

Information and Communication Technology-Based Career Guidance Model for Young People

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Abstract: Information and communication technologies (ICT) used in career guidance have fast become both a necessity and an opportunity for new professional challenges playing an increasing role. The use of ICT is an integral component of the daily life of youth, and it is useful for them to professionally apply the ICT in their career guidance. The aim of the research is to develop an ICT-based Career Guidance Model and perform an expert evaluation of it. The aim of the Model is to contribute to the purposeful, conscious, responsible and persistent choice of careers by the youth. According to the theoretical aspects analysed in the present research, the best approach is to integrate ICT as an inclusive model, in which the ICT are used in parallel with other guidance activities. Three experts – professionals in pedagogy and career counselling – were involved in the expert evaluation. The expert evaluation of the model allowed finding that career counsellors, using ICT in their counselling, have to plan carefully their career guidance and combine the educational content, theory and technology. The expert evaluation allowed concluding that the model would contribute to the purposeful, conscious and independent choice of careers by youth if career counsellors confidently use adequate digital technologies in their career guidance for the youth.

Keywords: career guidance model, information and communication technologies, school education.

Introduction

Nowadays the youth attending schools, colleges and universities are called differently: the new generation, the google generation, the digital generation, the millennial generation. All the terms are used to stress the role of new technologies in the life of young people (Helsper, Eynon, 2009). There are very great opportunities to access information and communication technologies (ICT) in the 21st century, and the modern technologies pervade almost every aspect of our life. The Internet is accessed not only via computers but also smartphones and other mobile devices (Kettunen, Sampson, Vuorinen, 2015).

The new technologies caused changes in various areas of human life, including career counselling. ICT used in career guidance have fast become both a necessity and an opportunity, and professional competence in this new environment plays an increasing role. ICT offer a lot of opportunities and cause many potential threats. An opportunity ICT provides is that it is a great resource that can enhance the quality of and access to career guidance activities for those who need it. A threat is that the human factor, which is very important in career guidance, could be lost if excessively using digital technologies. Clients (young individuals in particular) who are used to exploit computer technologies in their daily life in various areas of their life increasingly expect career counsellors to use ICT.

The relevance of the research was also determined by the Guidelines for Education Development in Latvia for 2014-2020 that prescribe that the career education system has to meet the requirements of the 21st century – “the quality of career guidance as well as vocational and interest-related education for youth has to be enhanced through providing a modern and adequate teaching environment, including the ICT...” (Izglītības attīstības pamatnostādnes..., 2013).

In recent years, the use of ICT in career guidance activities has fast come into existence, which makes the sector of providers of career guidance services be aware of the need to enhance their understanding of use of technologies and modernise their services produced (Kettunen, Sampson, Vuorinen, 2015). It is important for school pupils to develop digital competence (skills related to the ability to gather and process information and use it in an organized way) and the ability to handle technological tools and scientific data (Racene, 2017). A number of researchers have stressed that it is important for career specialists to be competent and confident in the application of existing and new technologies in order to decide whether the technological opportunities are useful to their clients (Bimrose, Hughes, Barnes, 2011).

The aim of the research is to develop an ICT-based Career Guidance Model and perform an expert evaluation of it. The Model is for youth to contribute to the purposeful, conscious, responsible and persistent choice of careers by the youth.

Methodology

The present research was carried out at Latvia University of Life Sciences and Technologies, Institute of Education and Home Economics, within the master study programme Career Counsellor. General education secondary schools in Jurmala city, school years 8-12, were chosen to test the model in practice.

The research object is the use of ICT in career guidance at schools. The research question – what kind of model is required to implement career guidance at schools? The specific research tasks were set as follows: 1) to review the scientific literature on career development theories applicable to youth and the possibilities provided by and the role of ICT in communication among the youth; 2) to develop a model for the use of ICT in career guidance at schools; 3) to perform an expert evaluation of the model. Three experts were involved in the expert evaluation. The findings available in the scientific literature were analysed for use at modern schools implementing career guidance activities, given the modern era requirements and their adequacy to the target audience, i.e. the youth.

Research methods: scientific literature review and Friedman's test for data mathematical and statistical processing by using the SPSS (Statistical Package for the Social Sciences) program. Friedman's test is a nonparametric test that compares several paired groups.

