

Digital Equipment Evolution and IT Activity of TU Graz study beginners (2011-2025)

Challenges of Tablet and AI Dominance
for University Digital-Sovereignty Initiatives

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Agenda

- Background
- Research Questions and Design
- Results
- Discussion and Outlook

Background: TU Graz

Higher Education in Austria, Europe

- 9 million inhabitants, ❤️ of Europe
- 22 public universities (plus 21 universities of applied sciences, 14 teacher training colleges and 19 (mostly small) private universities)
- About 365.000 students at Austrian higher education institutions/universities
- Most students attend public universities with comparably low fees (similar to Germany)

Graz University of Technology (TU Graz)

- Founded in 1811
More than 13,700 regular students
- 8 faculties, 97 institutes, 3 campus locations



Sources:

BMBWF (2026). Hochschulsystem
<https://www.bmfwf.gv.at/wissenschaft/hochschulsystem.html>

Homepage TU Graz, 2026

Illustration: "2009-11-28 München, Tierpark Hellabrunn 071" by Allie_Caulfield is licensed under CC BY 2.0.

Background: Welcome Days (1/2)

- Welcome Days: Introduction days for first-year students (BA) at Graz University of Technology.
- Aim: Provide essential information for a successful start to studies and introduce students to the engineering profession.
- Longitudinal Survey: Conducted since 2009 to gather data on IT equipment and communication tool usage.
- Topics Covered: IT equipment, communication tools, and more.
- Results: Published annually in the EdMedia Proceedings.



Background: Welcome Days (2/2)

- Unique Study: No similar longitudinal survey on IT equipment in higher education.
- Valuable Insights: Reveals trends and changes in IT equipment ownership among students.
- Importance: Understanding students' technology preferences and needs.
- Implications: Informing decision-making processes related to technology infrastructure and support.
- Future Research: Opportunities for further exploration and analysis based on the survey findings.



Research Questions

- How has the composition of digital equipment owned by first-year students at TU Graz changed between 2011 and 2025?
- In what ways are digital communication channels, social-media platforms, online and office productivity tools, and digital leisure activities being adopted or abandoned by this cohort over the same period?



Research Design

- Annual survey amongst study beginner at Welcome Days at TU Graz
- Paper-Pencil-Based
- In 2025 1,137 participants (of 1,644 study beginners)
- (14,131 questionnaires in sum over the years)

Results (1/7): Gender and age of survey participants

Table 1: Gender and age of survey participants in 2025

Key characteristics of the study beginners		2025
Number of analyzable questionnaires (N)		1,1137
Gender (in percent)	female	41,5%
	male	58,0%
	diverse	0,5%
Age	mean	20,088
	standard deviation	2,573
	min	15
	median	20
	max	49

