



Customization and use of digital storytelling in providing online career counseling services to students with physical-motor disabilities: A mixed study

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Abstract

Nowadays, students with disabilities suffer from various problems in entering the labor market and they need to receive career guidance services. This study was carried out in two parts of quantitative and qualitative with multiple purposes as a mixed design. In the qualitative part, challenges and problems of students in receiving career guidance and counseling were investigated and in the quantitative part, the effect of online career counseling on decreasing the challenges in receiving career counseling services by students with disabilities was studied. Moreover, in the quantitative part, the effect of online counseling on improving academic buoyancy, employability, and mental health of people with disabilities was investigated and its comparison with online career counseling based on digital storytelling was carried out. The qualitative part included 17 experts and students with disabilities and the quantitative part included 95 students with disabilities that were randomly assigned into experimental (i.e. digital storytelling and online career counseling) and control groups. The results of the qualitative part showed that students with disabilities suffer from various individual and social problems in receiving career counseling services. The results of the quantitative part showed that online career counseling with and without digital storytelling can solve the challenges against people with disabilities in receiving career guidance services to some extent. In the second part of quantitative results, it was indicated online career counseling with and without digital storytelling has a significant effect on academic buoyancy, employability, and mental health of students with disabilities and the use of digital storytelling in online counseling led to higher efficiency in employability and mental health.

Keywords Students with disabilities · Digital storytelling · Academic buoyancy · Employability · Online career counseling · Mental health

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1 Introduction

Nowadays, students constitute a broad stratum of a society and compared to other strata of society, they are closer to choosing a career and they need to choose it purposefully (Tuononen & Hyytinen, 2022). By career decision-making, in addition to choosing a career, the person chooses a particular lifestyle and for this reason, choosing a career is one of the main concerns of students in every country (Pordelan & Hosseinian, 2022). Higher Education (HE) is one of the most important and influential factors in finding a career for people (Healy et al., 2022; Hersh, 2014), specially people with disabilities (Langørgen & Magnus, 2020). People with disabilities in school or higher education institutes, do not show suitable academic and career progress (Sefora & Ngubane, 2021). In recent years, we have witnessed increasing number of people with disabilities around the world. Different people suffer from disabilities due to different reasons. The results of various studies have indicated that people with disabilities in different countries do not enjoy from suitable living qualities compared to other people in the society (Kuvalekar et al., 2015). These discriminations lead to detrimental impacts on individual and social life of people with disabilities. These issues not only affect people with disabilities, but include their friends, relatives, and almost all people in the society (Villanueva-Flores et al., 2014). People with disabilities face socio-economical inequalities, communicative limitations, and physical barriers in order to enter the labor market and experience higher stress and worse health status compared to normal people (Ghaneh-Ezabadi et al., 2021). Therefore, employment as a mechanism to compensated physical and social limitations of people with disabilities, rebuilding their daily lives and improving their life quality, plays an important role. Employment means being committed to participate in an activity, cooperation with other people, and career identity (Tsai, 2016). People need to feel that they are helpful and what they do, is meaningful in their own and others' views. For people with disabilities, such aspects are even more important.

1.1 Online counseling with/without digital storytelling

Online counseling is providing professional services such as counseling, surveillance, and training that is possible by using electronic devices such as telephone or computer (National Board for Certified Counselors, 2012). Online counseling process can be the same as in-person counseling and uses other technological facilities in online training and counseling. For example, online tests and interpretations, sharing content, instructional video clips, and related links are the facilities that can be used in online counseling (Pordelan & Hosseinian, 2022). The use of technologies beside online counseling services is dependent on counselors and there is no compulsion in this regard. However, the use of storytelling in psychology and psychotherapy has been taken into consideration by many counselors (Fish & Syed, 2021).

The use of digital storytelling can be adapted to career counseling theories and approaches. For example Pordelan et al. (2021). showed that digital storytelling

can be adapted to life design paradigm and can be used as a tool in this paradigm, because hearing the stories is one of the main principles of interview in life design paradigm. They stated that the use of digital storytelling can significantly increase career decision-making self-efficacy. Moreover, researchers believe that storytelling can lead to the assessment of clients in career counseling process and be used as a new method (McMahon & Watson, 2012). However, these studies were on healthy students with traditional forms of storytelling and digital storytelling. The purpose of this study is to use the guidance approach in digital process. According to Parsones, this approach includes three steps. In this approach, the person should be acquainted with his characteristics (e.g. talent, interest, values, personality, intelligence) and then, identify his peripheral career characteristics (the package used in the quantitative part).

It seems necessary to pay more attention to other digital sources and technologies in online career process. Storytelling, as a type of instructional technology, improves learning and treatment (Parikh-Fox et al., 2020). However, the majority of studies on online counseling have focused on online and offline counseling process (Ierardi et al., 2022; Linz et al., 2022) and less attention has been paid to investigating the importance of other technologies in online counseling process. About storytelling, various studies have been conducted and the majority of them have pointed to digital storytelling while (Brailas, 2021) it is needed to develop digital storytelling like other technologies. In this study, it has been attempted to further study online counseling by using storytelling and customize digital storytelling to take a new step in the development of digital storytelling. By customizing digital storytelling in career counseling, it means that digital stories should be created consistent with physical and mental conditions of people. For example, for a conventional career type with disabilities, video clips and files should be different from a healthy type, because these career types are different and their physical conditions are not similar. Different studies have shown that career, academic, and psychological variables have a significant relationship with career types and other individual factors (Okorie et al., 2023).

1.2 Academic buoyancy, career employability, and mental health in people with disabilities

In academic field, people with disabilities face a variety of barriers that limit their learning and progress in different learning activities. It is necessary that students have access to similar opportunities to participate in the society (Mir & Waheed, 2022). One of the disabilities in all societies, including Iran, is physical disabilities. This population includes people that somehow are deprived of normal abilities but this does not mean that they are not efficient and helpful. One of the problems that students with disabilities suffer more than normal people is employability. Employability consists of an ability to identify and actualize career opportunities within and among organizations (Fugate et al., 2004). As long as the community of people with disabilities is excluded from society and the cycle of employment and production, they become consumers and influence economic and social activities of other family

members as well. This causes many social and cultural problems in the society with serious mental and physical consequences for people with disabilities (Fantinelli et al., 2022; Olsen, 2018), because working has a therapeutic effect and creates a relationship between the person and the society, sense of participation in activities, and individual and social dignity that each of these factors may impact their mental health (Ebadi et al., 2013). Therefore, it can be said that people with disabilities suffer from more mental health problems compared to normal people. For example, a study by Shokri et al. (2015) on comparing the mental health of normal people and people with disabilities in Iran showed that people with disabilities obtained higher scores in physical health, anxiety and insomnia, and depression compared to normal people (higher scores mean less mental health).

