Development of a Computer-assisted Career Guidance System

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1. Evolution of CACGs

In recent years, many articles have been devoted to the subject of how young people perceive working styles and how their attitude toward work in general is undergoing change. This includes the increasing number of school graduates who do not move into steady employment and the increase in the number of employees who leave or change jobs. It has been suggested that young people do not have enough opportunities to acquire self-understanding and vocational understanding.

There are a number of concrete methods to help young people develop self-understanding and vocational understanding and provide them with vocational guidance. One method we have been watching closely is CACGs (Computer-assisted Career Guidance System).

A CACG system allows a person to go through basic steps in the vocational decision-making process using a computer. In Europe and the United States, such well-known systems as DISCOVER, SIGI-PLUS, CHOICES, and PROSPECT have been developed and utilized in career guidance and vocational counseling since the 1960s (Harris-Bowlsbey, 1974; Katz, 1971; Watts, Kidd & Knasel, 1991). These integrated systems allow the user to receive vocational guidance services via computer similar to those normally provided by counselors. The systems are equipped with basic features essential for making vocational choices, such as a self-understanding test, occupational information database, and career-planning tool.

Our institute began gathering detailed information on CACGs in the 1980s, but Japan lagged far behind Europe and the United States in this type of research, and we were unable to develop a system partly because computer use was not yet sufficiently diffused in the society. Since then, however, Japan has become an information society, and as computer use has become more widespread, the conditions are ripe for developing CACGs. Furthermore, as the younger generation is more accustomed to using computers, computer-assisted career guidance is more effective than traditional vocational counseling methods that rely on paper-based aptitude tests.

At the same time, however, there was concern over how applicable CACGs would be. CACG systems are based on a Western conception of vocational guidance and it was not a given that young people in Japan would be comfortable with this. Excluding specialist vocations, the basic premise behind CACGs — matching vocational choice with individual characteristics — does not match the reality of the Japanese employment system. In Japan, many companies hire new employees en bloc and develop their professional expertise and skills through OJT and training sessions after they have begun work. Moreover, employees are rotated through different positions every two to three years within the company, and in some cases this might involve a shift to a different job type (for example, engineering to sales). Consequently, the jobseeker tends to focus more on selecting a company than choosing an occupation.

Therefore, we initially used a prototype to check the applicability of CACGs in Japan. The results confirmed that CACGs were effective in stimulating the vocational interests of young job seekers and helping them to take the necessary intellectual steps in choosing an occupation (Muroyama, 2002). We then developed a system in 1997 and in 2001 completed the "Career In★Sites," equipped with features comparable to those of the Western integrated systems. This article provides an outline of the system and discusses use of the system, evaluates the system based on data analysis, and lays out proposals on how to improve the system.

2. System Contents

2.1 Target Users and Goal

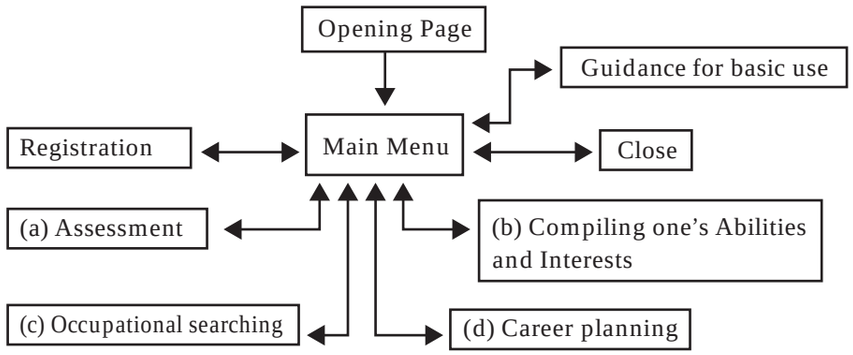
"Career In★Sites" targets those in their early 20s to around 35 years of age who are first-time job seekers and those who are plan-

ning their first job change. The goal is to assist job seekers in developing their self-understanding through aptitude assessment tests and exploring the relationship between their aptitude and the characteristics of certain occupations.

2.2 The System's Structure and Functions

The system has four main functions: Assessment, Compiling one's Abilities and Interests, Occupational searching and Career planning (see Figure 1). Before using these functions, one must register.