Results (2/7): IT Equipment

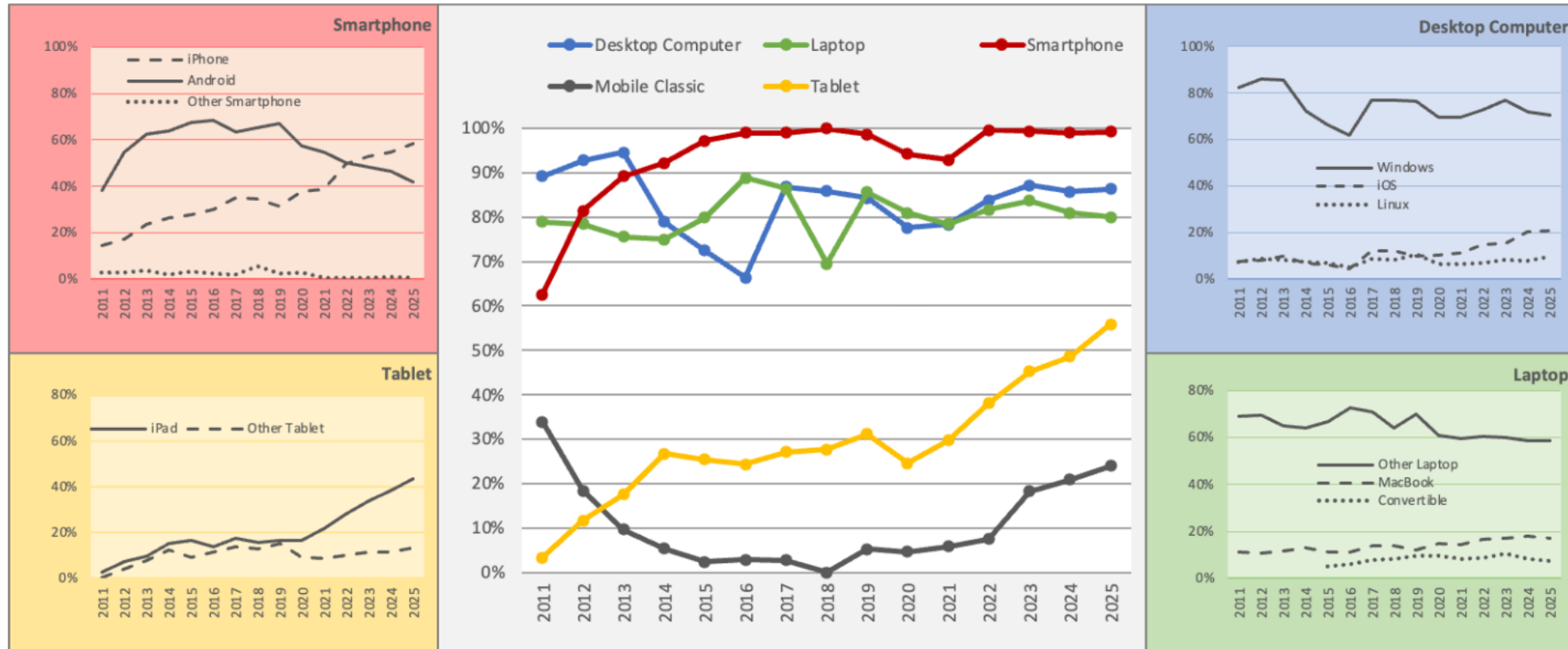


Figure 1: Equipment of first-year students at TU Graz between 2011 to 2025. Source: Annual survey of study beginners at TU Graz (n2011=632, n2012=715, n2013=789, n2014=968, n2015=889, n2016=944, n2017=872, and n2018=898, n2019=824, n2020=955, n2021=1,207, n2022=1,089, n2023=1,102, n2024=1,110, n2025=1,137).