Results and Discussion

Description of career development theories applicable to youth

Career choice models emerged in the middle of the 20th century, and these theories are used nowadays as well. However, the globalised economy of the 21st century raises questions about careers, particularly in relation to how individuals can cope with changes in their careers without losing themselves and their social identity (Savickas, 2012). As the form of careers changes from stationary to mobile, it is required to preserve the most appropriate career concepts and research studies based on the career models of the 20th century in order to use them in the 21st century as well. Nowadays a lot of things are demanded from youth, even though they have insignificant life experience. As soon as their stormy period of change during adolescence ends, they have to choose their future life path.

D. E. Super (1990), the founder of the Trait and Factor Theory, viewed the lifetime from three perspectives: the past – from where an individual came; the presence, in which the individual lives; and the future, towards which the individual moves. He continued developing his ideas for more than 50 years, making considerable progress with his spectrum of life stages that stressed the relevance of various life roles of individuals at certain ages. His spectrum of life stages reflected the different roles individuals played at various their ages and an understanding of the life space (Gikopoulou, 2008). D. E. Super has also stressed that transition from one career stage to another depends on the individual's personality and life conditions rather than the chronological age. The scientist has found that satisfaction with one's career and life depend on whether an individual finds an adequate framework for his/her abilities, needs, values, interests, personal traits and self-assessment. The term career guidance has emerged with regard to the individual's self-understanding and career choice ideas, which is defined as a process that helps the individual develop and accept an adequate assessment of his/herself and his/her role in the world of careers and test this process in reality in relation to his/her satisfaction with his/herself and the benefit for the society (Super, 1990).

K. Roberts (2000) believed that the effective choice of a career involves: the problem of the individual's adaptability and focusing career services on the individual's real problems and on positive information about the individual and his/her future behaviour (Gikopoulou, 2008).

Career guidance is vital to young individuals. However, it has to be taken into consideration that at the adolescent age it is important not only to help young individuals make decisions today but, what is much more important, help them build up their knowledge, skills and attitudes, which will assist them in making the right choice of a career throughout their lifetime (Patton, 2005).

Even though system elements and adolescent age real problems are the same as earlier, the very nature of the process has changed. Unlike today, as pointed out by W. Patton and M. McMahon, in the previous century the world of careers offered one area of jobs or even a job for the entire life (Patton, McMahon, 2006; 2014). Nowadays individuals change their careers many times throughout their life, and the choice of a career is only one of the areas where guidance by a career counsellor is required. Career development theories refer to the constructivist approach in the aspect of this change. The Trait and Factor Theory as well as career development theories are integrated into the constructivist approach from the modern perspective, thereby helping young individuals cope with 21st century challenges. M. Savickas attributes the influence of constructionism to the change in the structure of work and to the requirement for individuals to become agents in their lives and careers (Savickas, 2012). Constructivists assert that individuals actively construct their reality and are also able to actively construct a meaningful position in the context of work (Patton, 2005). In career guidance, the constructivist approach means active participation of career guidance recipients and formation of their own reality.

The role of a career counsellor has also changed, which earlier was that of an expert who helps someone solve problems, explain the problems through analysis or give advice. Scientist V. Peavy suggest employing the constructivist approach in career education, which means opening the way for movement, contributing to full participation, supporting change and giving individuals the right to actively take part in their desired future (Peavy, 1997).

A number of authors developed guidelines for integrating constructivism in career education (Brown, 1998, Doolittle, Camp 1999). If applying constructivism in career education rather than only in career counselling, the most essential difference lies in the form of learning, teaching and assessment (Patton, 2005).

According to constructivism, interaction between a student and a specialist as well as interaction among students are equally important (Shackelford, Maxwell, 2012). Constructivism and computer technologies – separately and often even jointly – have considerably affected the concept regarding learning challenges and created new learning opportunities for almost any teaching and learning situation, including traditional teaching in a class. One more essential effect of constructivism apparent in a technology-based learning environment is the fact that learning could be both a private and a social activity. Technologies provide an opportunity for more diverse and socially richer teaching contexts (Tamm, 2000).

The authors of the present research based the development of their ICT-based Career Development Guidance Model on the findings made by the above-mentioned authors: D. E. Super, K. Roberts, W. Patton, M. McMahon, M. Savickas, J. L. Shackelford and M. Maxwell. The content of career guidance and the methods used in the model were based on problem-focused individual and group learning, encouraging active participation, self-cognition and experience exchange. In developing the educational content for the model, the authors employed the concept highlighted by the above-mentioned theories, including the elements of the Trait and Factor Theory and constructionism.

