RaaSX

GUIDE FOR SCHOOLS

Agibot X2 *in the classroom*

What the X2 is, which version suits your school, how to teach safely and how pupils learn to program, from a first gesture to their own AI assistant.



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Version 1.0 · November 2026

A robot as a co-worker in the classroom

The Agibot X2 is a 1.31 metre humanoid robot that walks, gestures, talks and perceives its surroundings. For your school it is a learning tool: pupils use it to learn programming, sensors and artificial intelligence in the real world. The robot does not replace a teacher; it gives the teacher a powerful object to teach with.

Who is this guide for?

Teachers of computer science, design and technology, engineering and physics, ICT coordinators and school leaders who want to use the X2, from pre-vocational and technasium programmes to vocational and higher education.

What is inside?

1. What the X2 is · 2. Why invest · 3. Which version to choose · 4. Working safely · 5. Setup and learning levels · 6. Programming · 7. AI and privacy · 8. Pilot school and funding · 9. Options, rates and contact

What is the X2?



FEATURE	X2 (ALL VERSIONS)
Height	131 cm
Weight	35 kg (Basic), 39 kg (Ultra), 43 kg (EDU)
Arm payload	max. 3 kg in specific postures, at most 1 kg continuously
Movement	Walking, turning, side-stepping, 18 preset gestures
Interaction	Face screen with 23 expressions, LED strip, speaker, microphones (Ultra)
Software	AimDK_X2 developer kit on ROS 2 Humble, Python and C++
Documentation	Public at x2-aimdk.agibot.com

Specifications from the RaaSX catalogue and the Agibot AimDK_X2 1.1.0 documentation (May 2026). Versions differ in sensors, computing power and programming options; see page 4.

Why invest in robotics education?

A robot in the classroom is fun, but that is not the reason to invest. The Netherlands needs people who can program, deploy and maintain robots. That is also the conclusion of TNO, the Netherlands Organisation for Applied Scientific Research.

TNO report *Without robotisation, Dutch manufacturing will disappear* (April 2026)

264
robots per 10,000 employees in Dutch manufacturing

12th
place worldwide; South Korea, China and Germany are at 400 to over 1,000

+50%
productivity is the minimum needed to restore competitiveness

7%
of Dutch GDP comes from manufacturing

According to TNO, manufacturing is under pressure from an ageing workforce, staff shortages and high labour costs. TNO calls robotisation not a luxury but a precondition. One of its five recommendations is about education: a stronger link with the labour market through **continuous learning pathways and mandatory robotics competencies**. The report names the shortage of digitally skilled specialists who can organise automation as a key barrier.

Three reasons to start now

Skills in demand

Programming, sensors, safety and AI in the real world. Exactly the competencies TNO says are missing.

Robots as co-workers

TNO expects robots to take over standardised work while people instruct and correct them. You learn that role by working with robots.

The pathway starts in secondary school

TNO calls for continuous learning pathways. Pupils who programmed a robot at school are more likely to choose engineering in further education.

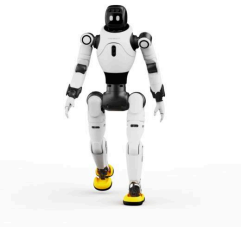
Source: TNO, report 2026 R10389, April 2026 (T. Bruijne, C. Bonte and C. Stolwijk), published in Dutch. The report covers robotisation in manufacturing, not humanoids specifically. The skills it names apply to any robot; a humanoid is a broad learning platform for them.

Which X2 suits your school?

RaaSX supplies three versions. They look similar, but differ greatly in what pupils can program.



X2 Basic
Reception, events



X2 Ultra · recommended
Full development stack



X2 EDU
Open interfaces, external PC

CAPABILITY	BASIC	ULTRA	EDU
Programming with the SDK	Limited	**Full**	Via external PC
Development computer inside the robot	No	**Yes, Jetson Orin NX**	No
Own voice assistant (only_voice mode)	No	**Yes**	No
Cameras and lidar	One RGB camera	**RGB-D, stereo, rear, lidar**	Limited
Head movement via SDK	No	**Yes**	No
LinkCraft choreographies via SDK	No	**Yes**	No
Navigation on a map	No	**Yes (optional module)**	Not confirmed
Rental per week	€1,500	€2,500	n/a
RaaS per month (36 mo.)	€996	**€1,969**	€1,817
Purchase, one-off	€19,725	€39,000	€36,000

Amounts exclude VAT and shipping. Features per AimDK_X2 1.1.0; for the Basic partly per reseller information.