Results (3/7): Wearables and other digital equipment

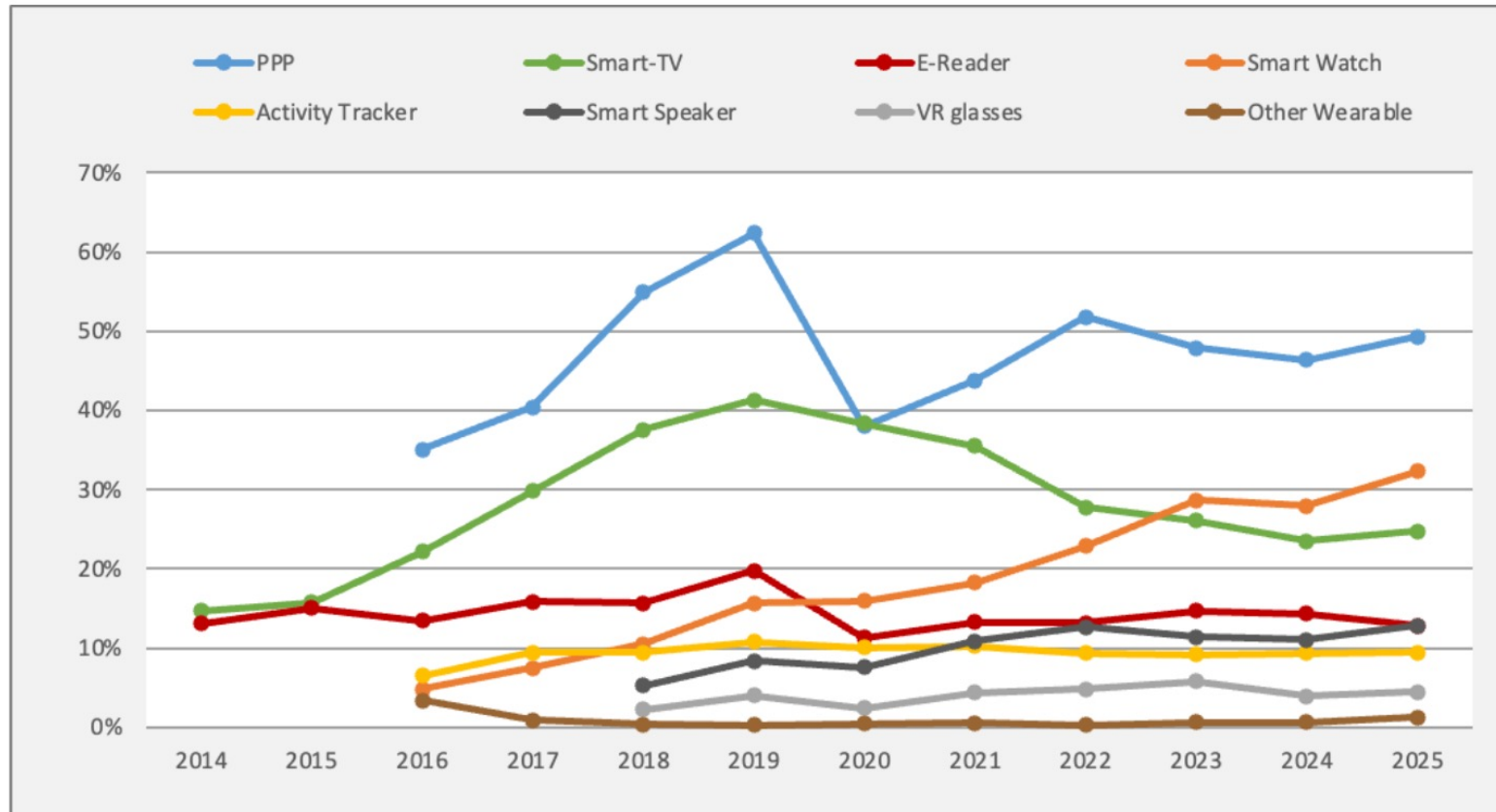


Figure 2: Wearables and other digital equipment of first-year students at TU Graz between 2014 to 2025. Note: older data were excluded because only a small subset was surveyed. Source: Annual survey of first-year students at TU Graz (n2014=968, n2015=889, n2016=944, n2017=872, and n2018=898, n2019=824, n2020=955, n2021=1,207, n2022=1,089, n2023=1,102, n2024=1,110, n2025=1,137).

