



OECD Future of Education and Skills 2030

Conceptual learning framework

ANTICIPATION- ACTION-REFLECTION CYCLE FOR 2030



IN BRIEF

ANTICIPATION-ACTION-REFLECTION CYCLE FOR 2030

The Anticipation-Action-Reflection (AAR) cycle is an iterative learning process whereby learners continuously improve their thinking and act intentionally and responsibly, moving over time towards long-term goals that contribute to collective well-being. Through planning, experience and reflection, learners deepen their understanding and widen their perspective.

The AAR cycle builds on and integrates a range of other learning processes. It is informed by developmental and social theories of learning, and by other models of learning cycles used in a range of contexts. It consists of three phases: anticipation, action and reflection. The three stages of the AAR cycle inform, complement and strengthen each other.

In the **anticipation** phase, learners use their abilities to anticipate the short- and long-term consequences of actions, understand their own intentions and the intentions of others, and widen their own and others' perspectives.

The next phase is where learners take **action** towards specific objectives, contributing to well-being. Whatever the motivation, the consequences of any action can vary widely. An action, in itself, may be neutral, yet could result in anything from very positive to very negative outcomes for the individual, society or the planet. It is therefore important that actions taken are both intentional and responsible – hence the need for anticipation prior to the action, and for reflection following the action.

Through planning, experience and reflection, learners deepen their understanding and widen their perspective.

In the **reflection** phase, learners improve their thinking and deepen their understanding, improving their ability to align future actions with shared values and intentions, and to adapt successfully to changing conditions. Reflection is a systematic, rigorous, disciplined way of thinking, with its roots in scientific inquiry.

KEY POINTS

- Anticipation requires more than just asking questions; it involves projecting the consequences and potential impact of doing one thing over another, or of doing nothing at all.
- Action is a bridge between what learners already know and what they want to bring into being.
- Through reflection, learners gain a sense of perspective and of power over their future actions, leading to the development of agency.



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AAR IN ACTION



Anticipation-Action-Reflection (AAR) cycle, Japan, Natural Science

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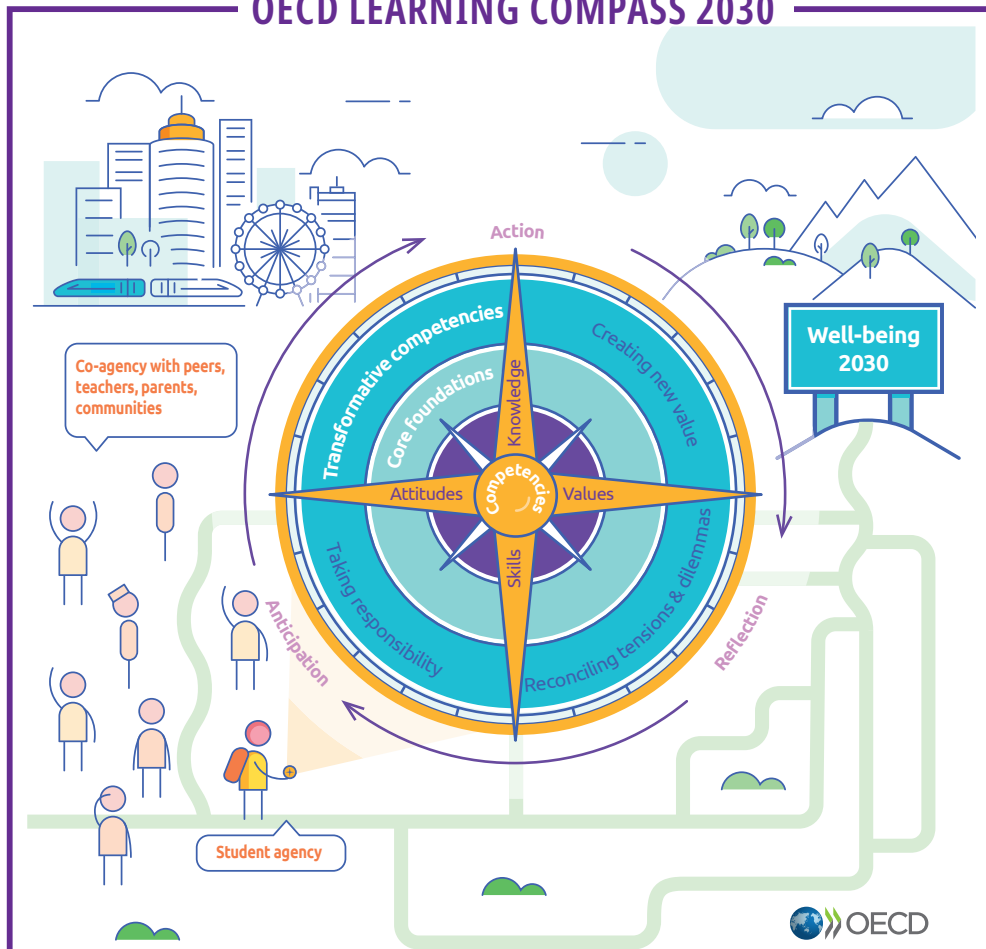
AAR CYCLE: SCIENCE FAIR



Anticipation-Action-Reflection (AAR) cycle, Science Fair, Mexico, Knotion


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Anticipation-Action-Reflection Cycle for 2030

The Anticipation-Action-Reflection (AAR) cycle is an iterative learning process whereby learners continuously improve their thinking and act intentionally and responsibly in the interest of collective well-being.

