Cognitive Science

New Media – Education [1/2017]

Dorota Siemieniecka

Nicolaus Copernicus University, Toruń, Poland
e-mail: dsiemien@umk.pl

Wioletta Kwiatkowska

Nicolaus Copernicus University, Toruń, Poland
e-mail: wkwiatka@umk.pl

Kamila Majewska

Nicolaus Copernicus University, Toruń, Poland
e-mail: majewska@umk.pl

Małgorzata Skibińska

Nicolaus Copernicus University, Toruń, Poland
e-mail: gosiek@umk.pl

Selected aspects of self-education of pedagogy students at Nicolaus Copernicus University in Toruń in the context of new media

Abstract. Technological advances, changing standards of living and the aging of societies that encourage people to take different forms of additional learning and self-education, which is not only due to necessity, but also to the need to take care of personal development.

The article presents an overview of selected research results in the field of self-education of students of Pedagogy of Nicolaus Copernicus University in Toruń: understanding the concept, using TI tools in the discussed process and the purpose and methods of their use. It follows that educational activities should be undertaken with the aim to increase information awareness and the

level of information literacy of students, , from the first year of study, to secure the success and increase the effectiveness of self-learning process.

Keywords: self-education, students of Pedagogy of Nicolaus Copernicus University in Toruń.

Introduction to the problem

The problem of self-education is widely covered in academic literature (Półturzycki, 2004; 2006, p. 39; A. Kamiński, 1978, p. 320–321), which in the last decade may be attributed chiefly to social changes and the development of broadly understood information technologies. According to predictions from the World Economic Forum (Press release of 14/12/2016 at Dziennik Internautów Technologies), 65% of school entry-level children will in the future work in professions that do not yet exist. In a few years, contemporary students will find themselves on a dynamically changing labour market. The awareness of these challenges obliges teachers of all levels of education to gradually and regularly introduce their students to self-learning. This task is also enforced upon teachers by school core curricula (Ministry of National Education), which say that teachers are obliged to create didactic circumstances in which their students can:

– independently set the objectives of their actions and plan their work,
– search for new sources of knowledge,
– work in line with an established work schedule,
– apply appropriate learning strategies,
– be able to manage work times,
– evaluate their own activity (Siadak, 2009).

In effect, students should engage in educational activities "*knowingly, independently, timely and systematically*" (Kupisiewicz, 2005, p. 159).

In the subject literature, self-learning is analysed from many perspectives, including, among others, pedagogical, psychological, and sociological. From a pedagogical point of view, self-learning is "*a process of independent learning with objectives, content, form, sources and methods chosen and set independently by a learning person*" (Półturzycki, 2002, p. 209–210). Psychology sees self-learning as an "*externally-led work on*

one's own personality, especially on developing one's own knowledge, skills, views and convictions, and character" (Pieter, 1963, p. 13). In the context of sociology, self-learning means a controlled "*developing in yourself a more or less realised model of personality*" (Urbańczyk, 1959, p. 24). Discussions about self-learning emphasise that it requires individual activity "*towards increasing one's own knowledge as well as improving general and specialised skills. Objectives, content, conditions and means of self-learning are set independently by an individual. Recently, self-learning has become a vital element of life-long learning as a condition of efficient functioning in knowledge-based society.*" (Kupisiewicz, 2005, p. 159)*.* Additionally, Wincenty Okoń also emphasised that "*self-learning reaches its optimal level when it becomes a permanent life necessity and a base for lifelong learning*" (Okoń, 1981, p. 269).

Despite differences in their meanings (Gołek, 2014, p. 13), the subject literature interchangeably uses the following terms: self-teaching, auto-education, self-education, autodidactism, self-upbringing, lifelong learning (Prymak, 2010, p. 73–77). Self-learning means independent experiencing and learning, both theoretically and practically. Depending on the core definition, some educators emphasise the significance of acquaintance with and application of some defined rules and methods of work in the educational process. According to the definition analysis of the Polish term conducted by Bogusława Matwijów (Matwijów, 1994, p. 113), a lack of the above shifts the emphasis from self-learning ("samokształcenie") towards self-teaching ("samouctwo"). Certain nuances may also be distinguished between the term self-learning and the other above-mentioned terms. Everything depends on the approach, level of description detail, researcher's experience, etc. "*We can talk about self-learning when an individual learns something independently as well as when they consciously seek a knowledge increase and reach beyond the established patterns and programme*" (Pawlak, 2009, p. 105). As a result, a properly conducted process of self-learning requires psychological maturity, self-awareness, self-control, self-directness and a sense of responsibility. The effort that students put into independent education originates in the need to seek, analyse, asses, gather and process resources adjusted to individual needs and skills (i.e. notes, projects, essays, thought maps, etc.) that are essential in the process of building one's knowledge. A huge role is played by motivation and the level of development of cognitive needs