Results (4/7): Social Media tools

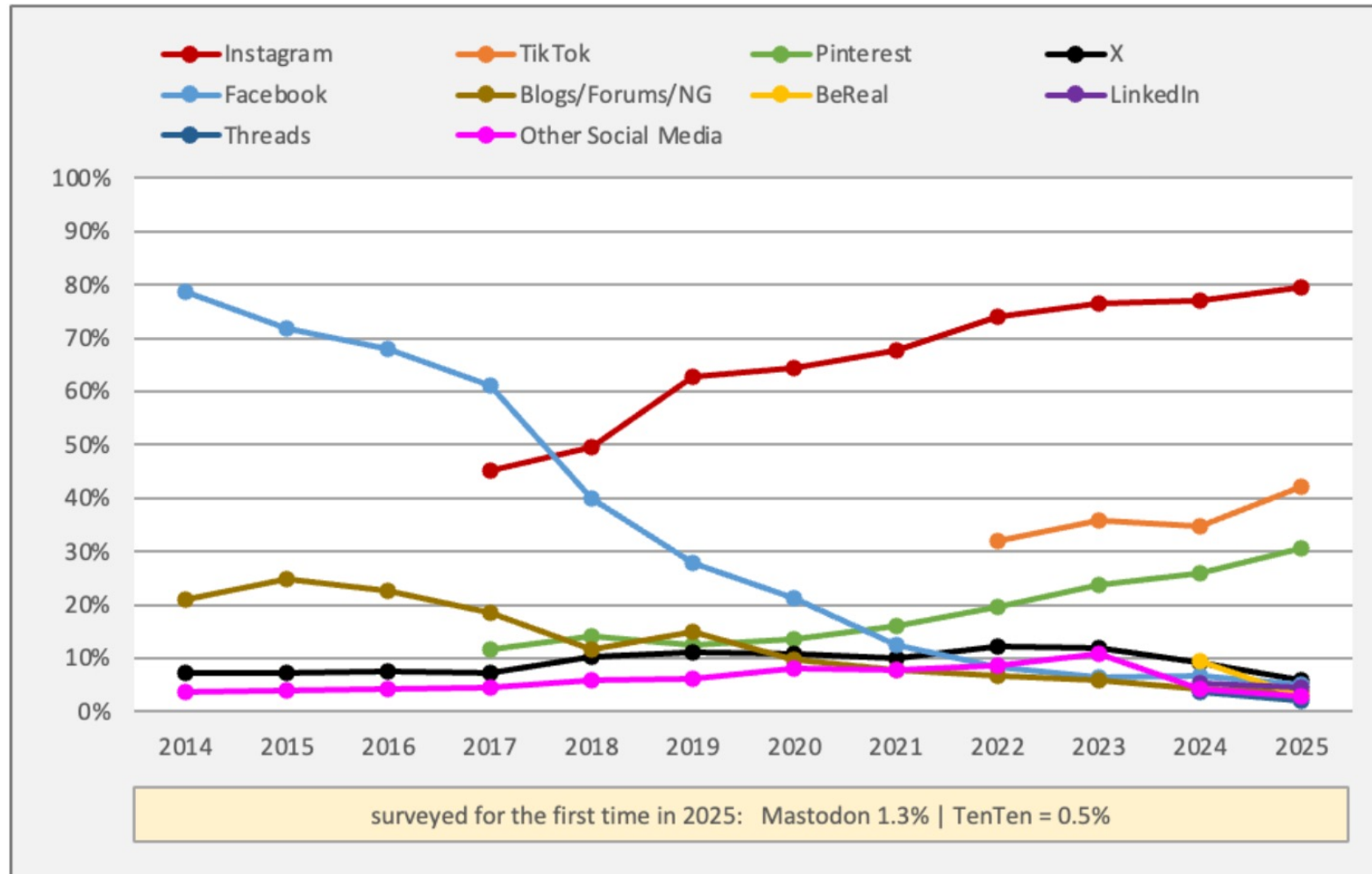


Figure 3: Social Media tools used by first-year students at TU Graz between 2014 to 2025. Values refer to frequent and daily use. Source: Annual survey of study beginners at TU Graz (n2011=632, n2012=715, n2013=789, n2014=968, n2015=889, n2016=944, n2017=872, and n2018=898, n2019=824, n2020=955, n2021=1,207, n2022=1,089, n2023=1,102, n2024=1,110, n2025=1,137).