Another variable that can have a significant relationship with the mental health of people with disabilities is academic buoyancy. Indeed, buoyancy is a reflection of mental health. Academic buoyancy means successful coping of students with academic barriers and challenges and overcome them. In another definition, academic buoyancy has been defined as positive response to the existing academic challenges and barriers. When the individual does something on his own, he not only feels exhausted, but will be empowered. Therefore, it can be said that any positive intervention in mental health, employability, or academic buoyancy can help people with disabilities have better living conditions.

The reason for selecting academic buoyancy, employability, and mental health in quantitative part is that studies in Iran show people with disabilities suffer from problems regarding these variables (Binaei Khajekini et al., 2022; Fayazi et al., 2019; Ghaneh-Ezabadi et al., 2021) that most of these studies were in-person counseling and psychotherapy and limited studies have been conducted on these people as online studies. Moreover, different studies have shown that digital storytelling can lead to better teaching and learning in terms of career, academic, and clinical aspects. Storytelling is based on feelings, movements, and senses to express challenging experiences (Carey, 2006). Therefore, it can play an important role in actualizing abstract concepts and ideas that can transfer knowledge (Adelle et al., 2022). Also, topics used in digital storytelling are personal stories and a set of different historical events and whatever that leads to observational learning (Wahyuni et al., 2017).

1.3 Digital technologies in career counseling and disability

Disability is a condition that limits performance and participation of people and is divided into medical and social disabilities. Historically, disability is a medical issue. People with physical disability suffer from a disability that includes organ defects, spinal lesions, and abnormalities related to bones and skeleton (Anderson et al., 2018). Studies related to education and career of students show that they face considerable barriers in universities and they are at different risks such as drop-out, because they feel university is not a suitable place for them (O’Keeffe, 2013). According to the conditions of these people, this study aims to investigate their barriers and problems in career and academic contexts and use online counseling

and digital storytelling as effective technologies to investigate and improve these problems.

Digital technologies are a tool to have an access to equal opportunities (Pordelan et al., 2022a) in order to receive career counseling services (Pordelan & Hosseinian, 2021). In this regard, evidences have shown that digital technologies (i.e. computer, laptop, smart phones) have changed the lives of many people with disabilities (Olumorin et al., 2022). To provide better career counseling services, modern and various technologies are used such as online career counseling and digital storytelling. Despite the impacts of online career counseling on the lives of people with disabilities, limited studies have been conducted on the use of online career services for people with disabilities in Iran and the majority of studies have concentrated on normal students without any disability (Pordelan et al., 2018). Online career counseling can be considered an assistive technology, because assistive technology has been defined by the United States as follows: Each item, component, or system, whether commercially, modified or customized, that is used to increase, maintain, or promote functional capabilities of people with disabilities (Fernández-Batanero et al., 2022).

Technology is increasingly being used for students both inside and outside of schools. Indeed, researchers have suggested that 95% of teenagers have use smart phones and 88% report that they have personal computer or laptop in their houses (Anderson & Jiang, 2018). E-learning not only provides an educational platform to transfer knowledge and skill to people with mental disabilities, but it is a platform that educates people with disabilities to prepare themselves for web-based employment such as electronic experiences, electronic marketing, electronic assistance, and other activities that exist in virtual world and electronic cities. In this space, people with disabilities are more suitable than normal people.

Rapid growth of knowledge is directly related to technology development. With the development of information technology and penetration of remote communication devices into the lives of people, modern educational tools and methods have been transformed. Providing online counseling services with the aim of reducing traffic, saving time, access to large amounts of information, facilitate learning, and create equal conditions for all people has increased in the last decade (Pordelan et al., 2020). Another technology that is being used beside counseling services (Fish & Syed, 2021; Parikh-Fox et al., 2020) or independent from counseling services (Büyükkarci & Müldür, 2022; Linz et al., 2022) is digital storytelling. According to cave drawings from thousands of years ago, it is obvious that storytelling has existed before printed sources and was used among people in oral or pictorial modes and with the rapid development of technology, is has been replaced by digital storytelling (Çetin, 2021). By digital storytelling, it means an artistic, creative, and at the same time aesthetic product that has been created digitally using multimedia tools (Sawyer & Willis, 2011). Digital storytelling is a new educational tool that is derived from information and communication technologies and its application for people with disabilities is optimistic (Sakellariou & Sakellariou, 2022).

The most important components of using digital storytelling in education are trust building, transfer of ideas, information and commitment. Students trust the narrator, because through storytelling, ideas and the main values are transferred to the listener and a commitment exists between the narrator and the listener (Çetin, 2021).

Creating and sharing digital storytelling in the online environment increase self-efficacy and observational learning (Kotluk & Kocakaya, 2017). Digital storytelling in the online environment emphasizes the strengths of people with disabilities and creates motivation for the listener to achieve more tangible and real goals through sharing stories in different chat groups (Saridaki & Meimaris, 2018).

By customized storytelling in this study it means that for each person and based on his disabilities and physical and psychological features, a unique story should be created and successful and efficient patterns should be based on each character. For example, a person with a disability in the hands and feet is different from a normal person or a person with a disability in feet and they have different life stories and each story is different in terms of character, interests, and talents.

1.4 Review of literature

So far multiple studies have been conducted on people with disabilities. However, limited studies have been conducted on career counseling and problems related to receiving career counseling services for people with disabilities and providing online career counseling services. Studies have shown that online counseling can help students in terms of career growth and academic progress but the majority of have concentrated on normal and healthy students and in Iran, limited studies are conducted on students with disabilities. Moreover, in similar studies, the use of digital storytelling has been limited to downloading video clips from YouTube or creating digital stories by researchers where no attention has been paid to disabilities while in this study, digital storytelling pays attention to spiritual and physical status of each person. Some of the conducted studies are as follows.

In a study by Santilli et al. (2022), an online career counseling group was created for unemployed youth during the Covid-19 pandemic. Twelve participants participated in online career counseling intervention based on life-design for an inclusive and sustainable future. According to the results, the participants showed a meaningful increase in scores in career adaptability, resilience, and orientation. In a study by Ofoegbu et al. (2020), the effect of digital storytelling on career burnout thoughts of teenagers was investigated. The results of their study showed that digital storytelling significantly decreased career burnout thoughts of teenager athletes in the intervention group compared to the control group.

