



# CIP: an alternative career guidance model to improve self-understanding and work understanding for deaf students

Author Name(s): Endang Pudjiastuti Sartinah, Esa Nur Wahyuni, Pamuji Pamuji, Eryana Fatimasari Retno Budiati

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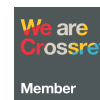
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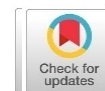
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# CIP: an alternative career guidance model to improve self-understanding and work understanding for deaf students

Endang Pudjiastuti Sartinah<sup>1\*</sup>, Esa Nur Wahyuni<sup>2</sup>, Pamuji Pamuji<sup>1</sup>, Eryana Fatimasari Retno Budiati<sup>1</sup>

<sup>1</sup>Faculty of Education, Universitas Negeri Surabaya, Surabaya, Indonesia

<sup>2</sup>Faculty of Tarbiyah and Teacher Training, State Islamic University of Maulana Malik Ibrahim, Malang, Indonesia

## ABSTRACT

The Cognitive Information Processing (CIP) career guidance model is an approach that emphasizes the reconstruction of the mind to achieve self-understanding and understanding of work. This research examines the CIP career guidance model to improve self-understanding and work understanding in deaf students. This research uses a single-subject design with a pretest-posttest on 12 deaf students in Indonesia. Data collection uses the self-understanding and work understanding Instrument developed by researchers, intervention workbooks, observation instruments, and interviews. Data analysis of this study using non-parametric statistics with the Wilcoxon Test. The results showed that CIP, a career guidance model for deaf students, can improve the knowledge and skills of self-understanding and work understanding. Thus, CIP can be used as a career guidance model for deaf students to improve their self-understanding and work understanding

## Keywords:

Career guidance model,  
Deaf students,  
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## Corresponding Author:

Endang Pudjiastuti Sartinah,  
Universitas Negeri Surabaya  
Email: [endangsartinah@unesa.ac.id](mailto:endangsartinah@unesa.ac.id)

## Introduction

One of the major challenges in career development for deaf students is a lack of self-understanding and career. Research results [Trezek & Mayer \(2019\)](#) found that deaf students lack self-understanding and career, as shown by the inability of deaf students to understand themselves well, including interests, abilities, personality, attitudes, and values. Meanwhile, the low career understanding of deaf students is indicated by limited knowledge about work, such as not knowing the job to aspire to, mindset towards work, and linking self-understanding with work. In addition to physical and mental barriers, low self-understanding and career can be caused by inferiority due to stigma and societal discrimination ([Lash, 2023](#); [Mikhailova et al., 2020](#)). At the same time, students with disabilities do not adequately receive appropriate career guidance due to limited school or educational institution resources to provide appropriate career guidance ([Sefora & Ngubane, 2023](#)). The results showed that low self-understanding and career in students with disabilities had an impact on limited further education opportunities ([Cohen et al., 2022](#); [Gibbons et al., 2015](#)), ([Gibbons et al., 2015](#); [Orok, 2019](#)), and low career self-efficacy ([Liu et al., 2022](#); [Orok, 2019](#)). Some of these research results show that self-understanding and career understanding are very important for the career development of students with disabilities.

Self-understanding is a deep awareness of one's identity, interests, values, skills, and weaknesses (Liu et al., 2022). It involves self-knowledge, including emotions, preferences, and abilities, which helps individuals understand life goals, decision-making, and interactions with others (Yang & Wong, 2020). While career understanding refers to a person's knowledge and understanding of various job options, fields of study, industries, as well as career paths that may suit their interests, values, and skills, Self-understanding and career in deaf students have a significant impact on their educational development and career success (Kurniawati et al., 2023; Miller & Kass, 2023). Several research results have highlighted that deaf students' self-understanding often develops through deep social interaction and hands-on experience in their support communities (Orok, 2019). This self-understanding greatly influences career understanding, helping students identify interests, values, and skill sets that fit future employment opportunities (Winarti & Aprilia, 2021). Therefore, career guidance is needed for deaf students to improve their self-understanding and career.