(Kozłowska, 2014) that are "*mental and stimulating properties, providing direction and managing intellectual effort of a growing up man*" (Gołek, 2014, p. 13)*.*

In the discussion about self-learning we should analyse the process itself and its supporting factors but also (or perhaps chiefly) the results achieved in the effort. These could lead to a broadly understood development, personality changes, attitudes and behaviours. Independent work shapes the sense of responsibility as well as time and attention management skills. The process of self-learning may lead to developing interests and increasing knowledge, which may further contribute to additional and autonomous mental effort.

A key element that influences the process of self-learning is the cultural context. "*In intracontrolable cultures dominated by a belief that what an individual has to face in their life results from their own actions, people use elements of self-learning more often, they do not expect to receive detailed guidelines, and they want to obtain knowledge independently and value their autonomy in defining learning objectives. People brought up in extracontrolable cultures require more of teacher's help both in defining their objectives and ways of learning, and in finding learning motivation and measuring achieved results*" (Knowles, Holton, Swanson, 2009, p. 172–173).

When discussing self-learning, the role performed by teaching resources in the learning process is worth attention. The internet, social media, tablets (Siemieniecki, Majewska, 2015, p. 65–74), smartphones, educational websites (Skibińska, Kwiatkowska, Majewska, 2014) – not only help in searching for information but also wipe up the border between education and everyday life. More and more often informal self-learning falls in the spectrum of broadly understood education. Cooperation and social learning are becoming more significant, while new technological solutions provide practically unlimited opportunities of self-development (based on Striker, Wojtaszczyk, 2014, p. 53). Using IT tools, however, requires students to have at least a basic level of independence and self-directness (Wróblewska, 2006, p. 51; Knowles, Holton, Swanson, 2009, p. 214).

Selected research into self-learning

Surveys conducted by Małgorzata Striker and Katarzyna Wojtaszczyk in 2012 on a group of 256 people[1] show that in the process of self-learning students notice a range of issues. The most worrying ones include:

– awareness of a lack of systematic work (68.4%),
– too low motivation to study independently (49.2%),
– need to be in permanent contact with academic teachers (56.6%),
– need to be in permanent contact with other students (50.4%).

The above-presented results bring a range of concerns about students' future and their readiness to take up a job that requires systematic increases of knowledge and skills. According to remarks by Striker and Wojtaszczyk "*surveyed students are not prepared for studying, and hence self-learning at further stages of their life; what is more, in the last four years the percentage of students who notice their own deficiencies in skills characteristic to self-learning increased*" (Striker, Wojtaszczyk, 2014, p. 56–57). Research results of Fons Trompenaars and Charles Hampden-Turner confirm this. According to it, Poland belongs to a group of countries with extracontrolled culture[2], i.e. requiring precise orders and work in line with enforced methods

According to a report by Anna Szucka, Konrad Turek and Barbara Worek entitled „Rozwijanie kompetencji przez dorosłych Polaków" (Szczucka, Turek, Worek, 2014, p. 5), data collected between 2012 and 2013 show that 65% of respondents have not increased their competences in any way, including independent learning.

The next research report prepared by Beata Mroczek, Karolina Werner, Michał Leitgeber, and Magdalena K. Wyrwicka (Mroczek, Werner, Leitgeber, Wyrwick, 2011, p. 67, 68) provides some clues about students' motivation for self-learning. It shows that the motivation for 21.19% of students is to increase their chances to find a better, more satisfying job. Financial aspects – a well-paid job – matters to 12.73% of all sample persons. While increasing their qualifications is important to 9.97% and

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[1] Postgraduate students of management at the Department of Management of the University of Łódź.