In a study by Chen et al. (2021), an online career intervention was designed during the Covid-19 pandemic to help Chinese high school students to improve career readiness and cope with career decision-making problems. All participants completed an evaluation before and after the intervention of career maturity, professional identity, and career decision-making problems. The results showed that online intervention significantly increased career readiness of high school students and decreased their career decision-making problems. In a study by Ezegbe et al. (2018), the effect of digital storytelling on the understanding of HIV/AIDS risk among students was investigated. The results showed that digital storytelling has a significant effect on increasing knowledge and understanding of students about HIV/AIDS risk. In this study, like the previous study, digital stories were downloaded from social

networks and no customization existed. These studies are an example of studies on online career counseling or digital storytelling. However, studies on people with disabilities are very limited or digital stories are not prepared based on their conditions. In the current study, digital stories are automatically designed for each person. In digital storytelling customization, each person received interpretations from the completed questionnaires that according to these interpretations, instructional clips were provided. For example, for a person with career interest, related videos about successful people were created. Further explanations are presented in the quantitative part.

1.5 The purpose of this study

Students with disabilities have a right to take advantage of career counseling services and desirable living conditions. So far, very limited studies have been conducted on digital technologies role in providing career-education services for students with physical and motor disabilities in Iran and career counseling services are not provided based on their conditions. Therefore, this study aims to answer the following questions by considering the review of literature.

1. What are the challenges of people with disabilities in receiving career counseling services?
2. Can online career counseling based on digital storytelling and online career counseling solve the challenges of people with disabilities in receiving career counseling services?
3. Can online career counseling based on digital storytelling improve academic buoyancy, employability, and mental health of people with disabilities?
4. Is there a significant difference between the effectiveness of online career counseling based on digital storytelling and online career counseling on academic buoyancy, employability, and mental health of people with disabilities?

2 Method

2.1 Participants

This study is a mixed study with qualitative and quantitative parts. In the qualitative part and through interview with experts and students with disabilities, their problems in using career counseling services were investigated and in the quantitative part, first of all, the effect of online counseling on decreasing counseling students' problems in receiving online career counseling and the effect of online career counseling based on digital storytelling on academic buoyancy, employability, and mental health of people with disabilities were investigated.

In Table 1, descriptive characteristics of the participants are presented. The qualitative part included 17 experts in academic-career counseling and students with disabilities. In the qualitative part, purposive sampling method was used and sampling

Table 1 Demographic characteristics of the sample group in qualitative and quantitative parts

Number	N	Gender		Age		Working background		Expert/student	
		Female	Male	Minimum	Maximum	Minimum	Maximum	Student	Expert
Qualitative	17	7	10	23	62	0	29	8	9
Quantitative	95	43	52	23	36	0	4	95	0

continued until saturation (17 subjects). The quantitative part included 95 students with disabilities from Tehran, Karaj, and Esfahan. G-Power was used to determine the sample size. The statistical analysis method in the quantitative part was analysis of variance with repeated measures and three groups with pretest, posttest, and follow-up. Therefore, the appropriate number of the sample based on G-Power ($f=0.30$, $sig=0.05$) with a power of 80% is 27 for each group and 81 in sum that with a 20% dropout rate, a total of 98 people were selected as the sample that after the dropout, a total of 95 people were analyzed as sample of the study.

2.2 Procedure

2.2.1 Qualitative part

In this design, firstly, the researcher investigated the most important challenges of students with disabilities in using career counseling and guidance services through semi-structured interviews and with grounded theory. Then, the qualitative results were used as a guide to develop questions and tools in quantitative survey.

The data collection tool in the qualitative part was semi-structured interview that was carried out with the participation of experts and students with disabilities. In this part, the first stage of data analysis based on the grounded theory was done using coding. Theoretical coding included three stages of open coding, axial coding, and selective coding. In the end, texts resulted from interviews were investigated separately with an emphasis on important points about challenges of students with disabilities in using career counseling and guidance services and open codes were identified from the perspective of experts. Then, open codes were put together and classified and reduced as axial codes. After the analysis of codes from the seventeenth interview, due to repetitive codes, the researcher could not extract a new category. Therefore, the codes were saturated in the seventeenth interview and theoretical adequacy was resulted. In this study, in order to increase the acceptability of the findings, review methods were used and five interviewees confirmed initial coding's. In the final stage, the resulted categories were returned to three participants to be reviewed and confirmed and suggestions were applied.

Inclusion criteria in the qualitative part were as follows: (1) The interviewee should have a Ph.D. in academic counseling or career counseling or should have disabilities (2) The interviewee should be connected to people with disabilities (3) The interviewee should be interested in participating in the study. Each interview lasted for 26 min and the main question was that what are the problems of people

with disabilities in using career counseling and guidance services? The next questions were based on the provided answers. To observe ethical consideration, the purpose of the study, duration of interviews, and confidentiality were explained to the respondents.

2.2.2 Quantitative part

The research method in the quantitative part was a quasi-experimental design with pretest, posttest, and control group. Sampling in this part was voluntarily that means through a public call on social networks (i.e. LinkedIn, WhatsApp, Instagram, Telegram) and clinics that were in contact with students with disabilities, they were asked to participate in the study voluntarily. Of 228 people who contacted to register in workshops, 98 people were selected as the sample (Fig. 1) that after dropouts, 95 people constituted the final sample of the study. Random assignment of people was carried out and subjects were randomly assigned into three groups of control (32 people), digital storytelling (32 people), and online career counseling (31 people). The sampling process is indicated in the quantitative part and Fig. 1. In Table 2, they type of disability is presented.

All eligible people were contacted to arrange meetings and necessary coordination was made with them to hold a preliminary meeting. In the preliminary meeting, objectives and how to participate in sessions were explained. After completing the questionnaires as the pretest, complementary information about how to participate in sessions, objectives, and ethical principles was given to the participants. In this study, the control group received no treatment but two experimental groups received Parson's Career Theory package (Savickas, 2015) with the difference that the digital storytelling group received digital stories and clips in addition to the package as follows.

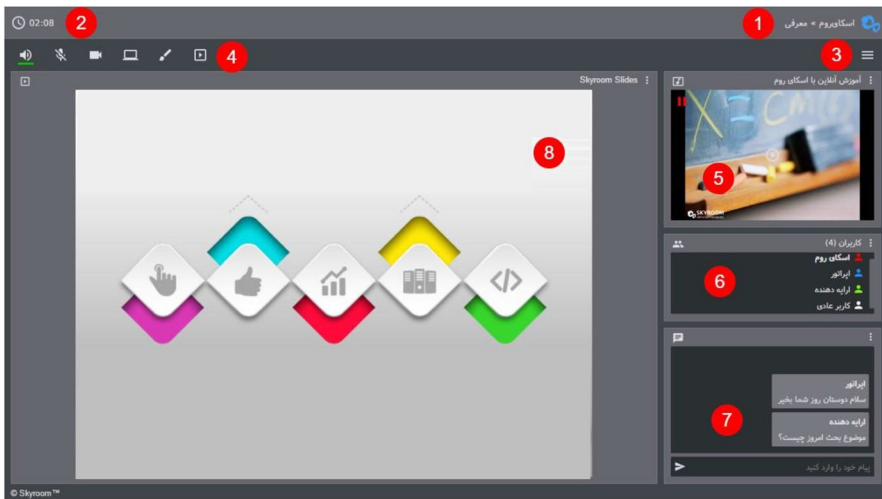


Fig. 1 Career counseling online environment

Table 2 Type of disability of participants

Type of disability	Type of disability	DS	OCC	CO
Amputation	Leg amputation	4	5	5
Neurological system disorders and spinal lesions	Limb paralysis	7	9	8
	Unilateral body paralysis	4	6	4
	Leg paralysis	7	5	9
abnormalities related to skeleton	Joints	4	4	2
	Skeleton	5	2	3
Biological and metabolic disorders	Respiratory	1	0	1