Use of information and communication technologies in career guidance activities

Technologies could be simply added to the career area as one of the resources: they cause the need for strategic planning at every turn (Palomba, 2009). For this reason, if introducing ICT in career guidance activities, it is necessary to analyse potential technological solutions and identify the one being the most appropriate for the target audience.

The purpose of integrating ICT into career guidance activities is to assist young and adult individuals in making as much informed and appropriate choices of professions, education and occupations. The relevant literature is unanimous that both career guidance practitioners and ICT specialists play an important role in providing career guidance services (Harris-Bowlsbey, 1989; Harris-Bowlsbey, Sampson, 2001). The entry of ICT into this area provides opportunities to design and introduce new tools tailored for career counselling and guidance in particular (Jacob, 2012).

Everything indicates that the new technologies, especially social tools, have considerable potential in the field of career services (Hooley et al., 2010). A successful use of technologies and social tools in career guidance activities does not depend on only built-up skills or available technological features but also on readiness to accept changes that digital technologies can introduce in the provision of services (Kettunen, Sampson, Vuorinen, 2015).

The use of ICT in career guidance activities provides two essential gains: maximisation of learning opportunities and easy access to career resources (Sampson, Bloom, 2001, Bontariuc, 2007).

A great deal of computerised career guidance systems has been developed in a way to use them solitarily, without assistance from a career counsellor (Watts, 2001). However, most of the users of such systems believe that the greatest benefit is achieved if integrating the systems in broader career guidance activities. Scientists A. Barnes and A. G. Watts offered a career education model that used ICT in career guidance activities and had the following three elements to be employed: 1) as a resource; 2) as a communication tool; 3) for development of teaching materials (Barnes, La Gro, Watts, 2010).

J. P. Sampson too suggested combining the use of ICT in career guidance activities in several ways: 1) self-assistance (ICT resources are used without assistance from a career specialist); 2) homework in career guidance (after a counselling session, the client could be encouraged to employ self-assistance resources). J. P. Sampson proposed both kinds as a synchronous (phones, videoconferences, chat) or an asynchronous (e-mail, e-materials) activity (Sampson, Bloom, 2001).

T. Hooley (2011) mentioned the following kinds of ICT use by career guidance specialists: 1) to supply information; 2) to provide automatized interaction; 3) to provide a communication channel. *As a supplier of information*, the Internet offers a large information resource that could be used in career guidance activities as a broad library. Nevertheless, the authors agree with J. Bimrose that the use of broad sources, the effectiveness assessment of diverse resources, data integration from resources and their further creative distribution in various formats matching the needs of youth are not yet fully practised (Bimrose, 2017). *Automatized interaction* tries to recognise the individual and provide a customised service. It could be used to facilitate an initial examination and provide diagnostic elements, e.g. if doing some initial diagnostic tests. Technologies could be used to build up career education skills: e.g. through games and simulations, depicting the world of education and work in an interactive way. Online games too have become a channel of communication with automatized interaction among players (Maxwell, Angehrn, 2008, Betts et al., 2009). There are several ways of communication *via the channel*, which could be classified into three categories: 1) *one against one*. There is one career guidance specialist and one individual who needs guidance. E-mail, phones, social networks and another ICT could be used; 2) *one against several*. In this case, there is one career counsellor that has something to say and there are several individuals that listen to the counsellor (e.g. radio and television, blogs and social media technologies). The communication one against several/several against one involves interactive learning applications, the use of which has not been yet appreciated enough (Hooley, 2011, Salmon, 2003); 3) *several against several*. This is a kind of communication, in which individuals use online social networks to offer assistance with career development to one another (DiMicco et al., 2009, Din et al., 2012). This could involve the use of various tools, e.g. *LinkedIn, Facebook and Draugiem*, to establish online groups, going beyond the boundaries of the organisation and exchanging information. Customised applications for career counsellors could be developed to establish cooperation in the Internet environment by means of technologies.

Internet-based services (or service delivery methods) in the area of careers constantly change. For example, M. Offer (2004) referred to the following e-service delivery methods: Internet chat, e-mail, online discussion forums and text messages to and from mobile phones. However, A. Barnes, N. LaGro and A. G. Watts have identified as many as eight Internet environment tools: e-mail, chat, news groups, websites, SMS, phones, videoconferences and computer programs (Barnes, LaGro, Watts, 2010).

For career specialists, the use of ICT as a resource requires mainly digital technology, information search, aggregation and analysis skills. The use of ICT as a kind of communication, however, requires performing an assessment of potential digital technologies (Bontariuc, 2007). J. Bimrose, S. A. Barnes and G. Atwell (2010) have summarised the necessary “digital skills” to be able use ICT in career guidance (Figure 1).