The AAR cycle consists of three phases:

- In the **anticipation** phase, learners use their abilities to anticipate the short- and long-term consequences of actions, understand their own intentions and the intentions of others, and widen their own and others' perspectives.
- The next phase is where learners take **action** towards well-being.
- In the **reflection** phase, learners improve their thinking, which leads to deeper understanding and better actions towards well-being.

Every day people take decisions with more or less awareness and understanding. While anticipation, action and reflection are competencies in their own right, when combined in a cycle, they can accelerate the development of both agency (see the [concept note on Student Agency](#)) and transformative competencies (see the [concept note on Transformative Competencies](#)) to help shape a future of individual and societal well-being. The AAR cycle can be understood as part of individual habit, social and organisational routine, and a practical component of lifelong learning. It can therefore enhance and extend the positive impact of education. Students can use the AAR cycle throughout their lives, beyond their formal education.

The AAR cycle builds on and incorporates a range of other learning processes

The learning processes on which the AAR cycle is based can be described as constructivist, in the sense that a cycle of planning, experience and reflection leads to changes in the learner's perspective, understanding and competence. This kind of learning often takes place within a community and in interaction with others (Vygotsky, 1978_[1]).

The AAR cycle incorporates developmental theories of learning, for example Jean Piaget on the origins of intelligence (1952_[2]), social theories of learning, such as those of Lev Vygotsky (1978_[1]), and theories that emphasise concept formation through experience, such as those of Jerome Bruner (1960_[3]). These developmental theories also find expression in major bodies of work, such as Ryan and Deci's Self-Determination Theory (2000_[4]).

The AAR cycle is not defined to be comprehensive or exclusive; rather it reflects a range of other learning theories and cycles, such as theories of experiential learning (Kolb, 1983_[5]); service learning, including the five stages of service learning (Kaye, 2013_[6]); early childhood learning, including Reggio Children's Provocation, Observation, Documentation, Relaunch cycle (Reggio Emilia Approach, n.d._[7]); and concept-based learning approaches, such as Sky School and the United World College of South East Asia's "Awareness, Abstraction, Application" model of learning (MacAlpine, 2018_[8]).

The AAR cycle is understood as a general heuristic that can be applied and adapted to a wide range of situations, and developed in combination with a variety of specific curriculum approaches or learning traditions. The emphasis on students anticipating and constructing new learning supports not only domain-specific competencies (see the [concept note on Core Foundations](#)), but also the three transformative competencies, with their focus on active engagement with the world (see the [concept note on Transformative Competencies](#)).

The AAR cycle also shares some features with the Plan-Do-Study-Act and Plan-Do-Check-Act cycles used in the business, healthcare and education sectors as part of their continuous-improvement processes (Tichnor-Wagner, 2018^[9]).

Anticipation requires thinking about how actions taken today might have consequences tomorrow

The first stage of the AAR cycle is anticipation – the ability to develop awareness of how actions taken today might have consequences in the future. Anticipation requires more than just asking questions; it involves projecting the consequences and potential impact of doing one thing over another, or of doing nothing at all. In anticipating, learners use their ability to understand issues, manage tensions and dilemmas, and consider the short- and long-term consequences that result from their actions (or inaction) (Rychen, 2016^[10]). Learners also consider how the resolution of an issue or the creation of new value anticipates future needs.

A critical element of anticipation is prospection – the ability to “pre-experience the future by simulating it in [the] mind” (Gilbert and Wilson, 2007^[11]). Prospection enables the learner to consider and predict the different possible outcomes of their potential actions. Prospection may strengthen children’s psychological connection to their future self, increasing their motivation to engage in behaviours that will benefit them later on (Prabhakar, Coughlin and Ghetti, 2016^[12]). The ability to forecast and anticipate events grows during childhood and adolescence, and is linked to developments in the prefrontal cortex (Gilbert and Wilson, 2007^[11]).

Action is activity undertaken to move towards a valued outcome

After having engaged in deep thinking during the anticipation phase, learners move to the action phase. Action is a bridge between what learners already know and what they want to bring into being (Leadbeater, 2017^[13]). Through anticipation, the learner defines a goal of and purpose for acting.

Actions may be investigative, they may be oriented towards taking responsibility or creating new value, or they may be directed towards making changes. Actions can be individual, common or collective (Jensen and Schnack, 1997^[14]). While an action, in itself, may be neutral, it could result in anything from very positive to very negative outcomes for the individual, society or the planet. For this reason, it is important that the action taken is both intentional and responsible – hence the need for both anticipation prior to the action and reflection following the action. Perspective-taking is required if the action taken is to be responsible (Selman, 2003^[15]; Gehlbach, 2004^[16]), and if it can lead to creating new value, and reconciling tensions and dilemmas.