Our advice: the X2 Ultra

Only the Ultra has everything a programming lesson needs: a built-in development computer, all cameras, a movable head and the option to replace the voice assistant with your own AI. Via RaaS the EDU costs only €152 per month less, but lacks exactly those parts. The Basic suits open days and events, not programming lessons. Not sure? Rent an Ultra for a week first.

Working safely in the classroom

The X2 weighs about 40 kilograms and can fall. A few fixed agreements let you work with it safely, even with a full class.

The remote control is the emergency stop

The remote control always overrides pupils' software. Keep it in your own hand during every lesson. Software is not an emergency stop: the SDK has no software emergency stop.

A marked free zone

Only let the robot walk in a free zone you mark out with tape on the floor. Pupils stay outside it while the robot is standing or walking.

Low speed

The default mode is LOW, with at most 0.8 m/s forward. Do not let pupils raise this setting.

After a fall

After a fall the robot only accepts passive and damping mode. Do not lift it up yourself during a movement. Recovery requires a restart; call RaaSX if in doubt.

Rules for programming lessons

RULE	WHY
Never run own code on the motion computer (10.0.1.40)	Agibot forbids this; it can disturb balance control.
Start at most two ROS programs per second while the robot stands or walks	Too many new programs at once slow down motion control; the robot may fall.
Do not let pupils switch off motors (PASSIVE and DAMPING modes) while the robot stands	A standing robot then collapses.
Test new code with gestures, speech or LEDs only first	Only when that works does walking come in.
Load the arms continuously with at most 1 kg	Per the robot's specification.

Walking stops within 200 ms when a program stops sending commands. That is a safety net, not a substitute for supervision. Sources: AimDK_X2 1.1.0, chapters on motion modes, locomotion and faults.

Setup and learning levels

What you need

- **A teacher PC** with Ubuntu 22.04 and ROS 2 Humble, connected to the robot by network cable (PC address: 10.0.1.2).
- **The AimDK_X2 developer kit**, downloadable from the Agibot documentation or copied from the robot.
- **Login details (SSH)** for the development computer in the Ultra (10.0.1.41). RaaSX requests these from Agibot for you.
- **For the AI lesson**, an internet connection on the teacher PC as well.

Good to know

From SDK version 1.2.0, your own code on the robot runs in a container. Code on the teacher PC is not affected; for most lessons that is the simplest setup.

Three learning levels

Level 1

Explore

Lower secondary, pre-vocational engineering

Pupils operate the robot with the app and remote control, show gestures and facial expressions, and design a dance in LinkCraft, Agibot's visual choreography tool. No code needed, but plenty of thinking about sequence, timing and how a robot comes across to people.

Level 2

Program

Upper secondary, technasium, vocational

Pupils write Python with ROS 2: make the robot talk, perform a gesture, colour the LEDs and read the battery status. A final assignment could be a guided tour in which the robot welcomes visitors and explains something.

Level 3

Engineer

Higher education, advanced technasium groups

Students work with camera images, lidar and navigation, and build their own voice assistant: microphone, speech recognition, a language model such as Claude, and speech back through the robot. Ethics, privacy and AI safety come up naturally.

Programming: gestures, speech and more

All functions are ROS 2 services and topics. Every service starts with **/aimdk_5Fmsgs/srv/**. The official Python examples in the documentation are the best starting point for pupils.

WHAT PUPILS DO	INTERFACE	KEY INPUT
Make the robot stand (ready for action)	SetMcAction	mode STAND_DEFAULT
Perform a gesture	SetMcPresetMotion	gesture ID and arm (see below)
Speak	PlayTts	text, priority (6 for conversation)
Show a facial expression	PlayEmoji	expression ID, once or looping
Colour the LED strip	SetPmuLed	R, G, B and effect (steady, breathing, blinking, flowing)
Read the battery	/aima/hal/pmu/state	percentage remaining
Read the status	/aima/mc/common/state	posture, mode, active source
Get a camera image (Ultra)	/aima/hal/sensor/rgbd_head_front/rgb_image	1280 × 720, 30 frames per second

The 18 gestures

ID	GESTURE	ID	GESTURE
1001	Raise hand	3001	Bow
1002	Wave	3007	Wave motion
1003	Handshake	3008	Hug
1004	Blow a kiss	3009	Cross arms
1007	Heart	3011	Cheer
1008	High five	3017	Clap
1010	Hands up	3024	Scratch head
1011	Wave at chest	3031	Wave goodbye
1013	Salute		

Arm choice: 1 left, 2 right, 3 both; 11 for whole-body gestures (3001 and up). We leave gesture 3025 out in class.

