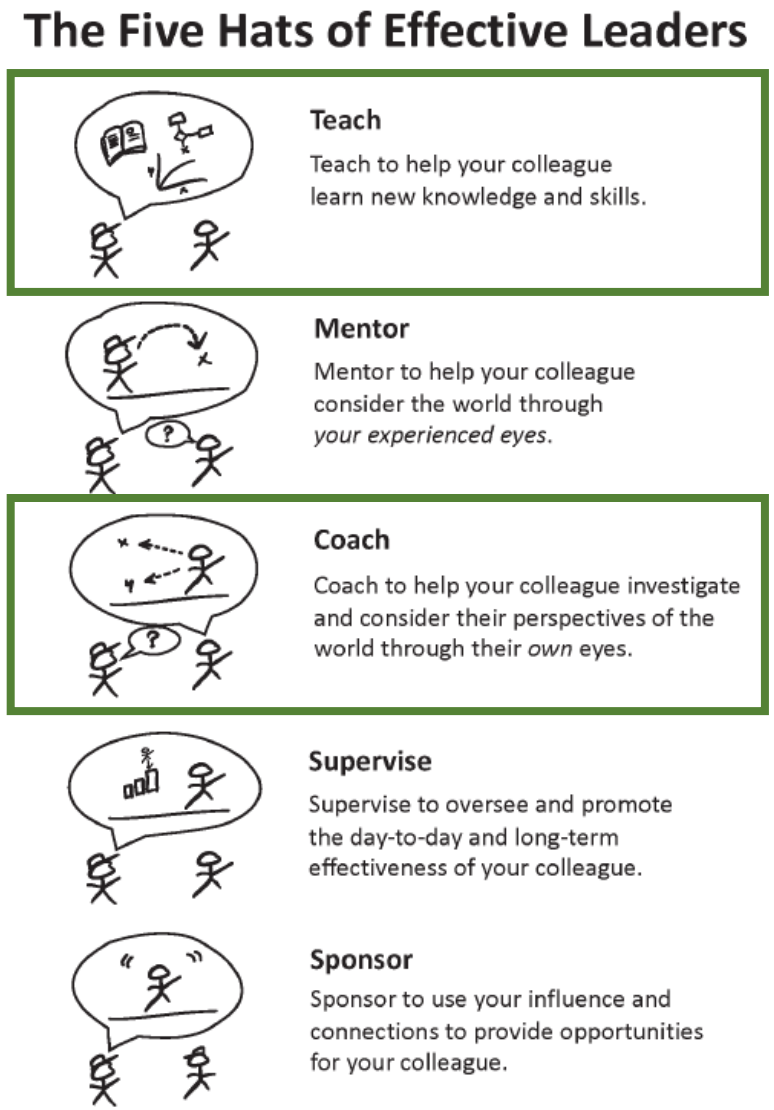


Figure 1 The Competence by Design (CBD) Coaching Model.

Relationship/Rapport	Establish an educational **R**elationship/**R**apport between the trainee and the coach to establish a safe learning environment
Expectations	Set e**X**pectations for an encounter (discuss learning goals)
Observe	**O**bserve the trainee and the trainee's work (directly or indirectly)
Coach	**C**oach the trainee for the purpose of improving that work
Record/Reflect	**R**ecord a summary of the coaching encounter and **R**eflect

Table 1 The RX-OCR process in the CBD Coaching Model.

Comparing roles in guidance



(Winters, 2024)

	Coach	Mentor
Orientation	Performance	Development
Relationship	Formal, time-bound	Less formal and time-bound
Expertise	Process focused	Knowledge\Experience

(King, 2024)

Coaching effectiveness

The consistent application of integrated professional, interpersonal, and intrapersonal knowledge to improve athletes' competence, confidence, connection, and character in specific coaching contexts.

Mentor

A mentor is a more experienced faculty member who provides a more junior clinician with career counseling and psychosocial support.