Reflection is a rigorous, disciplined way of thinking

The third stage of the AAR cycle is reflection, “the meaning-making process that moves a learner from one experience into the next with deeper understanding of its relationships with and connections to other experiences and ideas” (Dewey, 1933^[17]). Reflection is the thread that makes continuity of learning possible. It enables learners to improve their thinking, which leads to better actions towards well-being over time. Through reflection, learners gain a sense of power over their future actions – and a sense of direction – leading to the development of agency (see the [concept note on Student Agency](#)).

Reflection is a systematic, rigorous, disciplined way of thinking, with its roots in scientific inquiry. It requires “attitudes that value the personal and intellectual growth of oneself and of others” (Rodgers, 2002^[18]); and it enables learners to integrate greater levels of complexity into their thinking and actions.

Reflection implies the combined use of self-directed skills and creative-thinking skills, and encompasses motivation, ethics, and social and behavioural components in addition to cognitive components (Canto-Sperber and Dupuy, 2001^[19]). Reflection also results in a growing awareness of the self, others and the larger society. The transformative competencies are developed and deepened through reflection.

Box 1. Key constructs associated with the AAR cycle

A key aspect of the anticipation phase of the AAR cycle is the ability not just to respond to current events but to anticipate future events. This requires the learner to be **pro-active** – to foresee, and be willing to act on, what may be required for the future. **Perspective taking** is also crucial during the anticipation phase as it allows learners to step back from their own ideas and beliefs, and consider those of others as well.

Critical thinking is required by learners in the anticipation phase, during which the learner assesses his or her own opinions and assumptions and those of others, and in the reflection phase, when learners scrutinise the actions they have taken and consider whether the outcomes are oriented towards well-being. **Reflective thinking**, which occurs during the “action” phase, enables learners to adjust and improve their thinking and actions.

The three stages of the AAR cycle are interconnected

The three stages of the AAR cycle inform, complement and strengthen each other.

Anticipation and action

The willingness and capacity of the learner to take informed action stems from anticipation. If action is taken without anticipation, the learner is not taking into account the possible consequences of the action, either in relation to him- or herself or to others. Anticipation without action may overwhelm the learner with uncertainty about the future. Goal-setting can provide a bridge between anticipation and action; prospection or forecasting can help convert these into motivators of behaviour. As Bandura notes, “Action is motivation directed by cognised goals rather than drawn by remote aims” (Bandura, 1989^[20]).

Action and reflection

The literature on reflective practice supports the ideas of both **reflection-on-action**, which describes the individual reflecting on an experience he or she has already had, and also **reflection-in-action**, which describes an individual reflecting on his or her actions while doing them (Schön, 1983^[21]). The concept of reflection-in-action indicates not only that the two stages of the cycle are interlinked, but that the two could occur almost simultaneously (a person must assume that the action has already started in order for him or her to reflect on it). It also shows the fluidity and complementarity of the different aspects of the cycle.

Reflection and anticipation

Metacognition, self-awareness, critical thinking and decision making are all skills that are developed through reflection (Rolheiser, Bower and Stevahn, 2000^[22]). These are also skills that are required for effective anticipation. Therefore, the practice of any one of them should help strengthen the others. In particular, reflection can enhance learners' anticipation by building knowledge and experience of the implications of their actions.

The AAR cycle is a catalyst for the development of both agency and transformative competencies

While agency (see the [concept note on Student Agency](#)) and transformative competencies (see the [concept note on Transformative Competencies](#)) may be developed in different ways and in different contexts, the AAR cycle can act as a catalyst for the development of both.

Agency is at the heart of the OECD Learning Compass 2030 and is defined as the competency to think, initiate and act intentionally and responsibly to shape the world towards individual and collective well-being (OECD, 2018^[23]).

As learners engage actively in iterative cycles of anticipation, action and reflection, they can gain a sense of responsibility because they feel more connected to the issues and problems being examined. With that sense of responsibility comes the belief that they can make a difference in society. The AAR cycle enables learners to express and develop their agency both in classroom contexts and in life more generally.

In a world of complex, highly networked systems, from the climate to the economy, people need to be able to adapt. An iterative process of anticipation, action and reflection, both in and after action, lies at the heart of this adaptive approach. Each of the three **transformative competencies** – taking responsibility, reconciling tensions and dilemmas, and creating new value – depends on the ability of learners to be adaptive and reflective, to take action accordingly, and to improve their thinking continuously.

Taking responsibility means seeing any course of action in relation to its impact on a variety of stakeholders and relationships, and requires the perspective-taking that is developed in the anticipation and reflection phases of the AAR cycle.

Reconciling tensions and dilemmas may involve anticipating the effects of taking action by mapping the current system with the aim of finding leverage points for making change (Meadows, 2008^[24]).

Creating new value means not only developing new innovations, but also ensuring that those innovations are beneficial to the well-being of others and of society more generally. Creating new value also encompasses the ability to develop new thinking, and to approach challenges in different ways – an ability that is cultivated through the AAR cycle and its emphasis on continually improving thinking.

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