One career guidance model that can be used to improve self-understanding and career is Cognitive Information Processing (CIP). CIP is a career guidance model developed by researchers from Florida State University, which focuses on information processing and the five-step CASVE cycle, covering communication, analysis, synthesis, evaluation, and execution (Hayden et al., 2021; Lash, 2023). CIP believes problem-solving and career decision-making skills can be learned, enhanced, and retained, allowing individuals complete control over their career future (Buzzetta et al., 2017). This model aims to strengthen individuals' control and career planning, facilitating the development of career planning skills according to their personal goals (Wang et al., 2023). CIP theory provides a framework that combines theoretical knowledge, practice, and research results to guide individuals to make wise career decisions. This model helps individuals overcome challenges and develop expected careers by emphasizing the importance of self-understanding and career understanding (Werner et al., 2021a).

CIP can be used to develop career knowledge guidance models and work knowledge for deaf high school students. Related to self-understanding and understanding of the work of According to CIP theory, there have been three attributes associated with resolving chosen profession dilemmas: (1) the domain of knowledge, (2) the domain of decision-making skills (James et al., 2020) and (3) the domain of executive processing (Reardon et al., 2020). In career planning, the area of expertise of CIP theory necessitates that group counselling begins with an understanding and awareness of the possible job. This information or awareness should be the initial emphasis for deaf students to equip them for future employment, so the area of education is becoming the subject of this research. Furthermore, the development of a career guidance model in this study is based on the characteristics and needs of deaf individuals.

An essential key consideration in this study is the design and choice of guidance services for deaf students so that learning is conducive to guiding students with maximum abilities and potential. This research prioritizes the design of guidance and the implementation of services for deaf students in the form of group guidance using group discussion techniques to develop self-understanding and career understanding (McDonnell et al., 2021; Pautina et al., 2020; Schenk et al., 2020). So far, there is no career guidance like this for deaf students in Indonesia. Meanwhile, the primary role of counsellors and teachers at The Extraordinary Deaf High School should be as a channel for developing self-understanding and work understanding.

The research that has been carried out has primarily examined career guidance programs with the CIP model to improve self-understanding and career understanding for individuals without disabilities (Reardon et al., 2020b; Werner et al., 2021b). Even less research emphasizes self-understanding and work understanding in the context of the role of counsellors and teachers. So, this study aims to test the CIP career guidance model to improve self-understanding and work understanding explicitly developed for deaf students in Extraordinary High Schools.(Wang et al., 2023).

## Method

This study used experimental design to test the effectiveness of CIP model career guidance interventions to improve self-understanding and work understanding in deaf students. The research subjects in this study were twelve deaf students. Deaf students are students who have a condition of lack or loss of hearing ability and are in part B exceptional high school with indicators of (1) malfunctioning or the entirety of the hearing apparatus acquired from birth; (2) there are obstacles when the child produces and understands the conversation; (3) occurs at any time that may hinder the process of language information through hearing either with or without the use of hearing aids.

The career guidance model in this study is based on the domain of knowledge: 1) self-understanding, which includes (a) interests, (b) abilities, (c) personality and (d) values and attitudes and 2) understanding of work consisting of (a) individual ideals or thinking patterns towards a job and (b) connecting self-understanding and the field of work to be pursued. Furthermore, the two domains were developed into a CIP-based career guidance model, which in its implementation has six steps. First, the initial interview is an activity to identify the career problems of deaf students (Husnaini & Chen, 2019; Rubens et al., 2018). Second, conducting an assessment where students are guided to explore as much data as possible and be able to assess themselves in understanding themselves and their work.