(Côté, 2009)

Maladaptive responses to feedback (Bowen, 2017)

External feedback (from teachers and peers) may conflict with the learner's internally generated feedback. Several maladaptive responses to such a conflict can limit the ability to learn:

1. ignoring external feedback
2. rejecting external feedback,
3. viewing feedback as irrelevant
4. refusing to see a connection between internal and external feedback
5. reinterpreting the external feedback to align it with internal judgment
6. acting on feedback in a superficial manner.

Simulation and feedback

Promoting expertise through simulation (PETS) model (Jossberger, 2022)

Knowledge restructuring through case processing and guidance to go beyond automatization (experience-bases knowledge restructering)

Four phases:

1. Preparation: needs institution\profession, essence of competence, exemplar of superior performance, critical incidents, blueprint for training with 4C/ID
2. Briefing: brought competences, standards, expectations, including personal learning goals, shared understanding of the scenario, what and why (meaningful) & acceptance fiction contract, building psychological safety
3. Repetitive practice opportunities: with observation, direct instruction, scaffolding. Peripheral and more central roles, repetition with variability
4. Debriefing: reflection on experience makes a case a learning opportunity, informed self-assessment, safe environment (see PEARLS-tool for teachers)

Promoting Excellence and Reflective Learning in Simulation (PEARLS) (Cheng, 2016; Bajaj, 2018)

Debriefing is a facilitated reflection in experiential learning to help indentify and close gaps in knowledge and skills

Essential elements:

1. Active participation
2. Developmental intent
3. Discussion
4. Input multiple resources

Many debriefing scripts: EXPRESS, AHA, SHARE, DISCERN

More flexible and blended approach PEARLS framework with debriefing scripts

The framework is a workflow of 4 phases, in which the analysis phase helps the teacher to choose and combine appropriate strategies for discussion in a given context:

- Learner self-assessment
- Focused facilitation: advocacy-inquiry, alternatives with pro and cons, guided team self-correction
- Directive feedback and/or teaching

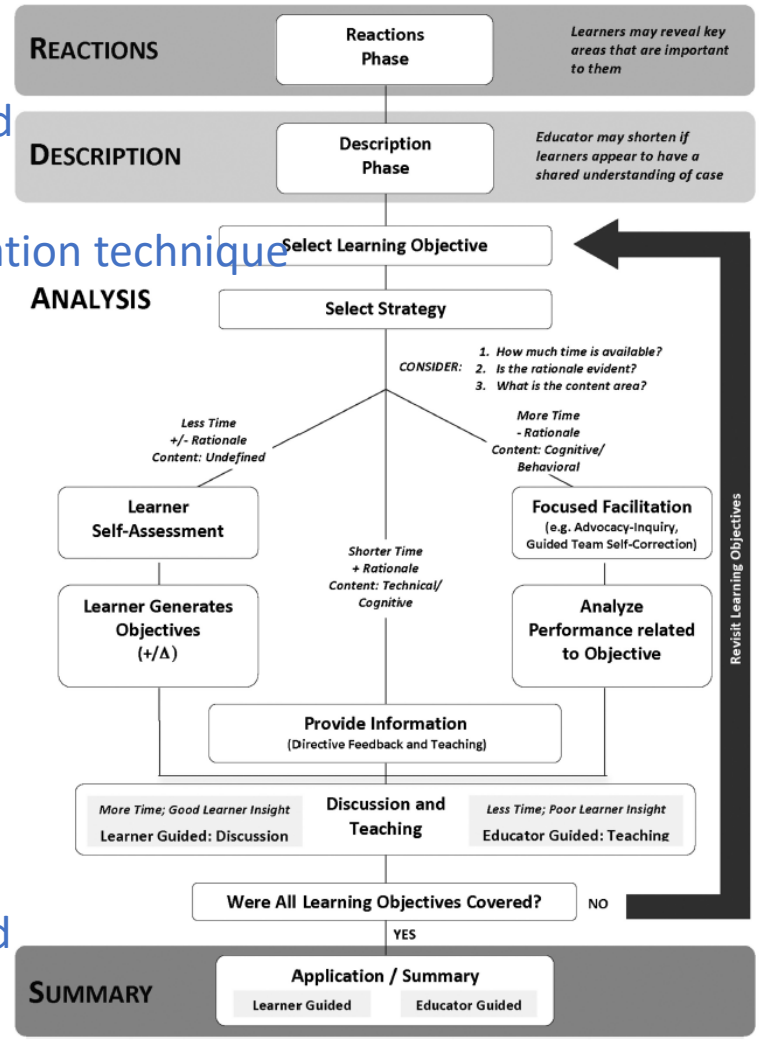
Framework (Eppich, 2015)