[2] Contrary to the majority of Western European countries and the US.

obtaining additional knowledge and experience – to 9.63%. Ambition and self-fulfilment determined the activity of only every twentieth person (about 4.5%). Among other motivating factors authors listed: finding any kind of job (2.93%), acquiring new skills and experience (2.68%), competitiveness on the labour market (2.6%), development (2.35%), development of interests (2.26%), personal development (2.18%), increasing requirements of the labour market (2.09%), completing higher education (2.09%), promotion (2.09%), pressure at work and willingness to meet employer's requirements (1.84%), satisfaction (1.26%), self-improvement (1.09%), need to improve the quality of life (1.01%), safe and secure future (0.92%), willingness to succeed (0.84%), meeting objectives (0.84%), willingness to improve self-value (0.75%), not enough knowledge received at the university (0.75%), recognition and pressure of the environment (0.67%), willingness to find a better-paid job (0.67%), professional development (0.59%). The following factors were mentioned by students much less often: entering into a good profession, fulfilling dreams, receiving industry news, having a better start, avoiding conscription, functioning in society, career, pressure at school, new opportunities, lack of jobs in the profession of first choice, changing jobs, fulfilling needs, respect, too much free time, meeting interesting people, self-reliance and independence, gaps in education, passion, willingness to get some life experience, too much money, protection against addictions, competition among students, better time-management and persistence. These values were declared by less than 0.5% of all sample persons.

Research into students' and teachers' activity was also carried out at the School of Economics in Poznań (Kierzek, Tyburski, 2005) to indicate which IT tools are used by students to increase their knowledge. The research indicates that 90% of students uses internet to the extent allowing them to obtain knowledge through digital materials published online. Students believe that electronic materials published online provide good support to the process of learning. That research shows that students find text materials and multimedia presentations the most efficient in self-learning (Siemieniecka, 2012).

Therefore it is not difficult to notice that self-learning process is very complex. It requires not only a good preparation but also strong and persistent motivation necessary to overcome difficulties resulting from learning independently.

Analysis of authors' own research

Information go out of date quickly, technologies advance, living standards change, and societies age which all prompts people to take up various forms of additional learning and self-learning. Modern technologies give access to vast information resources, allow communication to develop contacts and experiences, and improve qualifications. All people who want to work efficiently, adapt to market requirements, and meet social demands have to improve and increase their qualifications regularly. Self-learning results not only from a necessity but also a need to take care of personal development.

In the academic year of 2015–2016, the staff of the Didactics and Media in Education Chair of Nicolaus Copernicus University in Toruń conducted a survey on a sample group of 257 first-, second-, third- and fourth- year pedagogy students to ask their opinion about self-learning: understanding of this term, using IT tools in the described process and objectives and ways of using them. To collect research material and meet set objectives a survey with open and closed questions was prepared. Research sample was recruited in a purposeful manner to see in what way people who in the future should pursue lifelong learning and be able to prepare their students to self-education understand the essence of self-learning.

It is worth emphasising that students as a social group are characterised by above-average (110–119) and high (120–129) IQ results. The subject literature emphasises the characteristics of this group, among others: ability to learn easily, tendency towards self-learning, abilities to embrace school subjects (Strelau, 1987). Therefore a bigger engagement in the process of self-learning could be expected in comparison to other surveyed groups.

Those surveyed understand self-learning in a variety of ways. They see the essence of self-learning in independent learning with one's own effort and engagement towards personal development. Based on obtained opinions some categories can be distinguished that supplement one another and show the significance of the researched issues.

- **Fulfilling own objectives**

Those surveyed see self-learning as an opportunity to fulfil their own intentions, some assumed effects. It is extremely important for them as it gives meaning to their actions. It is reflected in the below-cited statements:

> "For me, it is setting objectives and pursuing their realisation. It is taking care of my own development, an investment in myself. Searching sources that give me bigger knowledge than what I learnt at the university."
> "Self-learning means developing myself and it allows me to get new characteristics and skills. It gives me a feeling that my actions have some goal I want to pursue, get more and more. Setting objectives is very important."
> "Self-learning means getting information and skills in a particular area of your own free will, through independent actions based on a goal you set for yourself".

These opinions prove students' awareness of the necessity to set one's own goals and pursing their realisation. A strong will is also necessary, as well as self-control and readiness for taking efforts to fulfil one's own educational needs.