Figure 1 . Career In★Sites Contents



1) User registration: The user is asked to register his/her name, age, gender and current vocational status. Using a password, the user can save his/her assessment results. However, before being able to access the save function, the user will be informed that stored data may be used for statistical purposes in assessing the accuracy of the system's evaluation mechanism. The user needs to give his/her consent before being able to use the save function.

2) Assessment: This section contains four sub-areas for assessing vocational aptitude; Ability, Interest, Values and Behavioral traits. After answering questions, the user can view his/her profile evaluating his/her characteristics in various categories (see Figure 2). In the Ability and Interests sub-areas, the system generates a list of occupations matching the user's individual traits.

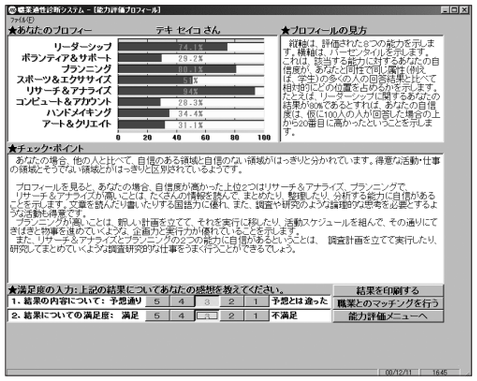


Figure 2.
Profile of the Ability Sub-area in the Assessment Section

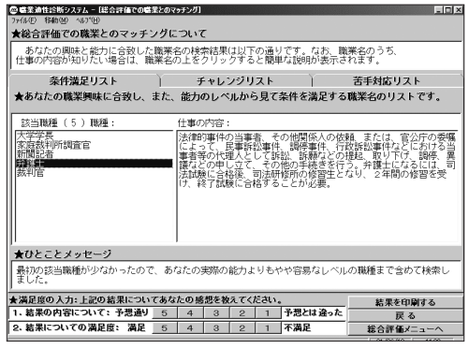


Figure 3.
Matching Ability and Interests with an Occupation

3) Compiling one's Abilities and Interests: This section provides a complete analysis of the results of an aptitude assessment for both Ability and Interests, and further analyzes the user's individual traits. Based on these results, it creates a list of occupations suitable for the user (see Figure 3).

4) Occupational searching: This database contains information on 417 different occupations and information such as classification codes, a short 300-word or less description of the occupation, required aptitudes (characteristics in Interests and Ability), number of people engaged, gender ratio, necessary qualifications and certificates, and reference materials.

5) Career planning: This section contains both a short-term and a long-term career planning section. The short-term career planning section is equipped with two sub-systems. The first is "testing your compatibility with your preferred occupations." Here, the user inputs the occupations he/she is personally interested in pursuing. Then the system indicates if the user's personal profiles from Ability and Interests match the required Ability and Interests of the listed occupations. The second is the "vocational readiness checklist." After answering questions, the user can check his/her vocational readiness in four areas: self-understanding, vocational understanding, actual preparations and decision-making. The long-term career planning section presents the user with a list of possible major careers and personal goals between one's late teens and 60s and asks the user to answer by what age he/she wants to achieve each of the goals. The results are presented in chart form.

2.3 Time Needed to Use the System

About 90 to 120 minutes are necessary to use all of the system's functions. It takes approximately 40 minutes to use only the Assessment section.

3. System Use and User Evaluation

3.1 System Use

1) Locations: We have distributed the system to student employment centers, student vocational guidance offices, employment security offices for young people, and 500 Public Employment Security Offices across Japan. In addition, public vocational counseling institutions, universities, junior colleges and technical colleges have received the system upon request. We have collected data on users with the assistance of an employment security office for young people in Tokyo. What follows is an analysis of the data collected at this office.

2) Number of users: The total number of users at this office in 2002 was 4,758 (approximately 400 per month, 20 per day). This amounts to 24 percent of the total number of newly registered clients at this office.

3) System use: The system is installed on the seven computers at the "vocational aptitude assessment booth" in this office. Everyone who is registered can freely access the system, and the user is able to consult with a counselor about his/her evaluation results.

4) Number of users by function: From the data that has been gathered, we have extracted information on users who are not yet employed and are between the ages 18 and 35 and analyzed which functions were used. The results are shown in Table 1. The number of users sampled was 853, of which 614 (approximately 72 percent) tried all of the four tests in the Assessment section (A). This suggests high interest in aptitude assessment. On the other hand, the number of users who accessed all of the system's functions (ABCDEF) was 75 (approximately nine percent). The result indicates that about 10 percent of the users took the time to go through all of them.