First assignment

Have the robot welcome a visitor: set it to STAND_DEFAULT, make it wave (1002, right) and say "Welcome to our school". Then colour the LED strip blue.

Teacher's tip

Let pupils read the status before they control anything. That teaches them a robot must always check what state it is in.

Your own AI assistant, with privacy in mind

With *only_voice* mode you switch off the built-in voice assistant of the X2 Ultra and your own assistant takes over the conversation. Your school stays in control of conversations and data.

How only_voice works

- Wake word and speech detection stay active.
- Agibot's built-in language model is switched off.
- Your software receives cleaned-up microphone audio.
- You can always switch back with normal mode.

The local route

Microphone, speech recognition, a language model such as Claude, speech back through the speaker. The language model triggers gestures and expressions from a fixed list of permitted actions. Walking only after the teacher confirms.

Privacy: where does the data go?

ROUTE	WHAT HAPPENS	ADVICE FOR SCHOOLS
Built-in assistant or Agibot's LinkSoul cloud	LinkSoul's privacy policy mentions processing in China and Singapore and sub-processors such as OpenAI, Microsoft and Perplexity.	Do not use with pupils without consulting your data protection officer.
Local route with only_voice	You choose the speech and AI services yourself, for example with servers in the EU.	Recommended. Record the choices in a data processing agreement.
Assistant off, own code only	No conversations go to external services.	Safest choice for levels 1 and 2.

Agreements for the AI lesson

- The teacher or RaaSX manages the AI connection; pupils do not use personal AI accounts.
- Do not store camera images or audio of pupils unless agreed in advance.
- The language model chooses from a short list of safe actions; a teacher supervises with the remote control.

Not legal advice. Have the use of speech and cameras with minors assessed by your data protection officer.

Become a pilot school: we are working on funding

RaaSX is preparing a grant application to bring programming with humanoid robots into education on a structural basis. We are looking for a small group of pilot schools to develop and test lessons with us.

Where we stand

We are preparing an application and exploring several regional and national schemes for innovation in education. Nothing has been awarded yet, so we deliberately name no amounts.

What it can offer your school

If awarded, the grant can cover part of the costs of lesson development, support and use of the robot. Pilot schools help shape the curriculum and are first in line.

Our proposal

STEP	WHAT HAPPENS	FROM YOUR SCHOOL
1. Introduction	We show the X2 Ultra and discuss your subjects, levels and wishes.	A one-hour meeting
2. Letter of intent	Your school states its interest in a pilot. That support strengthens the application.	A short letter, without financial obligation
3. Application	RaaSX submits the application and keeps you informed.	Nothing
4. Pilot	If awarded, the pilot starts with an X2 Ultra and lessons at the three levels in this guide.	A dedicated teacher as contact and feedback on the lessons

What if the grant does not come through?

Then your school is not committed to anything. You can still rent the X2 for a week or use it via RaaS at the regular rates on the next page.

Sign up your school as a pilot school

Email sales@raasx.nl or call +31 30 269 0012.

Sign up

Rent, RaaS or buy

For schools we recommend: start with a rental week to find out what works, then choose RaaS. The robot stays in the classroom for the whole school year and RaaSX takes care of maintenance.

OPTION	TERM	INCLUDED	X2 ULTRA
Rental	Per week, cancellable weekly	Robot under the RaaSX rental agreement; no SLA	€2,500 per week
RaaS	36 months	Maintenance service: monitoring, preventive maintenance, updates and repair work. Parts under manufacturer warranty. Response next business day.	**€1,969 per month**
Purchase	One-off	Robot; service via a separate service agreement	€39,000 one-off

Amounts exclude VAT and shipping. We budget integration and teaching support per school. Rates for the Basic and EDU are on page 4.

What RaaSX does for your school

- Delivery and briefing at the start
- Requesting SDK access from Agibot
- Help setting up the teacher PC
- Contact with Agibot support for faults

What your school arranges

- A fixed room with a free zone
- A teacher who supervises the lessons
- Approval from your data protection officer for the AI lesson
- Power and network in the room

RaaSX

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Book an introduction