Emotions

Common ground

Choice of facilitation technique

Lessons learned

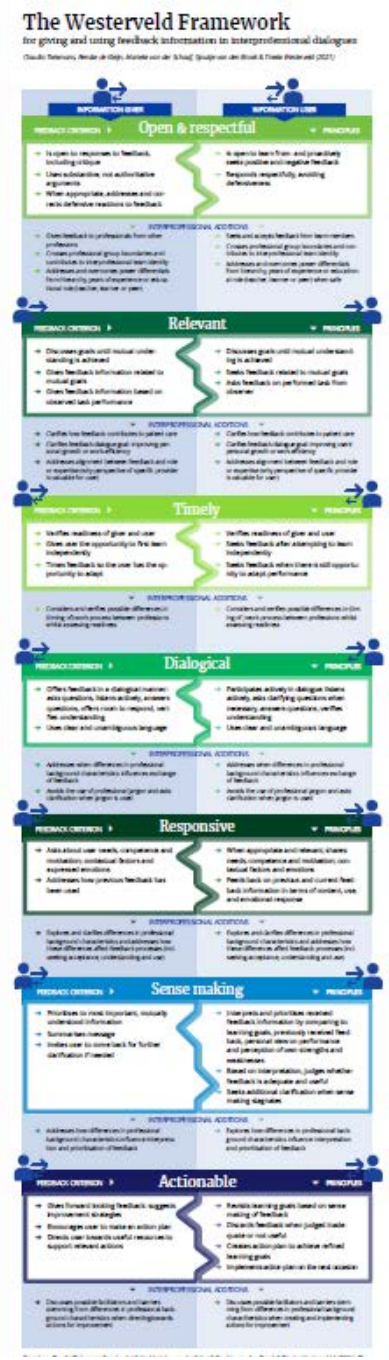


Interprofessional feedback

In the interprofessional context, feedback must be seen as a process, a dialogue in which feedback information givers and information users share responsibility. The Westerveld framework positions learners as active agents in their socio-cultural context, co-constructing meaning in such dialogues. (Tielemans, 2023)

The framework is structured around seven criteria:

1) Open and respectful
2) Relevant
3) Timely
4) Dialogical
5) Responsive
6) Sense making
7) and Actionable.



Interprofessional feedback

Among health professionals the feedback from one's own group, the in-group, is typically rated as being more positive than if it comes from the other, out-group (van Schaik, 2016).

Contextual factors in interprofessional health care that can strongly influence the feedback process are credibility and hierarchy (Tielemans, 2023)

Table 3. Hindering processes in interprofessional dialogues and corresponding professional background characteristics.

Hindering processes	Professional background characteristics
Power dynamics Complex hierarchies and the power dynamics stemming from them can hinder interprofessional feedback processes (including goal setting, motivation, self-assessment, sense-making, and seeking)	*Superimposed role* Determined by a professional's place in formal (hierarchical) structures in health care *Years of experience* Determined by the experience gained by a professional working in practice *Educational role* Determined by a professional's role as a learner, teacher or peer
Credibility Credibility judgements are made by assessing feedback information provider's professional role and expertise and its alignment with the interprofessional feedback information they provide.(Mis)judgements can hinder interprofessional feedback processes	*Expertise* Determined by a professional's competencies gained through education and experience *Professional role* Determined by a professional's work tasks and responsibilities
Identity Professional identity formation, and group processes stemming from that, can hinder interprofessional feedback processes	*Professional identity* Determined by a professional's socialisation within professional groups or interprofessional teams
Structural work processes Workloads and structural differences in work habits form practical barriers and thereby hinder the interprofessional feedback process	*Work habits* Determined by, e.g. work shift hours, handover & education times, communication styles *Workload* Determined by, e.g., patient load, administrative tasks, educational responsibilities

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