- **Motives for self-learning**

Those surveyed indicate numerous needs they can meet through self-learning. They indicate willingness to develop and improve their own knowledge, skills, professional qualifications and interests. This is expressed in the following statements:

> "A process of independent learning, developing your own passions, talents, interests to develop yourself."
> "Developing on your own, learning new languages, participating in additional courses, broadening your knowledge in line with your own interests, profession or change of job, or promotion."
> "Developing your own abilities, talents through systematic learning and acquiring other experiences".

Those surveyed realise their own deficiencies, the need of self-fulfilment, professional requirements. According to the respondents, obtaining knowledge, skills, and developing one's own passions take place through authentic actions and initiatives. Independence, consistency and responsibility are necessary features of character in self-learning as they allow to stick to one's own decisions.

> "It is a process through which people find information on their own, develop their own interests and skills. The obtained knowledge can be used in practice, i.e. in our daily lives."
> "Improving knowledge through your own actions and efforts."
> "It is improving your own person, independent learning and increasing your own skills and qualifications".
> "Independent acquisition and supplementation of knowledge. Making choices towards self-teaching."

Students are more engaged, they want to obtain knowledge, and improve because "this is what they want", "not what they have to do". Hence a change in the perspective of carrying out the learning processes occurs, it is not enforced, it is taken out of one's own free will. Thanks to self-learning one's own intentions, ambitions, passions and curiosity can be realised.

• **Individual learning**

For respondents self-learning means independent learning adjusted to one's own personal needs, abilities, preferences and time. It is indicated in the following statements:

> "Self-learning is a type of individual learning, in which I want to learn, to study particular areas, I acquire knowledge on my own."
> "For me self-learning means individual learning or getting information about a subject I am interested in."
> "For me self-learning means individual learning. I want to improve my knowledge of selected subjects. I look for information on particular subjects on my own."

> "Learning according to your own rules, individual course of study, learning on your own."

The above-quoted statements mean that students put emphasis on personalisation and free choice while taking decisions.

• Ways of obtaining knowledge

Having decided to purse self-learning, one has to choose the form of self-improvement. Respondents point to ways of obtaining knowledge, skills, and competences within self-learning. The main sources of information include: books, magazines, source texts, internet, TV, trainings, courses, training resources. It is proved by a selection of respondents' views:

> "Self-learning means taking care of your constant development, reading books, learning languages, looking for information on various subjects in the internet, attending courses and trainings."
> "A process through which we obtain knowledge on our own, using books, internet, TV and other means that allow us to acquire and deepen our knowledge."
> "Independent learning, acquiring knowledge on your own through books, media, information technologies."
> "It is a process in which pupils and students take the initiative to learn, and study, using various sources selected on their own."
> "Learning without the aid of a third-party. We look for information on our own, we extract it from various sources, e.g. books, internet, source texts. It is 'learning on one's own.'"
> "Independent searching for knowledge through e.g. mass media, IT."
> "Increasing my knowledge through books, magazines, websites and various other sources, available to everybody."
> "Self-learning for me means obtaining knowledge on your own, individual way, out of a need to study further using available resources, such as books, or internet."
> "E.g. a Moodle task, internet language or self-development courses."

When explaining the term "self-learning" students point to independence from teachers. Unfortunately, in a new situation when they have to learn

without any support and purse their objectives consistently they might at some point give up. Often the presence of other person or a group of people is necessary to motivate and provide support with issues students have to face. With access to various contents, interaction and personalisation, internet opens up new possibilities of self-learning that are independent of place, time, and style of learning, Students may easily monitor their progress, combine everyday duties and learning. In the future, thanks to its development, e-learning will undoubtedly be a key form used in self-learning process that enables collaboration between people, discussions, and knowledge, skills and experience sharing.

- **Time and place**

For the surveyed students, self-learning is a process of informal extracurricular studying and improving, outside of school, university or work.

> "Willingness to work independently to acquire particular competences and skills that go beyond e.g. university curriculum or work environment."
> "Additional extracurricular learning outside schools, gaining new experiences and passions".
> "Constant learning outside the university, can be linked to deepening my knowledge and self-improvement".
> "It is a process of acquiring knowledge through improving your own qualifications, and experience. It may take a shape of informal learning."
> "It is acquiring knowledge on your own, outside of formal education. Getting new skills and abilities."
> "Improving your skills and increasing your knowledge through books, of your own free will, outside school or university."
> "Developing your passions, interests, as well as knowledge about subjects that matter to us. Doing that also outside school, e.g. in your free time or at home, etc."