Third, after the student can identify and assess himself, the student is guided to define the problem and analyze its causes. Fourth, in formulating goals, the counsellor trains students to formulate guidance goals to understand themselves and work (Magnano et al., 2022). Fifth, developing individual plans is focused on the career needs of each research subject, considering the differences in individual characteristics that require conditioning during mentorship. Sixth, implement the guidance plan. At this stage, the core of the CIP-based career guidance process focuses on two main discussions: (1) self-understanding, including interests, abilities, personality, values and attitudes, ideals, or individual mindsets towards work. (2) discussion of understanding work where students are guided and trained to relate between self-understanding and the field of work they want to pursue. Meanwhile, the strategy used in the career guidance process is the cognitive restructuring of students through four procedures: identifying, challenging, changing, and taking action to improve self-understanding and work skills. Seventh, summary and generalization is the final stage of guidance, where students are trained to conclude what has been done while following career guidance and then generalize career development based on the learning that the individual has obtained during career guidance.

The data collected in the study consisted of data on the ability of deaf students to understand themselves and their understanding of work before and after students get intervention. Data collection techniques use documents in the form of workbooks filled out by students, obese counsellors assisted by assistant counsellors, and interviews. While the Instrument used there are two types consisting of (1) self-understanding and work understanding developed by researchers, 2) treatment instruments in the form of CIP-based career guidance modules consisting of (a) materials and workbook sheets on tracing interests, abilities, personalities, attitudes, and mindset towards work, (3) observation sheets of ability to understand self and understanding of work, (4) CIP-based career guidance reflection sheets. The instrument tests have been tested on reliability to self-understanding and work understanding, as in Table 1 and Table 2.

**Table 1.** Results of the Self-Understanding Instrument Reliability Test

Cronbach's Alpha	N of Items
.857	37

Based on the results of Table 1, the reliability test using the alpha cronbach formula, an alpha cronbach value of 0.857 was obtained. That means that the self-understanding variable is in a very reliable category. Based on the results of Table 1, the reliability test using the alpha cronbach formula,

an alpha cronbach value of 0.857 was obtained. That means that the self-understanding variable is in a very reliable category.

**Table 2.** Results of the Work Understanding Instrument Reliability Test

Cronbach's Alpha	N of Items
.717	13

Based on the reliability test results using the alpha cronbach formula in Table 2, an alpha cronbach value of 0.717 was obtained. Indicates that the understanding of the work variable is in the reliable category. The analysis of the data used in this study used the Wilcoxon test. The Wilcoxon test is a non-parametric statistical test typically used in quantitative data that is not normally distributed. This research data is in the form of pretest and post-test data of deaf students in Extraordinary High School that focuses on self-understanding and work understanding.

## Results and Discussion

This study examined the impact of CIP-based career guidance interventions on improving self-understanding and employment in exceptional high school deaf students. For this reason, the pretest, post-test, and t-test results are presented in this results section.

### Knowledge and Skills Self-understanding

Based on the difference in interest knowledge test results, a value of  $t = -15.906$  was obtained with a significance of  $0.00 < 0.05$ . This shows a difference in knowledge asked by deaf students before and after attending career guidance. At the same time, the test results of the interest comprehension skills difference showed a value of  $t = -5.420$  with a significance of  $0.00 < 0.05$ . In other words, there was a difference between the comprehension skills requested before and after deaf students followed career guidance.

The difference test results on knowledge of understanding ability were  $t = -7.746$  with a significance of  $0.00 < 0.05$ . The results stated differences in the knowledge of deaf students before and after career guidance interventions. While in the aspect of skills to understand the ability of different test results showed  $t = -10.014$  and significance  $0.00 < 0.05$ . Understandably, there are differences in skills and understanding ability before and after career guidance treatment.