The skills summarised in Figure 1 indicate that a successful use of ICT in career guidance requires significant social skills. For this reason, an essential role is played by in-person classes, in which the skills necessary for the individual use of ICT are build up. Nevertheless, there could be a number of factors affecting the amount of necessary assistance provided from a distance by means of digital technologies after in-person classes: verbal limitations, goal instability and impersistence, inappropriate

self-assessment and the lack of confidence, the lack of motivation, mental health problems, barriers to the choice of a career (Sampson et al., 2000).

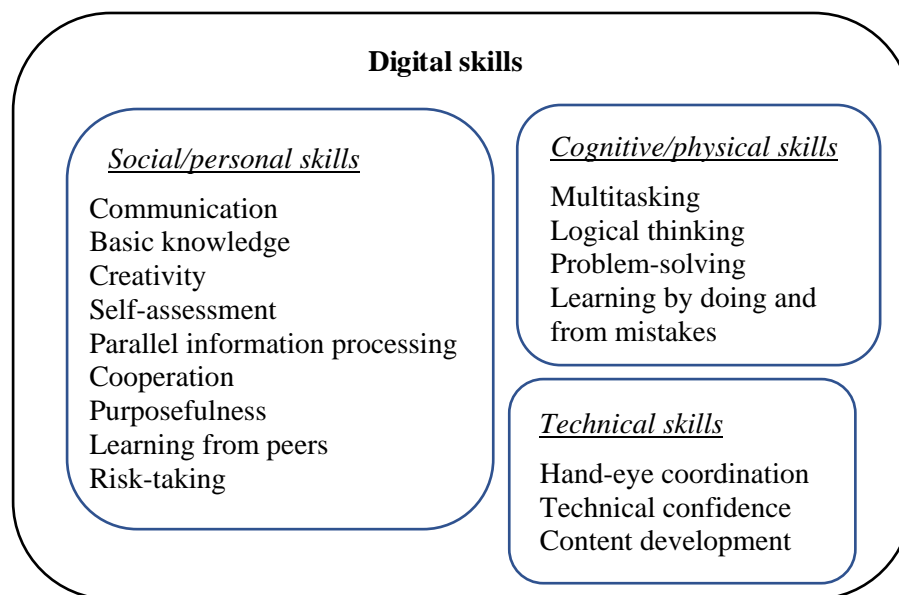


Figure 1. Skills necessary for the use of ICT in career guidance (Bimrose, Barnes, Atwell, 2010).

The authors agree with A. G. Watts – before using ICT as a component of career guidance activities, the career specialist has to be make sure that (Watts et al., 1996): 1) the client is intellectually, emotionally and physically able to use computer technologies and applications; 2) computer applications meet the needs of the client; 3) the client understands computer technologies and operations, and the career specialist has to follow the way the client uses ICT and to consider the use of ICT in future.

Career guidance model and the expert evaluation of ICT

In the 1970s, the definitions of career education and career guidance were enhanced: career education focused on “self-understanding”, “thinking about opportunities” and “making decisions”. The DOTS model was developed based on these ideas (Law, Watts, 1977):

- self-awareness – “what am I?” (S - self);
- opportunity awareness – “where am I?” (O - opportunity);
- decision-making – “what will I do?” (D - decision);
- transition learning – “how will I cope with it?” (T - transition).

This model was employed in planning career education and career guidance activities and events at schools for a long time. However, during the course of time, the model was enhanced, focusing on how students learnt rather than what they learnt (Law, 2001). It is important in real work life too, and when developing their career guidance model, the authors focused on the additional element of the DOTS model – the way how students acquire their knowledge.

The theoretical literature refers to three main phases in introducing the use of ICT at schools: during the first phase, students begin using computers at school, and IT is the choice of a particular curriculum; during the second phase, ICT become an integral part of teaching practices aimed at promoting learning; during the third phase, the elements that would not be possible if no ICT were used are integrated in the curriculum (Fluck, 2001). The use of technologies means that the curriculum is delivered by employing technologies as a teaching aid.

Teachers integrate technologies into education and career guidance for various reasons: to promote the participation of students in building up their 21st century skills as a best practice; to go the easiest way; to combine various teaching methods; to show demonstrations; as well as for research and communication purposes (Hechter, Phyfe, Vermette, 2012).

Scientists P. Mishra and M. J. Koehler developed a model for using technologies in education that mainly represented a combination of subject content, technological opportunities and pedagogy (Mishra, Koehler, 2006).

