

Occupational Information Knowledge Levels among Secondary School Students in Uganda

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Abstract

Youth unemployment challenge remains a problem in Middle Income and Low-Income Countries (LICs) despite the existence of career guidance and counselling services in schools. A quasi-experiment was conducted in four major secondary schools in southwestern Uganda among students receiving advanced level education. A total of 89 students were enrolled into treatment group, and 72 in control group that were randomly selected. Treatment group received career guidance and counselling sensitisation based occupational information contained in National Occupational Information Coordinating Committee (NOICC) competencies and indicators (1976). A checklist was modified from NOICC competencies and indicators and used to assess students' occupational information knowledge. Results revealed no significant occupational information knowledge difference between treatment and control groups. However, occupational information knowledge gaps were detected in competencies for understanding the impact of growth and development, need for positive attitudes toward work and learning, and understanding how societal needs and functions influence the nature and structure of work; and understanding the interrelationship of life roles on career life decisions. Therefore, increasing occupational information sensitisation for students in schools focusing on current changing work demands and technology may improve career transition among students and reduce youth unemployment challenge being experienced globally.

Keywords

Students, Secondary Schools, Occupational Information, Career Life Transition, Uganda

1. Introduction

The study of students' occupational information knowledge in this age is crucial given information and skills gaps the youth experience when transiting between education and employment. It is assumed that the youth undergo normal career self-concept developmental stages due to cognitive development and the interaction with the environment to shape their career paths. During the exploration stage (15 - 25 years), experience exposure to curricular and non-curricular fields from which they accumulate information about careers from which they are likely to make career choices (Super, 1976). According to Cognitive Information Processing (CIP) model of career counselling by Sampson and Reardon in 1991 information about occupations is processed in a hierarchical manner that shapes individuals career choices. Three domains of cognitive information processing are singled out starting with lower occupational information order that consists of lower thinking activities namely self and occupational knowledge. The second and third hierarchies are high order cognitive processes that include career decision making, and metacognition whose products include reasoning, problem solving, and decision making. Students who attain high cognitive information processing skills during exploration stage of career self-concept development are likely to become competent career decision makers during career transition than those who don't have such cognitive skills.

As the world grapples with high youth unemployment, it is important to study students' level of occupational information knowledge to identify gaps that require urgent attention to support students' smooth career transition based on competencies in self-knowledge, educational and occupational information exploration, and career planning. Improved occupational information knowledge is critical for students undergoing education because it facilitates their career life transition especially for youth in LIC's to make competent career life choices that fit into global development agenda (United Nations, 2018).

Uganda being among the LICs with one of the youngest populations in the world, of which over 78% of the population is under the age of 30, and graduates transition in the labour market is at 12.7% (Bertelsmann, 2022). It is important that this study is given attention to document gaps identified in the human capital development initiatives related to limited skills, education, and poor attitude to work (Kim, 2021). Existing studies link poor career transition among students in Uganda to poor structuring of guidance and counselling in schools in sub-Saharan Africa, poor conceptualisation of career guidance and counselling in schools, low student-career advisor ratio (Otwine et al., 2018) poor training and counselling skills among career advisors poor skills of career assessment and lack of integration of career guidance and counselling information to global development agenda (Otwine et al., 2022). Poor career life transition is further compounded by students' negative attitude to non-university study programs (Kizza et al., 2019), and poor career guidance and counselling environment in schools (Besigomwe, 2019). Improved occupational information knowledge increases

students' cognitive ability for career information processing for high order thinking and career decisions (Clemens & Milsom, 2008). Career competencies and indicators contained in National Occupational Coordinating Committee guidelines for high school are used in this study as a build up for sensitisation of students towards occupational information awareness, at the same time for assessment of occupational information knowledge level. This information is favoured because it contains structured occupational information which students require exposure to make appropriate career decisions in life. Again this information is useful to both educators, career advisors, and employers to focus on holistic career needs when making career decisions in respect to self-knowledge, educational and occupational information exploration, and career planning (Lester et al., 2013). Therefore, in this study high occupational information knowledge in schools may mean that students' capacity to make evidence-based career decision due to improved memorisation of occupational information knowledge, career decision making skills, and metacognition. Therefore, assessment of occupational information knowledge level among secondary school students in Uganda, a low-income country may help to give feedback necessary to improve policy review in education, employment, and capacity building of career advisors. This is aimed at bridging the gap between students' career aspirations, and occupational information knowledge required to connect education, occupational exploration, and career planning to facilitate positive school to work transition.