The statements pointing out that self-learning takes place in one's free time and in home environment occurred most often. Hence it turns out that students prefer convenient conditions giving them a free hand in the learning process.

Majority of students also admit that they use IT tools in self-learning process. 257 people admitted it, 11 said they do not use them and 15 did not express their opinion. It is likely that people whose answer was negative can have a negative approach towards modern technologies due to earlier unpleasant experiences with them.

Information and communication technologies facilitate and streamline self-learning process and hence achieve assumed effects. It is also a chance to work and develop one's own ability of self-control and self-criticism in obtaining knowledge and effective functioning in knowledge society.

• Application of Information Technologies (IT)

A considerable majority of surveyed students (43%) named internet as a basic IT tool used in self-learning process. They access it most often on computers, both PCs and laptops (38%), more rarely on phones (18%) or tablets (6%).

Popular answers to the question about IT tools used in the process of self-learning also include: multimedia presentation (13%), text editor (10%), TV (8%), graphic design software (6%), courses, trainings, e-learning (6%), social media (5%).

The frequency of answers indicating social media is interesting They account for 5% of all the answers but were given only by first-year students, which allows to assume that for "freshers" social media perform an adaptive and integrating role allowing them to find their ways in new educational circumstances through sharing such pieces of knowledge as: "I know how", "I know where", and "I know who". Surveyed students do not specify how they use social media in the learning process.

The tools mentioned by students may suggest that they use information technologies during their studies mainly to get and manage information that are necessary to perform students' tasks and projects, and get credits for their courses.

These assumptions are confirmed by the surveyed students when they list objectives and ways of using IT tools in self-learning process. Most often students look for information (46%) that is interesting or necessary for their independent learning (13%) or to bridge the gaps or increase their knowledge (26%).

> "For me, IT tools are helpful in searching for information while making notes using various software, which I then use to learn."

Students want to use IT tool to improve their skills (7%), create presentations (7%) and make notes (6%), search and read articles and news online (6%) and prepare tasks for classroom use (6%)

> "I use them to develop my knowledge and interests. I find numerous and various interesting facts. I also use them to show resources to the group in an interesting way, e.g. as a multimedia presentation."
> "With a web browser I can find all information I am interested in and obtain almost all types of knowledge I require at a particular moment. I can also watch many films that improve my knowledge. The system of internet library allows me to quickly find books on the matters I want to study further."

Computer programmes and internet technologies also allow students to manage information, making it more interesting, transparent and understandable (4%) thanks to obtaining and processing photos, illustrating notes and making them more transparent.

> "To better and more transparently illustrate required information."

It is considerably worrying that information obtained online is treated as a basic source of information and its evaluation. Students treat internet as an encyclopaedia that allows them to evaluate their level of knowledge and correctness of its construction.

> "I search information online by inserting key words. I use these tools to obtain information, deepen my knowledge and verify it."
> "To learn new things, increase my knowledge and verify it."

Awareness of contemporary students' level of information skills, confirmed by our own research (Skibińska, 2016; Skibińska, Kwiatkowska, Majewska, 2014) and foreign literature on the subjects causes a certain level of anxiety (*Information behaviour…*, 2008).

Information literacy, defined as "*understanding and set of abilities enabling individuals to recognise when information is needed and have the*

capacity to locate, evaluate, and use effectively the needed information"
(Council of Australian University Librarians) is a basic minimum in pro-
cesses of effective orientation in the world of information and learning.

A British report entitled "*Information behaviour of the researcher
of the future*" that describes information behaviour of British Google
generation – i.e. young people born post-1993 that grew up in a world
dominated by the internet - concludes that we should not identify the
Google generation as experts in searching and using online information.

Selected conclusions of this report suggest a low level of information
literacy among young people (*Information behaviour...*, 2008):
– they do not spend enough time on evaluating pieces of informa-
tion, their adequateness, accurateness and significance;
– they do not understand well enough their own information re-
quirements and hence it is difficult for them to develop effective
information search strategies;
– they believe it is difficult to evaluate usefulness of a mass number
of resources and often carry out just a superficial review of their
content;
– many young people do not look for adequate library resources
and instead prefer to use a familiar and friendly search engine
such as Google to simplify solving their research problems;
– young people very often do not think about the origin of the
content provided by various internet content providers.