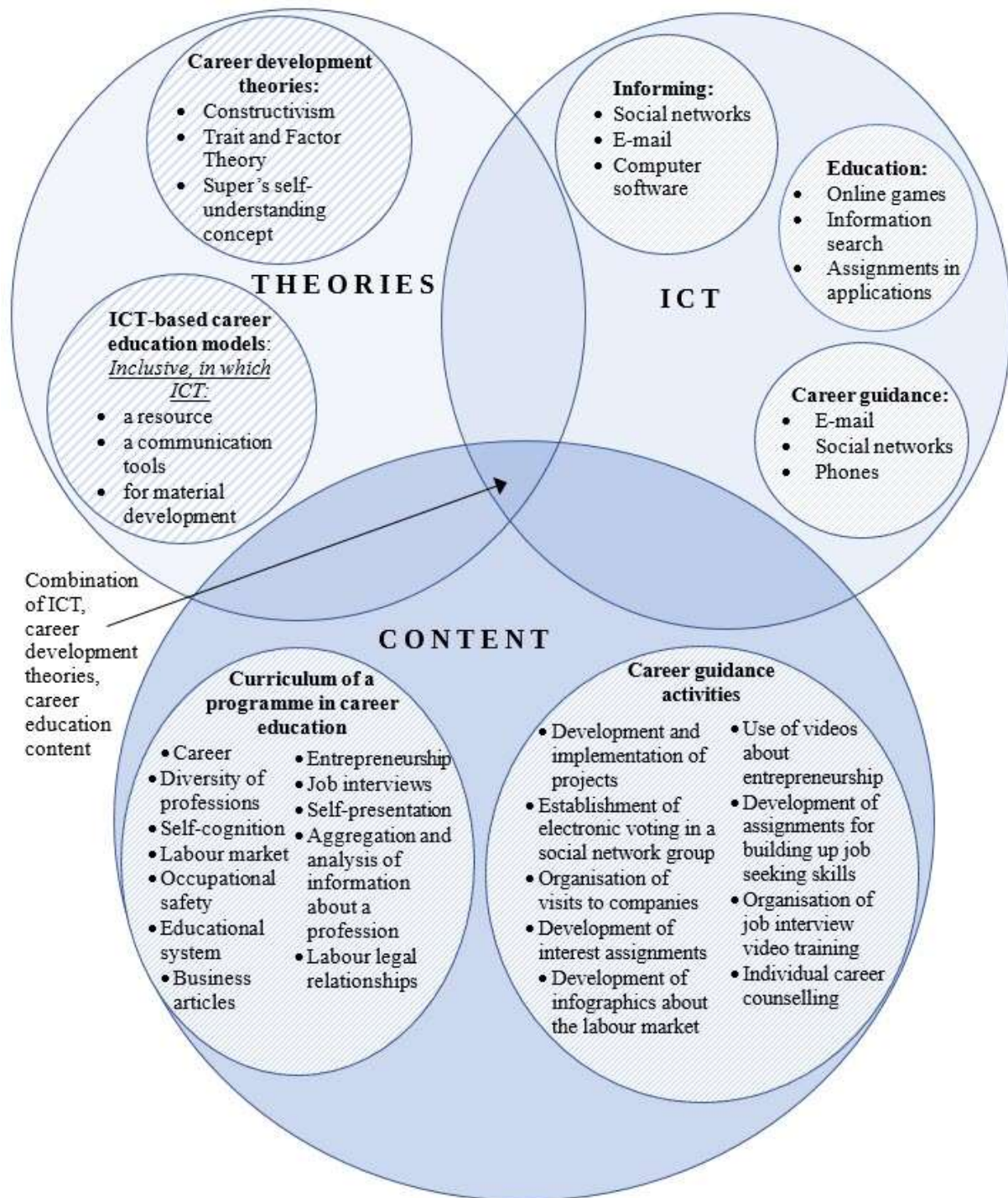


Figure 2. ICT-based Career Guidance Model.

The ICT-based Career Guidance Model (Figure 2) was developed based on both authors' work experience and the above-mentioned scientific findings. In the opinion of the authors, it is important to integrate the theoretical findings, the latest ICT achievements, the content of career education (professional diversity, labour market requirements and self-presentation skills) and the newest career counselling techniques (the project method, video training and company workshop visits) into career guidance activities. The authors believe that an interaction of the model's all sections: "Theories", "ICT" and "Content" in particular could yield the best outcomes in career guidance for young individuals.