The digital storytelling group, after completing questionnaires of interest, personality, intelligence, and talent and demographic characteristics such as age, type of disability, number of siblings, information of parents, addiction history, and place of birth, received digital stories (three stories per session) automatically for three to five minutes. These stories were processed automatically according to the questionnaires and if any story was inconsistent with the person completing the questionnaire, it was reviewed and edited by the administrator and was sent again. In these digital stories, in addition to create digital stories automatically, in the end, related video clips (these motivational clips were designed according to the personality and talents) were suggested according to the type of disability, personality, interest, intelligence, and talent of each person to watch them and take notes and present them in counseling sessions. The online environment was based on Skyroom as follows (Fig. 1).

1. The logo of the holder with class title are shown in this section.
2. The training course duration is shown in this section.
3. The menu that shows facilities such as user information, connection status, settings, arrangement, and exit.
4. Toolbar in which communicative tools are provided.
5. In this section, the webcam image of users and media (audio or video) are shown.
6. In user window, the list of users present in the room with their roles is shown. Moreover, user management by the operator is through the same window.
7. In chat room, messages sent by users are shown.
8. The output of content presentation such as slide show, desktop, and whiteboard is shown in this window.

For storytelling, questionnaire links are given to them as email or in Skyroom and by completing the questionnaire, the results were interpreted and the codes were received. Then, video clips related to each user were created automatically after processing and a sample of questionnaire output was given to the person. In this questionnaire, six main interests exist that the arrangement of three interests shows the main interests of the person. This interpretation was done completely and placed in questionnaire output as a sample (Fig. 2). Digital story was based on the results of questionnaires that the final output was confirmed by users. For example, in the following questionnaire, the type is conventional and careers such

Figure 1. career-personality types colorful radar

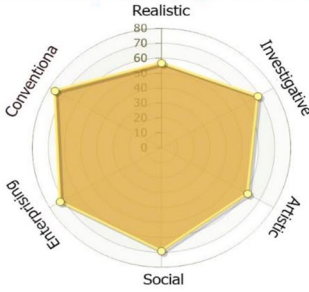


Figure 2. career-personality types simple radar

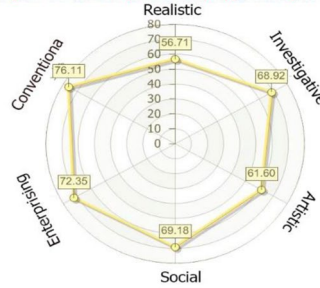


Figure 3. interests in self-assessments 1 and 2

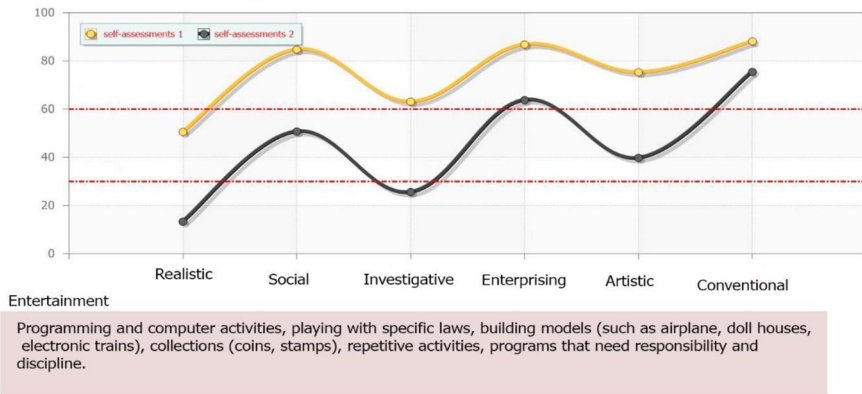


Fig. 2 An example of career interests output

as programming are suitable for the user. In the video clip suitable for this personality type, examples of successful people with disabilities were included. An example of a famous video clip suitable for this personality type is “handicapped with one finger” that this person became is successful person in programming in Iran. In Fig. 2, a sample of interests output is presented.

The counseling sessions package was based on Parson’s theory (Savickas, 2015) in six sessions of 90 min as follows: session 1: pretest, objective, goals, rules, and motivating students with disabilities and assign homework for the next session; session 2: identifying personality types, talents of students consistent with related tests, assigning homework for the next session; session 3: determining the amount of effort for objectives, identifying values and interests of people and providing explanations in this field; session 4: how to identify the labor market and adapting the self to the world of work; session 5: career adaption to the labor market consistent with the type of disability; session 6: posttest implementation and answering the questions. Follow-up test was implemented with a one-month interval. The inclusion criteria for the quantitative part were as follows: (1) Being student (2) Having physical-motor disabilities (3) Having minimal digital literacy (4) Interest in participation in the study. The exclusion criteria were

as follows: (1) Lack of interest in sessions (2) Participation in career counseling sessions at the same time (3) Lack of participation in more than two sessions. To analyze data, SPSS and descriptive and inferential tests were used.

Data collection in quantitative part was according to the questionnaires that people completed as pretest, posttest, and follow-up test. These data were collected as online questionnaire and analyzed by SPSS at two descriptive and inferential levels. According to the drops, data collected from 95 people were analyzed (control group: 33 people, online career counseling group: 31 people, digital storytelling group: 32 people). Complementary information about sample selection process is presented in Fig. 3. Pretest questionnaires were completed by the respondents in the first session (control group questionnaires were completed in the same day). Posttest questionnaires were completed after the training course and in the last session (control group questionnaires were completed in the same day). Follow-up questionnaires were completed one month after the training course. In the following, the list of questionnaires used in the study is presented.

