

EVALUATING ACCESSIBILITY OF IT SUMMER CAMPS FOR CHILDREN IN THE REPUBLIC OF MOLDOVA

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Introduction. The rapid growth of information technologies over recent decades led to the emergence of IT-oriented summer camps for children. Initially rare, these camps have become more prevalent, especially following the COVID-19 pandemic, to equip youth with essential IT skills early on [1]. Covering a range of fields from programming and mobile app development to robotics, cybersecurity, digital citizenship, AI, and virtual realities, these camps aim to enhance digital literacy, foster innovation, and prepare children for future IT careers [3]. As part of the IT industry, these camps reflect its evolving challenges and opportunities, promoting a culture of collaboration and learning [2][4].

In response to global IT trends, Moldova has launched initiatives to boost IT education and digital literacy, especially among girls and young people. In 2015, GirlsGoIT was founded to encourage girls towards STEM careers, and the STEP IT Academy Moldova branch was opened, offering IT education for all ages. 2016 saw the launch of IUCOSOFT LLC, focusing on Java programming courses. The Tekwill ICT Innovation Center, established in 2017, represents a significant public-private partnership, which includes Tekwill Academy Kids for IT and digital arts education for youth. The same year also saw the start of RoboCode School, focusing on robotics, and Impact Academies & Camps Organization, which promotes programming, digital literacy, and soft skills through summer camps. These efforts aim to develop the IT potential of Moldova's younger generation. The question is how accessible are the IT summer camps to beneficiaries – the children.

Methods, results and discussions. *Table 1* details Moldova's organizations offering IT summer camps for children, highlighting course topics and varying durations from 4 to 19 days. GirlsGoIT provides free IT courses for girls, which may also be attractive to children in difficulty, promoting IT careers, while paid camps cost between 94.74 MDL to 400 MDL per day, catering to ages 5 to 20. The accessibility of Moldova's IT summer camps for children is evaluated using aggregated indices which were elaborated by authors through normalized scaling method [5]: affordability index (AFI), age inclusivity index (AGI), course topic diversity index (CTDI), and holistic accessibility index (HAI), with calculations based on camp costs, age range, and course variety. The AFI index, reflects the cost accessibility and, like the other indices, ranges from 0 (least) to 1 (most affordable). The AGI index is determined by the age range of children covered by the camps, while the CTDI index measures the variety of IT topics offered, both normalized for comparison. The holistic accessibility index (HAI) combines these metrics to assess overall accessibility.

Table 1.

Organizations from Republic of Moldova that provide summer camps for children by their characteristics and topic of their courses

	IUC OSO FT LLC	Girl sGo IT	Impact Academies & Camps	Tekw ill Acad emy Kids	RoboC ode	STEP IT Academy Moldova
Tour duration (days)	19	10	4	4	10	12
Tour price (MDL)	1800	Free	950/1200/1450	1600	2150/2300	1290/1590
Tour price (AZN)	173.38	Free	91.51/115.59/139.67	154.12	207.09/221.54	124.26/153.15
Tour price per day (MDL/day)	94.74	Free	237.50/300.00/362.50	400	215/230	107.50/132.50
Tour price (AZN/day)	9.13	Free	22.88/28.90/34.92	38.53	20.71/22.12	10.35/12.76
Age coverage (years)	10-16	14-20	5-17	7-16	8-15	9-15
HTML, CSS	✓	✓	✓	✓	✗	✗
3D Modeling	✗	✓	✗	✗	✓	✓
JavaScript	✓	✓	✗	✓	✗	✗
Adobe Photoshop	✗	✗	✗	✓	✓	✓
Video editing, videoblogging	✗	✗	✓	✓	✗	✓
Google Products/Services	✓	✗	✗	✗	✓	✗
Minecraft (programming, playing), Motion-Animation, Thunkable	✗	✗	✓	✗	✗	✓
Learning through Playing video games	✗	✗	✓	✗	✓	✗
Blender	✗	✗	✗	✗	✓	✓
Figma	✓	✗	✗	✗	✗	✓
VueJS, Google Firebase, Fusion 360, Arduino MCU, Machine Learning and Decision Trees – data science, cyber security	✗	✓	✗	✗	✗	✗
Robotics (LEGO® WeDo®, LEGO® Mindstorms® EV3/LEGO Education SPIKE™ Prime)	✗	✗	✗	✓	✗	✗
Python (programming)	✗	✗	✗	✓	✗	✗
Tinkercad, The Sandbox, Pygame library (Python), Future jobs	✗	✗	✓	✗	✗	✗
Digital greeting, Tech Crafting, Digital art	✗	✗	✗	✓	✗	✗
Minecraft (Python), SmartGlove, MeteoScanner, Smart sensors, OLED display, Canva	✗	✗	✗	✗	✓	✗
Micro:bit, Filmora, Animaker, Adobe Premiere Pro, Paint.NET, Clickfusion, Adobe Express, SketchUp, Pixcap, Kandinski 2.0, Gamma.App, AutoDraw, CoSpaces, Lua	✗	✗	✗	✗	✗	✓

(programming), Steam, Wix						
Affordability Index (AFI)	0.763	1.000	0.250	0.000	0.444	0.700
Age-inclusivity index (AGI)	0.400	0.400	0.800	0.600	0.467	0.400
Course topic diversity index (CTDI)	0.075	0.170	0.189	0.226	0.170	0.453
Holistic accessibility index (HAI)	0.413	0.523	0.413	0.275	0.360	0.518

Source: Elaborated by the authors

Results show that GirlsGoIT, IUCOSOFT LLC, and Step IT Academy Moldova as the most cost-accessible camps. Impact Academies & Camps and Tekwill Academy Kids score high on age inclusivity, while Step IT Academy Moldova leads in course topic diversity. GirlsGoIT and Step IT Academy Moldova are found to be the most accessible overall, with RoboCode camps showing balanced scores across all indices, indicating consistent accessibility. These indices simplify the process of selecting suitable IT summer camps for children.

Conclusions. The study underscores the importance of IT summer camps in Moldova in equipping children with crucial IT skills and promoting digital literacy, aligning with global trends in technology education. Highlighting initiatives like GirlsGoIT, Tekwill Academy Kids and other similar ones, it points to efforts in making tech education inclusive and accessible. Through affordability, age-inclusivity and course topic diversity indices, the study reveals the diverse accessibility of these summer camps. The introduction of the holistic accessibility index (HAI) can aid parents in selecting suitable camps, emphasizing the summer camps' role in preparing youth for digital futures. In brief, these summer camps are key to nurturing a skilled, innovative, and diverse future workforce in the tech industry.

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Key words: summer camps, cybersecurity, digital citizenship, education

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