Based on the results of the difference in knowledge test of personality understanding, a value of  $t = -15.326$  was obtained with a significance of  $0.00 < 0.05$ . This shows differences in knowledge of understanding the personality of deaf students before and after following career guidance. The test results of the personality comprehension skills difference showed a value of  $t = -4.508$  with a significance of  $0.001 < 0.05$ . In other words, there was a difference between personality comprehension skills before and after deaf students followed career guidance. In the aspect of understanding values & attitudes, it is known that the results of different knowledge tests, understanding values and attitudes show  $t = -10.786$  with a significance of  $0.00 < 0.05$ , and in the aspect of skills, understanding values and attitudes obtained results  $t = -5.615$  with a significance of  $0.00 < 0.05$ . The analysis of the difference in personality understanding and value and attitude understanding skills showed differences in achievement before and after providing career guidance. Thus, it can be concluded that there are differences in the achievement of self-understanding and work in deaf students both in terms of knowledge and skills of self-understanding and employment. In summary, the results of the t-test are described in Table 3.

**Table 3.** Results of Pretest Analysis and Self-Understanding Post-Test

Domain	N	Mean	Std Deviation	t	Sig.
Pre-Test-Post Test knowledge understanding interest	12	-3.83	.83485	-15.906	.000
Pre-Test-Post Test of Interest comprehension skills	12	-4.5	2.87623	-5.420	.000
Pre-Test-Post Test knowledge comprehension ability	12	-4.416	1.97523	-7.746	.000
Pre-Test-Post Test comprehension ability skills	12	-4.666	1.61433	-10.014	.000
Pre-Test-Post Test knowledge of personality understanding	12	-2.750	.62158	-15.326	.000
Pre-Test-Post Test personality comprehension skills	12	-6.667	5.123	-4.508	.001
Pre-Test-Post Test: knowledge, understanding, values & attitudes	12	-4.083	1.31137	-10.786	.000
Pre-Test-Post Test value comprehension skills & attitudes	12	-10.58	6.52907	-5.615	.000

### Work understanding

The second domain of providing career guidance interventions to research subjects is the provision of understanding of work, which includes two main things: the provision of knowledge and skills about ideals or individual thinking patterns towards work. Based on the analysis of different knowledge tests, ideals or individual thinking patterns towards work showed a value of  $t = -9.053$  with a significance of  $0.00 < 0.05$ . In other words, there are differences in knowledge, ideals, or mindsets of research subjects before and after following CIP-based career guidance. The results of different skills tests to understand the ideals or thinking patterns of the research subjects showed that the value of  $t = -6.137$  with a significance level of  $0.000 < 0.05$ . Thus, it can be said that there are differences in the skill levels of research subjects to understand ideals or mindsets before and according to career guidance interventions.

**Table 3.** The results of the t-test analysis on the level of understanding of the work of research subjects.

Domain	N	Mean	Std Deviation	t	Sig.
Pretest-posttest of knowledge of ideals or mindset towards work	12	-3.8333	1.4668	-9.053	0.000
Pretest-posttest of skills to understand goals or mindset towards work	12	-6.8333	3.85730	6.137	0.000
Pretest-posttest of knowledge links self-understanding with the field of work you want to pursue.	12	-2.9169	0.99620	10.14	0.000
Pretest-posttest of skills associates self-understanding with the field of work you want to pursue	12	-9.2500	7.58138	4.433	0.001

The results of the knowledge difference test analysis linking self-understanding with the field of work you want to pursue show a value of  $t = -10.142$  and a significance of  $0.000 < 0.05$ . The result showed differences in the knowledge of research subjects in the field of work they want to pursue

before and after providing career services. Meanwhile, the skill level of understanding of the field of work the research subjects want to pursue has increased after receiving CIP model career guidance services. The difference in increase is shown by the analysis of t value = -4.227 with a significance of  $0.001 < 0.05$ . Table 3 briefly describes the results of the t-test analysis on the level of understanding of the work of the research subjects.