The cited report was based on a comprehensive review of the sub-
ject literature, exploration of survey data and a deep analysis of logins
in the British Library and JISC (Joint Information Systems Committee)[3]
website.

Report's conclusions are confirmed by research carried out by Dorota
Siemieniecka. Issues around students' problem solving and information
selection in the context of using the media were researched in 2008–2009.
Analyses confirmed differences in learning and selecting information
between students with various levels of abilities, creative attitudes and

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[3] A non-governmental public body in the UK tasked to support upper secondary
and university education as well as academic research through providing leadership in
using information and communication technologies (ICT), teaching, educating, academic
research and administration.

intelligence. Research looked into a degree of selection pedagogy students apply to resources obtained from various media sources and the evaluation of their usefulness in their projects (PBL). 78 students divided into 34 groups participated in the research. Based on IQ test results as well as tests in abilities and creative attitudes two groups were further distinguished: Creative (group 1) and Intelligent and Creative (group 2).

It has been noticed that when analysing materials coming from various sources students from the high intelligence, abilities and creative attitudes group put information through a selection process in accordance with their own assessment of usefulness in the project more often than students from low abilities and creative attitudes group (result is statistically significant $p < 0,05$ for $F = 7,358$, $p = 0,008$). When analysing materials from various sources people from the higher level of creative attitudes group (activity measured by a KANH survey developed by Stanisław Popek) put them through a selection process in line with their own assessment of usefulness for their projects more often than people with a low level of that feature.

The above-mentioned research also looked into the issue of students' activity in solving problems regarding searching, processing and presenting information. Research results suggest that application of new technologies in a learning process based on projects has the highest rate of students' engagement in information searching process. The author interprets it in a following way "the current school system (both the primary and secondary level) prefers information search and effectiveness in information finding. Information search in the internet is easy and does not require a huge amount of work. Despite a high level of intelligence and creative attitudes and abilities (that allow efficient problem solving and non-standard solutions) students only focus on finding the required piece of information". Research also showed a connection between the level of creative attitude and active processing of information.

It was also noticed that when solving tasks day-time students more often select resources and their usefulness ($p = 0,001$ for $F = 11,076$). Students working on projects in educational courses listed the following sources of information:

Table 1. Information sources used by students to find methods or ways of carrying out their projects.

Sources:	Number of choices	% of the group
Books, literature	61	78
Internet	74	94
Consultations with other people	25	32
Magazines	13	16
TV/Films	6	7
Consultations with teachers, knowledge from classes	9	11
Institutions: school, library	2	2
Interviews, reports, radio programmes	2	2
Dictionaries, internet encyclopaedias	2	2
Software	1	1
e-books	1	1
Own knowledge and resources	4	5
Courses and other projects	7	8

Source: D. Siemieniecka, Metoda projektów w budowie i realizacji systemu kształcenia studentów [Project method in constructing and implementing the educating systems for students], Wydawnictwo UMK, Wydawnictwo Adam Marszałek cop., 2012.

Students learn from the sources (media) they used to carry out the project. The internet is the most often used source (chosen by as many as 74 people, i.e. 94%). This category included Polish websites and topical websites. The dictionaries and internet encyclopaedia, a separate entry in the table, can also be included in the internet sources (Wikipedia, IT dictionaries, and practical guides). Books and literature are the next sources of knowledge. This category was chosen by 61 students, amounting to 78% of the group. Consultations with other people are also an important source of information. 25 people – 32% of the group – chose this category as important. The least used knowledge sources are software and e-books. It is interesting that only 2 students chose school (university) and library as a source of obtaining information (Siemieniecka, 2012).

A book by Erik Bratland, Dorota Siemieniecka and Bronisław Siemieniecki entitled *Knowledge, ICT and education: a variety of perspectives*

(2016) included, among others, other researches into ways through which students obtain knowledge, which is connected to self-learning activities. Research carried out in 2014/2015 covered a sample of 200 second-year postgraduate day-time students (1st semester), 192 women and 8 men. The research was conducted in 2014/2015.