Table 1. Number of Users per Function

Section or Module	Module & Number of Users											
A: Assessment	A	614										
B: Compiling one's Abilities and Interests	B	485	AB	454								
C: Occupational searching	C	370	AC	328	ABC	277						
D: Short-term career planning/Correspondence between user's aptitude and desired occupation	D	338	AD	315	ABD	281	ABCD	194				
E: Short-term career planning/ Vocational readiness checklist	E	320	AE	293	ABE	258	ABCE	179	ABCDE	163		
F: Long-term career planning	F	157	AF	143	ABF	133	ABCF	94	ABCDE	80	ABCDEF	75

3.2 User Evaluation

Table 2 shows user responses gathered via questionnaires. The number of responses and mean evaluation grade for each question are indicated. Questions No. 1 to No. 4 are for evaluating the effectiveness and credibility of the aptitude assessment function, and here it is fair to say that we were able to receive satisfactory grades, close to three out of four. Questions No. 5 and No. 6 evaluate post-assessment future career plans suggested by the system, and we received slightly lower grades for these questions. This indicates the system is inadequate in this area. Questions No. 7 to No. 10 evaluate overall effectiveness and whether the system was interesting, and we received, on average, above four out of five, indicating a high level of interest in the use of the system. We have been able to confirm that young Japanese people do find using CACGs an interesting experience.

Table 2. Overall Evaluation of System

Question	Total Number of Responses	MEAN (SD)
1. Has the system helped you understand your own aptitude?	285	2.92 (.58)
2. Does the aptitude rating supplied by the system conform with your own self-image?	277	2.90 (.52)
3. Has the system helped you understand what type of work best suits you?	268	2.83 (.56)
4. Does the type of work the system selected for you meet your image?	266	2.73 (.60)
5. Has the system helped clarify what work you should pursue?	266	2.56 (.80)
6. Has the system helped you understand the next steps you must take to find a job?	265	2.58 (.78)
7. Was the system interesting to use?	265	4.26 (.80)
8. Was the system easy to use?	261	4.18 (.88)
9. Do you want to use the system again?	258	3.83 (.99)
10. Is the system useful in selecting future occupations?	257	4.14 (.95)

Note: Questions No. 1 through No. 6 were evaluated in four stages, and No. 7 through No. 10 in five stages.

4. Issues for the Future

4.1 How to Utilize the System in Actual Counseling Situations

Unlike Europe and the United States, both of which have a long history of developing and utilizing CACGs, Japan has just started to develop these systems. Thus, we have not developed sufficient experience in using the system in real vocational counseling situations. In the West, research has been done to examine how a user's personal traits might influence the effectiveness of CACGs. This research suggests that CACGs might not be effective for everyone, and traditional methods involving a counselor might be more effective for certain individuals (Melhus, Hershenson & Vermillion, 1973). In Muroyama (2002), an experiment using university students noted that students with high vocational readiness attach importance to different functions than those with low vocational readiness. If the effectiveness of CACGs varies by individual, it would be necessary to distinguish clients who need only CACGs, those who need CACGs combined with traditional counseling services, and those who need just traditional counseling. To promote effective use of the system, we need to develop ways to offer the most appropriate type of vocational counseling by taking into account the client's compatibility with the system.

4.2 Training Sessions

Users can basically use CACGs on their own. In recent years, however, even among university students, there are those whose vocational readiness is very low. For that reason, it is possible that young users might not have the ability to fully understand and analyze information provided by the system and will have trouble using it to make actual vocational choices. To ensure that young people can effectively utilize the system, we need to train counselors who can actually advise users how to interpret evaluation results and how to apply them to their vocational choice. For that reason, high-quality training sessions for counselors are needed. We can expect individual counselors to develop more hands-on experience in advising on how to

utilize the system in the future as the system becomes more widely available. Therefore, we should also consider organizing discussion forums and workshops incorporating examples from real counseling situations which would allow counselors the opportunity to exchange information among themselves.

4.3 Regular Updating

CACGs need to be updated regularly because they contain aptitude assessment tools and occupational databases. This system is no exception, and it is essential for us to revise the contents when necessary. Moreover, as the system becomes more diffuse, there is a growing demand for new ways of applying the system, such as interactive use in school classrooms and vocational counseling meetings. There is also a demand to upload the system onto the Internet. To develop a user-friendly system that can respond to these diverse demands, it will be necessary for us to continuously revise the system.

References

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