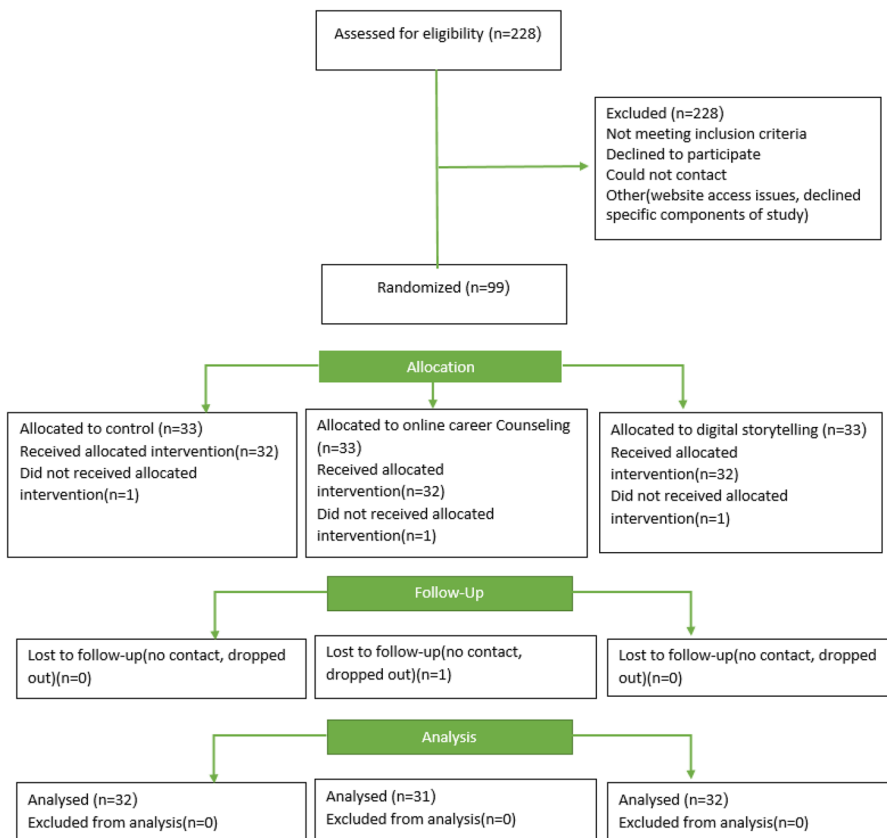


Fig. 3 Participant eligibility flowchart

2.3 Instruments

Academic buoyancy questionnaire this questionnaire has been developed in Iran by Dehghanizadeh and Hoseinichari adapted from the model of (Martin & Marsh, 2009). This 9-item questionnaire of academic buoyancy has been designed on a 5-point Likert scale from 0 to 5 (never to always). Minimum and maximum scores in this questionnaire are 9 and 45, respectively. In this study, reliability coefficient with Cronbach's alpha was 0.77 and correlation values of each item varied from 0.54 to 0.64 (Safa et al., 2021).

Dispositional measure of employability this questionnaire was developed by Fugate and Kinicki (2008). It has 25 questions that assess employability. This questionnaire has 5 subscales of career motivation (3 items), openness to changes at work (5 items), career identity (6 items), career resilience (8 items), and career proactivity and has been validated in several studies. The results of confirmatory and exploratory factor analysis showed that factor loading for the questions varies from 0.41 to 0.96; therefore, it can be said that the questionnaire enjoys from acceptable construct validity. The correlation between the subscales of this questionnaire varies from 0.27 to 0.58 and reliability coefficients for subscales of openness to changes at work (0.70), career motivation (0.78), career identity (0.68), career resilience (0.70), and career proactivity were calculated. This questionnaire was validated in Iran by Moghaddas and Nilforooshan (2020). In this study, employability means a score that the person has obtained from the sum of all questions. Reliability of this questionnaire in the current study varied from 0.70 to 0.76.

General health questionnaire the instrument used to examine mental health is GHQ that is a self-report questionnaire. This questionnaire was used for the first time by Goldberg in 1972 and has different forms. In this article, the 28-item form has been used that has four minor subscales, each with seven questions that assess physical symptoms, anxiety symptoms, social functioning, and depression symptoms. The scoring method is based on a 3-point Likert scale from 0 to 3. The total score of this questionnaire assesses mental health (Zare et al., 2016). The Persian version of this questionnaire has been used in different studies and its validity and reliability have been confirmed (Ghaffari et al., 2022; Olyani et al., 2022). The total reliability coefficient of this questionnaire is 0.96 (Zare et al., 2016).

The questionnaire of receiving career counseling services challenges for people with disabilities this questionnaire has been designed by using the data of the qualitative part that includes 23 questions and is scored based on a 7-point Likert scale from 1 to 7. It has two main subscales of individual and non-individual challenges that each one them has three (financial problems, psychological problems, confidentiality) and four (transportation problems, on-time attendance, lack of career experts, lack of appropriate space) minor subscales.

3 Findings

The results of the extracted codes from the qualitative part are presented in Table 3.

As can be seen in Table 3, from the results of interviews, two main themes of individual challenges and non-individual challenges were formed that in non-individual challenges, four subthemes of transportation problems, on-time attendance in sessions, lack of career experts, and lack of appropriate space exist and in individual challenges, financial problems, psychological problems, and confidentiality existed. Data available in this table are related to the quantitative part of the questionnaire that after attendance in session, all people (the control group after the course and attendance in sessions) were asked to investigate which problem has been solved by online counseling. To analyze this part, one-sample t-test and descriptive characteristics of each question were used. The results showed that online career counseling can solve individual and non-individual challenges in receiving counseling services at an error level of 0.05. Minimum and maximum mean values were related to transportation and fear and disappointment to attend sessions, respectively.

In Table 4, one sample t-test is presented to investigate the opinions of participants about the effect of online career counseling on improving the challenges of people with disabilities in receiving career counseling and guidance.

According to the table above, it can be observed that the average responses of the respondents is significant for all variables at 0.05 level according to one sample t-test. Therefore, it can be said that according to the respondents, online career counseling is effective in solving the challenges of people with disabilities in receiving career guidance services. In Fig. 4, the opinions of the respondents are presented.

To analyze data related to the quantitative part, analysis of variance with repeated measures was used. In Table 5, descriptive characteristics of research variables are presented.

Table 5 shows that the mean of experimental groups in posttest and follow-up has changed compared to pretest. To investigate the significance of these differences after hypothesis testing (such as data distribution normality, equality of variances, Mbox test) within-subjects effects was used (Table 6).

Table 6 shows that by considering pretest, a significant difference exists between groups at an error level of 0.05. According to impact factor, it can be said that 51% of changes in employability, 0.56% of changes in mental health, and 40% of changes in academic buoyancy have been related to the treatment effect. To compare groups, LSD follow-up test was used (Table 7).