Results (5/7): Digital leisure

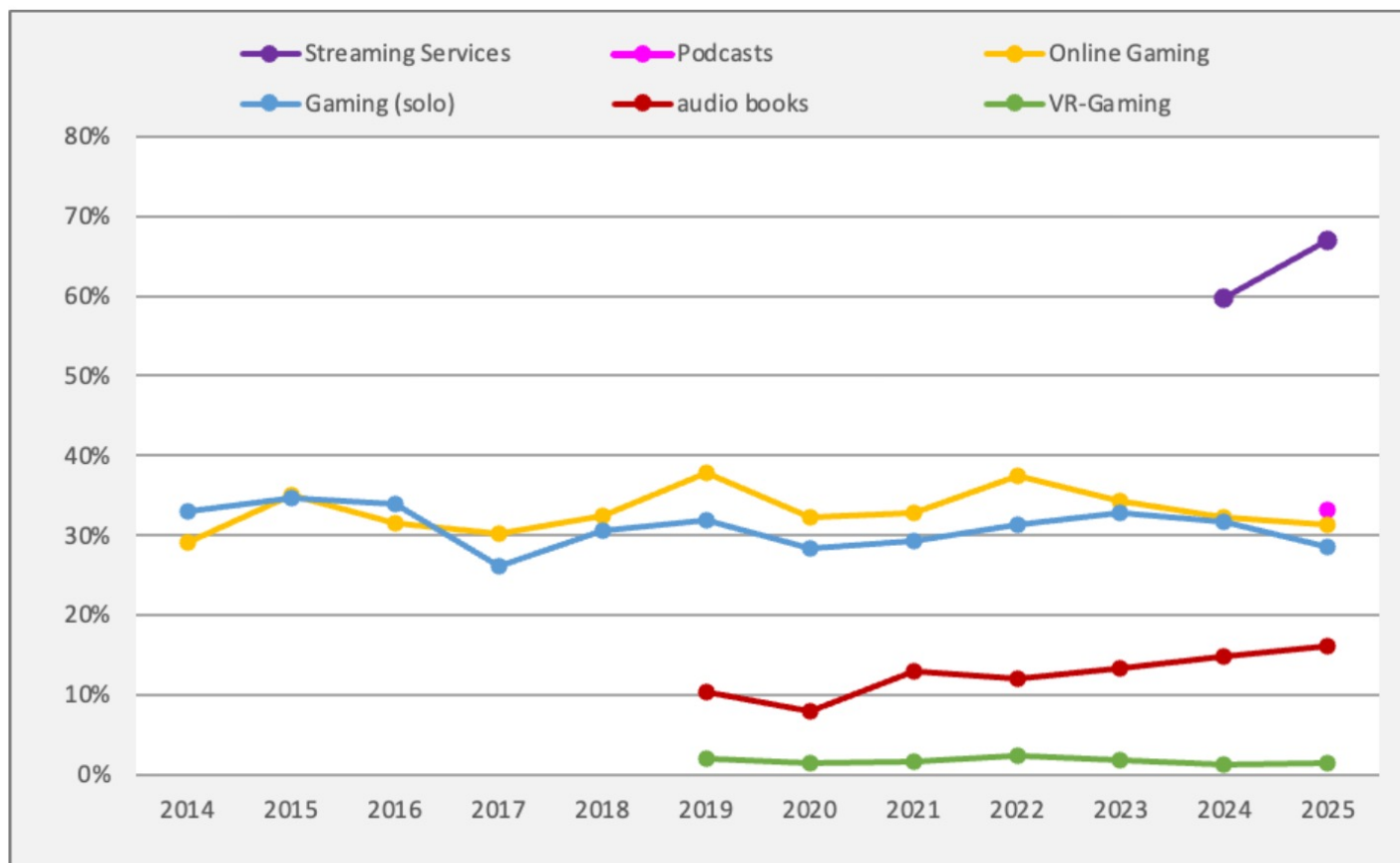


Figure 4: Digital leisure of the first-year students at TU Graz between 2014 to 2025. The questionnaire was changed concerning streaming services in 2024. Values refer to frequent and daily use. Source: Annual survey of study beginners at TU Graz (n2014=968, n2015=889, n2016=944, n2017=872, and n2018=898, n2019=824, n2020=955, n2021=1,207, n2022=1,089, n2023=1,102, n2024=1,110, n2025=1,137).