The results of this research analysis have shown that the provision of CIP model career guidance services to deaf students has provided an increase in their understanding of self and work, both in aspects of knowledge and skills, which include interests, abilities, personality, values and behaviours and goals; and individual job thinking patterns related to career aspirations and the relationship between self-knowledge and work. This study reflects that the CIP model has the effectiveness to be used as a model for providing career services to students who have limited hearing skills. As individuals with hearing impairments, deaf students experience problems in making career decisions. As stated by [Sefora & Ngubane-Mokiwa \(2021\)](#), one of the important problems in career development in students with disabilities is self-understanding associated with the field of work. The career development of students with disabilities is strongly influenced by various very complex factors such as students' disability status, difficult socioeconomic conditions, lack of family and community support, and attention to the world of work ([Wehmeyer et al., 2018](#)) These factors can form negative attitudes and become obstacles to the career development of deaf students, especially in having an awareness of themselves and their work ([Punch et al., 2006](#); [Punch & Duncan, 2020](#); [Retief & Studies, 2018](#)). Therefore, career guidance is needed to improve self-understanding and work skills for deaf students.

Characteristics of deaf students who have hearing difficulties but are mentally normal thinking ([English et al., 2021](#); [Pisoni et al., 2017](#)) make it possible for school counsellors to provide career guidance using the CIP approach. CIP concerns thought and memory processes related to career problems, such as cognitive strategies in the form of rules and stages of thought. Furthermore, in applying CIP theory to career guidance, the emphasis shifts from helping individuals make the right choices at any given time to acquiring knowledge and cognitive skills to solve career problems and make career decisions over time. Therefore, this approach aims to help people become skilled at solving problems and making career decisions. ([Leong, 2014](#); [Peterson & Lenz, 2012](#); [Reardon et al., 2020a](#); [Sampson et al., 2004](#)).

This study has given meaning to the career development of students with disabilities, especially deaf students who have career problems because they are seen as having limitations and are often considered a burden to families and communities ([Brady et al., 2016](#); [Luft, 2015](#); [Punch, 2016](#)). Increasing the ability of deaf students to understand themselves and work after receiving career guidance services of the CIP model has provided empirical evidence that the CIP model career guidance can be a strategy to improve the ability of individuals who have difficulty hearing in understanding themselves and work and then link these two aspects to career development. This research has also corroborated and supported similar studies, some of which were conducted by [Dipeolu et al. \(2020\)](#)). CIP career guidance is proven effective for Attention-deficit/hyperactivity disorder (ADHD) students. [Sartinah \(2017\)](#) tested the effectiveness of CIP in improving the career understanding of physically disabled students. Thus, the results of this study have provided theoretical reinforcement of the application of the CIP model not only for people with conditions without disabilities but also for people with disabilities.

The findings in this study recommend at least five concrete and holistic actions for applying the CIP model in career guidance with deaf students. First, teachers and counsellors must be trained in CIP in-depth. Secondly, the material should be tailored for deaf students. Third, schools need to involve experts and parents. These four programs should promote equity and inclusivity and host inspiring sessions by successful deaf guest speakers. Fifth, continuous evaluation and adjustment of materials through data will increase the effectiveness of this program. With this holistic approach, career guidance with the CIP model can provide equal opportunities for deaf students in planning their careers.

## Conclusion

This research has proved that the CIP model is one alternative career guidance model that can help deaf students develop career decision-making skills. This research has also been able to empower deaf students to make career choices that are often unable to be made by deaf students or other students with disabilities because they are considered individuals who are unable to understand themselves and work for their future. A deficiency in hearing is considered to be the inability of a deaf student to determine their future career. Through several stages of the CIP career group, deaf students are trained to have knowledge and skills in self-understanding and work. This research has provided empirical evidence that the negative view of self-understanding in deaf students and the impact of low self-understanding and work can change and improve. So, the results of this research show that CIP can be applied not only to individuals without disabilities but also to individuals with disabilities. This research has some limitations, at least on two things. First, this type of research experiment with research subjects consisted of twelve high school-level deaf students who had problems understanding themselves and their work. For this reason, it is necessary to test the efficiency of the CIP model career guidance on a wider number of research subjects, both in terms of the number and disability carried by the research subjects (subjects with autism, physical barriers (hearing)). Second, this research uses experimental research methods pretest-posttest design with a single model, so it is necessary to conduct testing using a more rigorous and complex experimental model.

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