As shown in Figure 2, the three circles overlap, i.e. interaction and a combination of all the three sections of the model is the most effective way of providing career guidance to young individuals. An expert evaluation of the model and its content of career education was performed in April 2017 to verify the consistency of the model with the goal set. The authors had a discussion with five experts to identify their compliance with expert selection criteria (experience in pedagogy, career guidance and ICT use). In the result, three experts were involved in the expert evaluation; their competences and experience met the selection requirements, as they were directly or indirectly associated with an interest education institution in Jurmala city. It was important to find out whether there was significant disagreement among the experts with regard to their ratings. The experts were marked by the letters A, B, C. All the experts were sent questions or criteria (Table 1) for the evaluation of the model to identify the usefulness of the model in providing career guidance to young individuals. Numbers from 1 to 5 points show the ratings by each expert from 5 – the highest to 1 – the lowest.

The expert evaluation's data were processed using the SPSS program and a Friedman's test. A Friedman's test is a nonparametric test that compares several paired groups. The test is used for interval and ordinal scale data. The data obtained are shown in Table 2.

Table 1

Expert ratings processed mathematically

No	Expert evaluation questions	A	B	C	Min	Max	A	Me	Mo	Σ
1.	Could the expected outcomes – purposeful, conscious, responsible and independent choice of careers – be achieved if implementing the career guidance model?	5	5	4	4	5	1	5	5	14
2.	Are the model's career education content and career counselling methods in compliance with the 21 st century standards for the use of information and communication technologies?	5	4	5	4	5	1	5	5	14
3.	What is your rating of the model on a five-point scale?	5	5	5	5	5	0	5	5	15
	Min	5	4	4						
	Max	5	5	5						
	A	0	1	1						
	Me	5	5	5						
	Mo	5	5	5						
	Σ	15	14	14						

Where:

Me - median;

Σ - the sum of all the elements;

Mo - mode;

Min - the minimum value;

A - amplitude variation;

Max - the maximum value.

Table 2

Friedman's test results

Number (N)	3
Chi- Square	1.000
Degree of freedom (df)	2
p-value (Asymp. Sig.)	0.607

The p-value = 0.607 > 0.05 acquired in the result of secondary processing of the data allows concluding that there were no significant differences in ratings among the experts.

After analysing the experts' ratings, the authors concluded that the experts evaluated the Career Guidance Model as the one promoting the purposeful, conscious, responsible and independent choice

of careers. The model's content of career education and career counselling methods, according to the experts, were in compliance with the 21st century standards for the use of ICT. The experts made the following comments: if implementing the Career Guidance Model, a career counsellor has to have ICT competences, and the outcomes considerably depend on the teacher of in-person classes. The authors also conclude that the understanding of a career guidance specialist about his/her role in this model and the ability to implement it are of great importance. Young individuals are used to the directive role of a teacher of classes, and initially such an approach is not easy to implement, as it depends on the teacher's pedagogical proficiency. The experts' opinions were consistent with the theoretical findings that in career guidance for young individuals, ICT have to be used inclusively – together with other career guidance activities. Overall, the experts have highly evaluated the model, which indicates that it is appropriate for the intended purpose – to assist young individuals in making independent, conscious and purposeful decisions on their future careers.

Conclusions

- At present, career guidance at schools, especially in career education, is mainly implemented in accordance with the Trait and Factor Theory, yet the adolescent age and fast progress in technology create a need for career guidance activities being based on the problem-focused approach. ICT are one of the means that contributes to solving the problem independently through searching, aggregating and analysing necessary information.
- ICT play an important role in the daily life and communication of young individuals. However, ICT cannot replace in-person guidance. A career counsellor, using ICT in career guidance, has to carefully plan his/her career guidance, combining the educational content, theory and technology. According to the theoretical aspects analysed in the present research, the best approach is to integrate ICT as an inclusive model, in which the ICT is used in parallel with other guidance activities. The Career Guidance Model developed by the authors integrates the career guidance content into in-person classes and individual counselling sessions, ICT into career guidance activities as well as incorporates theoretical aspects that determine the choice of a career.
- The model developed by the authors was evaluated by experts. All the three experts gave high ratings to the model, indicating that the successful implementation of the model and the achievement of the goal largely depend on the professionalism of a career counsellor employing the model. The expert evaluation allows concluding that the model will contribute to the independent, conscious and purposeful choice of careers by youth if the career counsellor confidently uses adequate digital technologies in his/her career guidance for the youth.

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