Results (6/7): Communication applications

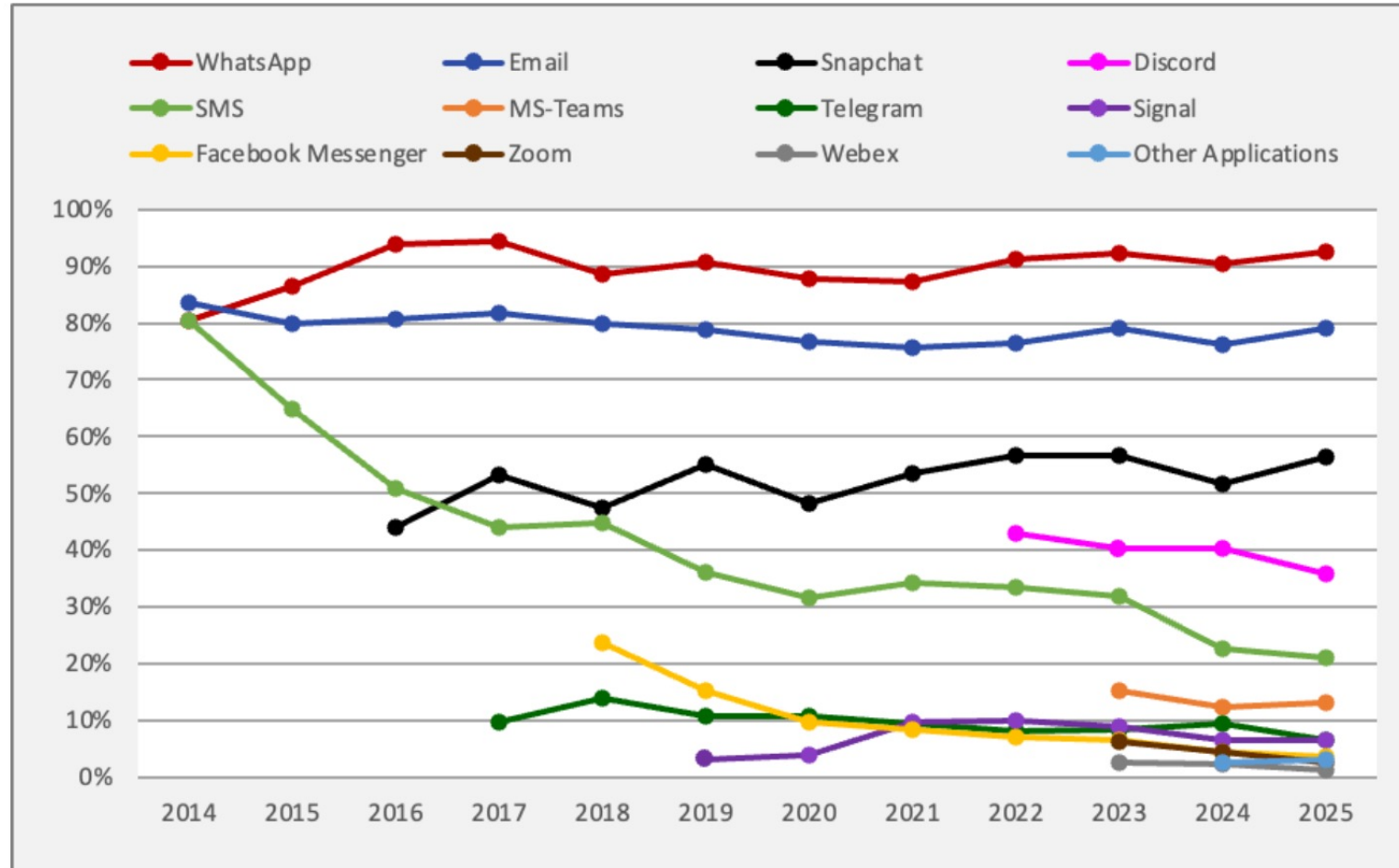


Figure 5: Communication tools used by first-year students at TU Graz between 2011 to 2025. Note: older data were excluded because only a small subset was surveyed. Values refer to frequent and daily use. Source: Annual survey of study beginners at TU Graz (n2011=632, n2012=715, n2013=789, n2014=968, n2015=889, n2016=944, n2017=872, and n2018=898, n2019=824, n2020=955, n2021=1,207, n2022=1,089, n2023=1,102, n2024=1,110, n2025=1,137).