Table 7 shows that a significant difference exists between digital storytelling and control group in terms of employability, mental health, and academic buoyancy at an error level of 0.05. According to descriptive characteristics (Table 5), it can be said that the digital storytelling group has improved the scores of employability, mental health, and academic buoyancy of students. In investigating changes in online career counseling group, the results showed that

Table 3 Codes extracted from qualitative interview

Main theme	Subtheme	Row	Mean	SD	Mean Rank	<i>t</i>		
						<i>t</i>	<i>p</i>	
Non-individual challenges	Transportation problems	1	4.9368	2.15273	12.31	4.242	0.000	
		2	4.8000	2.12683	12.43	3.666	0.000	
		3	5.1895	2.01745	13.83	5.747	0.000	
	On-time attendance in sessions	Lack of necessary facilities on rainy or snowy days	4	4.8842	2.12314	12.91	4.059	0.000
		Inability to attend sessions on time	5	4.6632	2.30453	11.41	2.805	0.006
		Inability to attend some sessions due to not being accompanied	6	4.6632	2.12187	11.55	3.046	0.003
		Inability to attend sessions on busy days	7	4.8947	2.23832	12.66	3.896	0.000
	Lack of career experts	Inability to attend sessions on rainy or snowy days	8	4.4842	2.28251	11.38	2.068	0.041
		Inability to choose preferred counselors due to long distances	9	4.5895	2.08589	11.61	2.754	0.007
		Lack of counselors for people with disabilities	10	5.1263	2.24671	13.44	4.886	0.000
	Lack of appropriate space	Lack of expertise of consultant in the field of people with disabilities	11	4.6947	2.14909	11.93	3.151	0.002
		Lack of appropriate space in the building for transportation	12	4.6737	2.16078	11.68	3.039	0.003
		Lack of appropriate space in the clinic or consultation room to use a wheelchair	13	4.6211	2.08938	11.59	2.897	0.005
		Lack of appropriate space to use toilets	14	4.5579	2.27716	11.69	2.388	0.019

Table 3 (continued)

Main theme	Subtheme	Row	Mean	SD	Mean Rank	<i>t</i>	
						<i>t</i>	<i>p</i>
Individual challenges	Financial problems	15	4.5579	2.16213	11.54	2.515	0.014
		16	4.6842	2.35771	12.06	2.829	0.006
		17	4.8947	2.14116	13.32	4.073	0.000
	Psychological problems	18	4.5263	2.20175	11.38	2.330	0.022
		19	4.5368	2.30545	10.96	2.270	0.026
		20	4.5053	2.23547	11.25	2.203	0.030
Confidentiality		21	4.7158	2.26755	11.75	3.077	0.003
		22	4.6526	2.29137	11.60	2.776	0.007
		23	4.7158	1.92775	11.71	3.619	0.000

Table 4 One-sample test

	Test value = 4					
	<i>t</i>	df	Sig. (2-tailed)	Mean difference	95% Confidence interval of the difference	
					Lower	Upper
Transportation problems	5.585	95	0.000	0.94531	0.6093	1.2813
On-time attendance in sessions	3.939	95	0.000	0.67969	0.3371	1.0223
Lack of career experts	3.031	95	0.003	0.53125	0.1833	0.8792
Lack of appropriate space	3.067	95	0.003	0.53725	0.1895	0.8850
Financial problems	2.656	95	0.009	0.49306	0.1246	0.8616
Psychological problems	2.883	95	0.005	0.52431	0.1632	0.8854
Confidentiality	4.109	95	0.000	0.68750	0.3553	1.0197

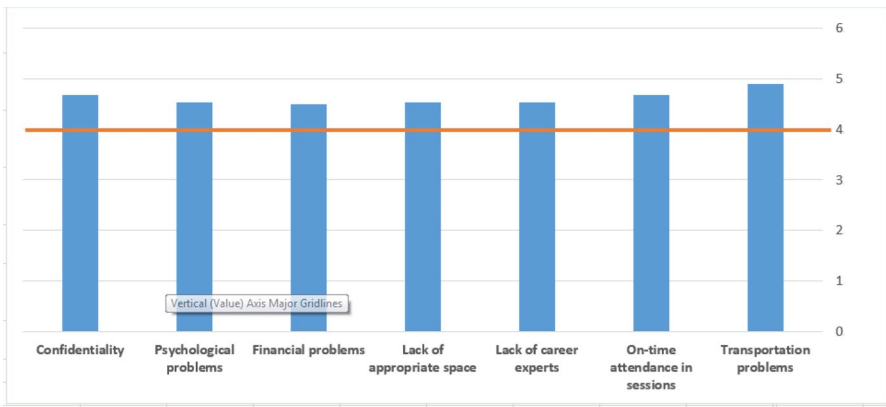


Fig. 4 Average opinions of the respondents about the role of online career counseling in reducing the problems of people with disabilities in receiving online career services

a significant difference exists between online career counseling group and control group in terms of employability, mental health, and academic buoyancy at an error level of 0.05. According to descriptive characteristics (Table 5), it can be said that the digital storytelling group has improved the scores of employability, mental health, and academic buoyancy of students.

In comparing two experimental groups, the results show that a significant difference exists between digital storytelling group and online counseling group in employability and mental health and according to Table 7, it can be said that digital storytelling group had a better performance but in academic buoyancy variable, no significant difference was observed at an error level of 0.05. In Fig. 5, mean values of group changes in pretest, posttest, and follow-up are presented.

Table 5 Descriptive statistics

		N	Employability		Mental health		Academic buoyancy	
			M	SD	M	SD	M	SD
Pretest	DS	32	75.50	4.970	35.50	4.69	20.40	5.80
	OCC	31	74.93	6.717	33.93	6.717	19.90	6.78
	CO	32	74.65	6.067	32.90	6.208	19.62	6.00
Posttest	DS	32	87.50	5.758	24.09	5.378	30.09	5.89
	OCC	31	84.22	6.026	28.41	5.783	27.22	5.90
	CO	32	76.78	5.574	33.09	6.060	19.81	5.61
Follow up	DS	32	88.28	5.64	21.78	4.270	31.03	6.26
	OCC	31	83.70	6.758	27.41	6.227	26.64	6.60
	CO	32	76.71	5.150	33.12	6.384	21.65	5.30

4 Discussion and conclusion

This study was carried out to provide better services for students with physical and motor disabilities. Here, research questions and objectives are presented and the results will be investigated and explained. The first research question is that what are the challenges of people with disabilities in receiving career counseling services? The results of the qualitative part showed that students with disabilities have individual and non-individual challenges in receiving in-person career counseling services. These challenges will be discussed consistent with conducted interviews. In individual challenges, problems are related to the individual and the type of disability and is distinct from social services and facilities. In this category, financial problems, confidentiality problems, and psychological problems exist. When a person suffers from disabilities, he spends higher expenses than a healthy person and these expenses are higher in some cases such as city services. The findings of this part are consistent with Haberstroh et al. (2007) who stated that online counseling leads to lower costs. Moreover, over the years, they may have suffered from mental health problems due to different reasons that a normal person does not experience. Psychological factors such as anxiety or even feeling embarrassed may prevent them from going to career counseling centers. According to the type of disability (usually feet), they are not able to travel alone and in many cases, others help them and for this reason, they may be informed of their daily affairs. This group of students have to make their family members informed of their daily plans and that where they go and this may ruin the confidentiality of receiving counseling services.