Table 2. The methods of students' knowledge acquisition. Aggregate results

| Value	Count	Percentage
1. Internet, blogs, websites	98	10.53
2. Books, articles, magazines	186	**19.98**
3. Relations with other people (friends, family, social environment)	158	**16.97**
4. Formal education (institutions: school, university)	112	**12.03**
5. Everyday life, own experience, learning by trial and error method, imitation	101	10.85
6. Courses, trainings, informal education	37	3.97
7. Self-education, own creativity, development of interests, hobby	81	8.70
8. Practice and professional work	25	2.69
9. TV (films, popular science programmes)	77	8.27
10.Mass media	40	4.30
11. Travelling	16	1.72

Source: E. Bratland, D. Siemieniecka, B. Siemieniecki, Knowledge, ICT and education: a variety of perspectives, Wydawnictwo Adam Marszałek, Toruń 2016.

Students point to books, articles and magazines as well as relations with other people as sources of knowledge. They also emphasise the significance of formal education.

Research conducted in the Didactics and Media in Education Chair of Nicolaus Copernicus University in Toruń (Skibińska, 2016) explored the level of information literacy of first-year students at the Faculty of Education Studies and it concluded that in comparison to their real skills, students' self-assessment of their information literacy is overestimated. The surveyed students pointed to the internet as their first resort of planned research process and inspiration as well as information seek-

ing, and solving a defined research problem. This shows a high degree of trust among students in abilities and credibility of the internet, especially in Google search engine and Wikipedia online encyclopaedia. Majority of respondents do not have a systematized knowledge on information resources organisation and management. Their basic activity in this area is limited to the internet. Although the surveyed students are tech-savvy, they do not have critical thinking skills[4] that enable effective and, what is more important, independent learning. Without these skills the self-learning process that is fundamental to adult learning and listed as an inseparable element of contemporary times, is doomed to failure.

Fig. 1. Answers to the question about methods of students' knowledge acquisition
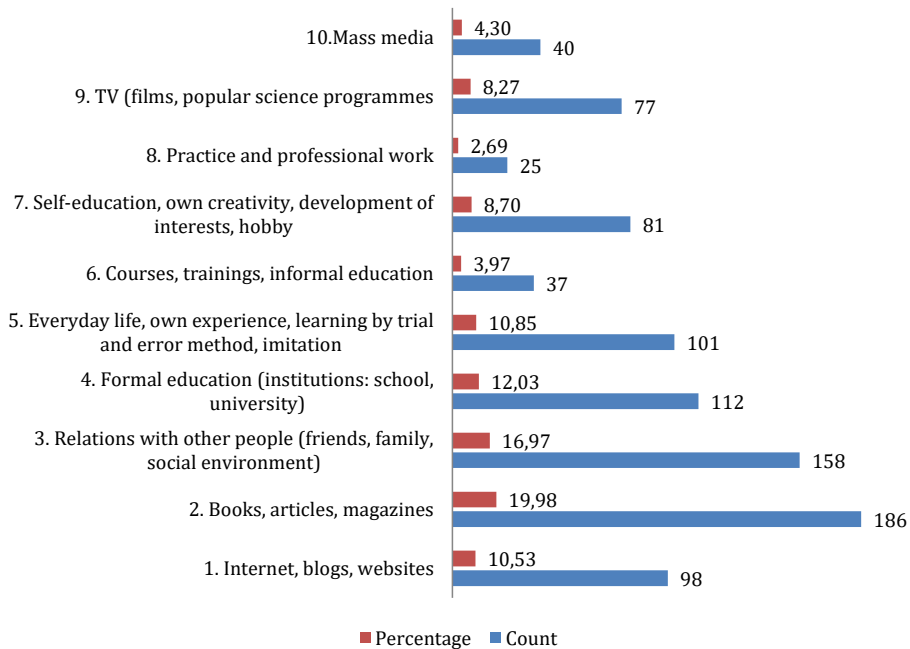
Source: E. Bratland, D. Siemieniecka, B. Siemieniecki, Knowledge, ICT and education: a variety of perspectives, Wydawnictwo Adam Marszałek, Toruń 2016.

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4 D. Siemieniecka, *Postawa i zdolności twórcze a styl użytkowania elektronicznych mediów*, [Creative Attitudes and Abilities versus the Style of using Digital Media] MADO,

Other research conducted in the Didactics and Media in Education Chair of Nicolaus Copernicus University in Toruń[5], concludes that learning via e-learning requires asking questions, authentic experience, critical thinking skills, activity, building interpersonal relations, students' motivation and engagement, presence of a teacher, and high quality teaching resources.

It follows that educational activities should be undertaken with the aim to increase information awareness and the level of information literacy of first-year students to secure the success and increase the effectiveness of self-learning process.

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