Results (7/7): Office Programs, Open Source, OER, AI use

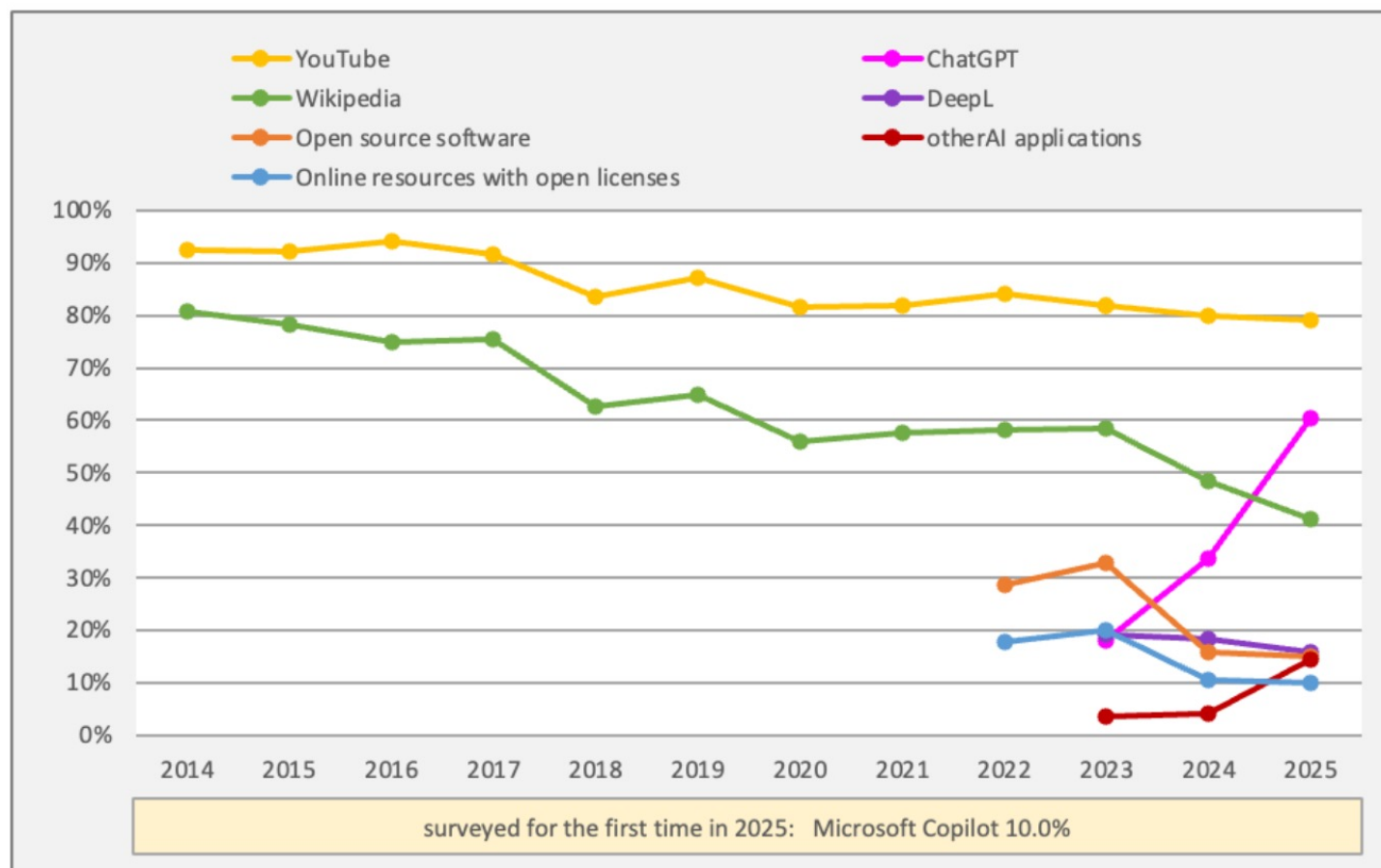


Figure 6: Office Programs, Open Source, OER, AI use first-year students at TU Graz 2025. Values refer to frequent and daily use. Source: Annual survey of study beginners at TU Graz (n2021=1,207, n2022=1,089, n2023=1,102, n2024=1,110, n2025=1,137).

Discussion 1/2

Results

- The 2025 data reveal that more than half of the incoming cohort now owns a tablet
- a clear majority reports regular interaction with AI tools such as ChatGPT
- (again) declining engagement with Wikipedia, open educational resources (OER) and open source

Potential interpretations:

- One possible interpretation is that the convenience and immediacy of proprietary AI services are displacing traditional open-knowledge practices.
- The tablet-centric workflow may favor cloud-based, closed ecosystems, further reducing exposure to community-maintained tools.

Discussion 2/2

1. The relatively low level of knowledge about OER sources among new students hampers the university's ability to foster a culture of open, reusable, and legally clear learning materials.
2. The dominance of AI-driven applications creates a dependency on external, often commercial, platforms
3. The extensive use of tablets as primary learning devices introduces additional constraints. Tablets are typically tied to closed ecosystems that restrict the installation of self-hosted, open-source software.

Outlook: OER and AI competence development

Taken together, these three trends impede both individual digital sovereignty and collective institutional sovereignty, which involves the development of robust competencies and the provision of sustainable, open-source solutions.

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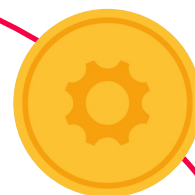


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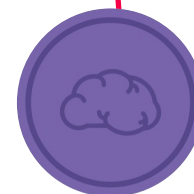
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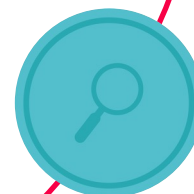
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