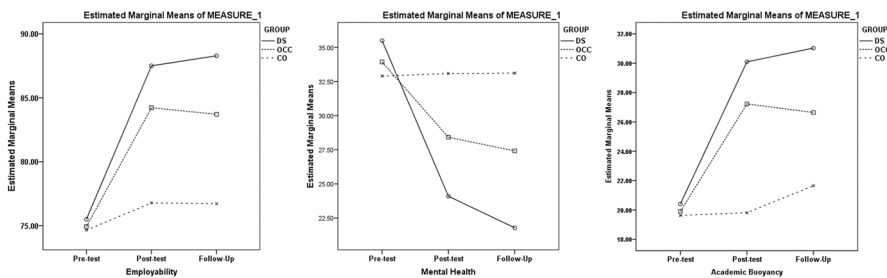
In non-individual aspects, the problems are somehow related to social services. In this study, students with disability pointed out four non-individual challenges including transportation, on-time attendance in sessions, lack of career experts for people with disabilities, and lack of appropriate space. One of the main challenges in transportation was lack of special roads for people with disabilities or unavailability of these roads in urban centers. In some parts of the city, it is not

Table 6 Tests of within-subjects effects

Source	Type III sum of squares	df	Mean square	F	Sig.	Partial Eta squared	Observed power ^a
Employability	Sphericity Assumed	1167.248	4	291.812	49.046	0.000	0.516
	Greenhouse-Geisser	1167.248	3.821	305.500	49.046	0.000	0.516
Mental health	Sphericity Assumed	1782.777	4	445.694	60.096	0.000	0.566
	Greenhouse-Geisser	1782.777	3.715	479.873	60.096	0.000	0.566
Academic buoyancy	Sphericity Assumed	947.438	4	236.859	40.749	0.000	0.470
	Greenhouse-Geisser	947.438	3.754	252.411	40.749	0.000	0.470

Table 7 Multiple comparisons

(I) GROUP	(J) GROUP	Employability		Mental health		Academic buoyancy	
		Mean difference (I-J)	Sig.	Mean difference (I-J)	Sig.	Mean difference (I-J)	Sig.
DS	OCC	2.8034*	0.047	-2.7997*	0.041	2.5857	0.075
	CO	7.7083*	0.000	-5.9167*	0.000	6.8125*	0.000
OCC	DS	-2.8034*	0.047	2.7997*	0.041	-2.5857	0.075
	CO	4.9049*	0.001	-3.1169*	0.023	4.2268*	0.004

**Fig. 5** Changes in employability, mental health and academic buoyancy

possible for these people to travel and according to the location of the counseling center in high rise buildings, their access to the services decrease and in many cases, they give up.

Another problem of people with disabilities is on-time attendance in sessions. These people cannot attend individual and group sessions on time and in most cases such as rainy days, it is impossible for them to travel and for this reason, they miss the sessions or do not achieve desirable results. Most of the providers of career counseling services do not have any expertise in working with people with disabilities and even are not informed of their businesses and since they are in different parts of the city, reaching them is associated with high costs. In most cases, the design of counseling centers prevents the attendance of these people. These spaces can be in counseling room as well, so that the position of the person with wheelchair is not possible in front of the counselor.

The results of this part are consistent with Shokri et al. (2015) who concluded that people with disabilities obtained higher scores in mental health in terms of physical health, anxiety, insomnia, and depression relative to normal people, because in this study, one of the individual challenges of people with disabilities was psychological problems. The results are also consistent with de Oliveira et al. (2022) that lack of awareness of teachers about the type of disability is one of the main problems of these people and they have problems in reaching the counseling centers and buildings. In this study, it was found that lack of expert counselors and transportation problems and lack of appropriate space constitute the main problems of people with disabilities.

In answering the second research question that can online career counseling based on digital storytelling and online career counseling solve the challenges of people with disabilities in receiving career counseling services, the results of one-sample t-test showed that the use of online career counseling can significantly solve individual and non-individual challenges of people in providing and receiving in-person career counseling services.

To answer this question, after extracting the problems of people with physical disabilities, a questionnaire was designed and the subjects were asked to answer this question that how online counseling technology can solve the problems of people with disabilities in receiving in-person counseling services. The answers were investigated in a 7-point Likert scale. In this scale, 1 means complete disagreement with solving problems through online counseling and 7 means complete agreement with solving the problems of people with disabilities in receiving career counseling services. The resulted mean varied from 4.4 to 5.1 that according to t-test, this value is significant relative to the mean of 4 (ineffective). This means that according to the respondents, the training program is effective in reducing the problems. However, the mean shows a large distance from the range of 6 and 7 that shows although online career counseling can be effective, its intensity is not high.

The largest mean was related to the existing barriers from the subscale of transportation and the smallest mean was related to fear or disappointment with attendance in sessions from the subscale of psychological problems. When people can receive counseling services through the internet, there is no need to travel and many problems will be solved such as confidentiality, lack of appropriate space, and on-time attendance in sessions.

The use of online career counseling helps people with disabilities to communicate with the outside world and receive services inside their house. To attend a training session, in-person career counseling is needed that the person has to go through various paths such as cars, streets, and stairs to use counseling and guidance services. These paths are almost impossible for people with disabilities. But in online counseling, the person can have the shortest path to attend sessions. The results of previous studies have shown that in-person counseling leads to higher costs such as transportation costs that online counseling can lower them.

Some of the problems such as psychological problems in receiving career counseling services significantly decrease due to anonymity in the online environment and not knowing the disability of the person behind the system. For example, the person may feel embarrassed by losing his hand but in the online environment, he can communicate easily and take advantage of career counseling services. In another challenge known as lack of counseling expert, online career counseling has solved this problem to a large extent. The findings from other researchers shows that the use of online technology and guidance and counseling leads to higher access to competent counselors. In this study, people who were providing career counseling services, were not sufficiently familiar with disabilities and services. Although in this study help was sought from experts, online career counseling itself cannot be helpful but the clinic or the center that manages it should give value to these people and assign experts to help them to let them take advantage of technical services.

The findings of this part are consistent with Wiyono and Haq (2019) who stated that providing online counseling services to children with disabilities can let them talk about their private issues and problems that face without any concern. In this study, the respondents pointed out that online counseling solves the problems of receiving career counseling services. Moreover, the results of this study are consistent with Pordelan et al. (2018) that online career counseling can eliminate the distance and reduce financial and commuting problems. Furthermore, it is consistent with Maples and Han (2008) who stated that online counseling is suitable for people who have family commitments and transportation problems.

Can online counseling based on digital storytelling improve academic buoyancy, employability, and mental health of people with disability? In answering this question, the results showed that online career counseling based on digital storytelling could lead to academic buoyancy, employability, and mental health of people with disability. In explaining the findings of this part, it can be said that online counseling services share the principles of in-person counseling and in some cases, online counseling improves some variables such as work alliance relative to in-person counseling. The interactive and multimedia nature of online counseling allows digital storytelling to adapt itself with it easily. For example, when a person does not have sufficient information about employability of people with disabilities, he can watch a short clip about interviews with these people to enhance his knowledge. The findings of this part are consistent with Pordelan et al. (2022b) that psychotherapy with digital storytelling has a better impact on academic and career integration of students and these three academic variables are interconnected changes in each variable may lead to changes in other variables. For example, increased mental health and decreased anxiety are significantly related to academic performance and it has been emphasized in different studies. However, the use of storytelling in the process of career counseling leads to organized and attractive information accompanied by visual elements such as pictures and diagrams that try to present a set of complex information and data to transfer the message quickly and in an understandable way. The use of digital storytelling allows the person to receive a considerable amount of information visually in 3 to 5 min and memorize it. Indeed, it can be said that in online career counseling services, there is no need for oral presentation to introduce the self and by watching short clips, people can get an understanding about themselves and receive feedback in an online environment that encourages and increases self-efficacy. It is consistent with a study by Pordelan and Hosseinian (2020) that investigated and designed online career in order to enter the labor market and pointed out that career counseling has a positive effect on career decision-making of students.

For example, introducing an artist by using digital storytelling and use of video clips and elite personalities and their similarities in digital storytelling will be so easy. Moreover, digital storytelling allows the audience to concentrate on the most important information and as a result, the cognitive load decreases. This theory is supported by Korbach et al. (2017) that claim by removing irrelevant information and concentrating on necessary items, cognitive load can be decreased. The ability of digital media has been discussed and confirmed in different studies and all of these studies agree that due to decreased cognitive load,

students can spend less time for learning. The findings of this study are consistent with Ofoegbu et al. (2020) who investigated the effect of digital storytelling intervention on burnout thoughts of teenagers and concluded that digital storytelling can considerably decrease these thoughts among teenager athletes with disabilities. It is also consistent with Pordelan et al. (2021) who concluded that digital storytelling can be used in career counseling and has a positive effect on career decision-making of students.

In investigating the fourth research question, that is there any significant difference between the effect of online career counseling based on digital storytelling and online career counseling on academic buoyancy, employability, and mental health of people with disabilities, the results showed that a significant difference exists between digital storytelling and online career counseling in employability and mental health and the digital storytelling group showed a better performance but in academic buoyancy, no significant difference was observed, although the digital storytelling group obtained a larger mean than the online career counseling group.

Regarding the lack of difference between experimental groups in terms of academic buoyancy, it can be said that previous studies show although the use of digital storytelling in career counseling can lead to better career counseling performance, it cannot be the same for all variables. For example, Pordelan et al. investigated the effect of using digital storytelling on career decision-making and self-efficacy. The findings showed that although storytelling could have a larger impact on career decision-making, no significant difference was found between the two groups (with and without digital storytelling) while in career decision-making self-efficacy, a significant difference was found between these groups and the digital storytelling group acquired a larger mean.

About the effect of digital storytelling on employability and mental health, it can be said that storytelling has a direct relationship with self-efficacy sources and self-efficacy itself has a deep impact on employability and mental health of people. One of the sources of self-efficacy is substitute experiences that is provided through social patterns. Self-efficacy beliefs are under the effect of observing the behaviors and consequences of behaviors of others, especially the people who are accepted as models. People take advantage of this information to build and form their experiences about behaviors and consequences and this is completely dependent on this fact that to what extent people see themselves similar to the person who they observe. In this study, the video clips about people with disabilities played an important role in their substitute experiences.

These findings are consistent with Ezegbe et al. (2018) who investigated the effect of digital storytelling on the risk of HIV/AIDS among students and concluded that digital storytelling has a significant effect on increasing students' knowledge and understanding of HIV/AIDS. Santilli et al. (2022) showed that online career counseling increases the scores of unemployed youths in career adaptability, resilience, and orientation. Chen et al. (2021) designed an online career intervention during the Covid-19 pandemic to help Chinese high school students improve career readiness and cope with career decision-making problems and concluded that online intervention considerably increased their career readiness and reduced career decision-making problems.

5 Conclusion

This study aimed to investigate challenges in receiving career counseling services for people with disabilities and the role of online career counseling in solving these challenges and compared online career counseling based on digital storytelling and online career counseling. The results showed that people with disabilities suffer from problems in receiving career counseling services such as transportation, financial, psychological, confidentiality, lack of sufficient space, and lack of career experts and these problems can be solved by online counseling significantly. Moreover, the results showed that online career counseling and digital storytelling-based counseling impact academic buoyancy, employability, and mental health of people and career counseling based on digital storytelling has a more significant effect on mental health and employability than online career counseling.

6 Limitations and future works

This study is a cross-sectional study conducted in 2022 after the Covid-19 crisis when people were more interested in online learning and digital space. Therefore, it is needed to conduct the same study as a longitudinal study. In this study, experts were employed to support and generate software. Also, counselors and psychologists who were providing online psychological services had sufficient expertise in the field of career counseling for people with disabilities. Therefore, in future studies, it should be noted that how expertise and skills of people who provide online services influence the quality of services. In this study, minimum digital literacy was an inclusion criterion that in future studies, it should be investigated as an inclusion criterion for online career counseling. Moreover, this study has been conducted on people with physical and motor disabilities and for this reason, findings should be generated with caution. Furthermore, in the survey section and asking people about to what extent online career counseling can solve the problems of people in receiving career guidance services, the respondents answered the questions according to their existing understanding about online counseling and may change their mind while experiencing conditions such as rainy and snowy days and problems such as electricity or internet shutdown. Therefore, it is suggested to study the challenges of online career counseling for people with disabilities as well as online career counseling under various circumstances.

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Author contribution NP designed the interventions, held and managed the sessions, analyzed data, contributed in site design and developed the article. AA contributed in data analysis, designed the research method, and contributed in article development. HH and SHKH contributed in data analysis, designed the research method, and contributed in article development. Skh contributed in data analysis, designed the research method, and contributed in article development. All authors read and approved the manuscript.

Data availability The datasets generated and analyzed during this study are available from the corresponding author on reasonable request.

Declarations

Informed consent Informed consent was provided by all the participants.

Conflict of interest The Authors declare that they have no conflict of interest.

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