1.1. Literature Review

Occupational information refers to either printed or electronic materials, personal contacts, and other resources that provide individuals with information in the career planning process (Ananthaswamy, 2010). Occupational information knowledge refers to awareness of valid and usable data about jobs, training opportunities, entry requirements, working conditions, rewards offered, career advancement patterns. Occupational information is foundational in cognitive information processing, and it covers information about self and occupations (Clemens & Milsom, 2008; Peterson et al., 1991). Daws (2007) observed that occupational information reduces chances of occupational psychopathology if offered early in life and improves individuals' career self-concept and career decisions (Ananthaswamy, 2010; Rogers & Creed, 2011). It is established that high school students' career decision is influenced by occupational information about self, education and occupational exploration, and career planning. This information about occupations is in line with occupational information by National Occupational Information Coordinating Committee (NOICC) competencies and indicator that high school students consider while making formal career decisions (Clemens & Milsom, 2008; Lester et al., 2013; Bloom, 1996; National Occupational Information Coordinating & Committee, 1992). Occupational information competencies and indicators are a good resource for teachers and career

advisors to provide information necessary for preparations about career information to be disseminated to different students classes.

Career guidance and counselling in schools contribute to students' occupational information knowledge because it provides a medium for enhancement of occupational information literacy about work and lifelong learning (Borbély-pecze & Watts, 2011). Schools also provide platforms to assist students evaluate occupational information required to respond to individual and societal needs of work. Career education provided to students further promotes career information health of students thus reduces career insecurity and anxiety associated with career indecision (Rawatlal & Pillay, 2017). Occupational information knowledge for secondary schools is reviewed under areas of self-awareness, educational and occupational exploration, and career planning. This review is in line with cognitive information processing (CIP) model of career guidance by Sampson, and Reardon in 1991. In the CIP model, it is explained that conceptualization of occupational information influences individuals' occupational information knowledge and promotes career self-concept, career decisions, problem solving, and critical thinking (Peterson et al., 1991). It is further observed that higher order thinking is hierarchical. The lower level is knowledge domain consists of occupational and self-knowledge, middle domain is decision making, while the highest domain covers metacognition (Clemens & Milsom, 2008; Peterson et al., 1991). Peterson et al. (1991) further observed that the lower information processing tasks in memory cannot override higher cognitive tasks. Occupational information knowledge reflects advancements in students' cognitive and emotional tasks adolescents require to make appropriate career plans and decisions (Bullock-Yowell et al., 2011; Clemens & Milsom, 2008).

Self-Knowledge includes information that individuals are aware about self that influence their career decisions. Self-knowledge includes information about personal values, interests, skills, and employment preferences (Clemens & Milsom, 2008). According to (Brown & Lent, 2013) awareness of career information is fundamental to students' career knowledge relating to occupations, career decisions, and meta cognition. In schools, accumulation of occupational information depends on school-to-work activities and career guidance and counselling programs which improves students' understanding of themselves and employable skills (Alfeld et al., 2013; Chand et al., 2014). According to Maree (2018), it is documented that increased self-concept of occupational knowledge improves individuals' skills for work life, interpersonal skills, and self-esteem. It also promotes individuals' autonomy, authority, creativity, innovativeness, adaptability, and resilience during career transition and life changes (Hughes, 2017; Koune-nou, 2012; Jacobus, 2017; Rogers & Creed, 2011).

Self-knowledge of occupations is linked to a person's understanding of mental health and the influence it has on their career choices. According to the assumptions of CIP model of career counselling it is observed that ability to address students emotional, and cognitive processes produces positive career decisions (Bullock-Yowell et al., 2011). Strong emotional awareness enhances individual

career development attributes like courage, optimism, perseverance, hope, career adaptability, perseverance, joy, and altruism. Schools that promote self-knowledge of career information among students improves their emotional development and career goal setting, and therefore increases their self-confidence for career decision-making (Rogers & Creed, 2011; Jacobus, 2017; Nasir & Lin, 2013). Therefore, valuing self-knowledge of occupational information among students is crucial to estimate their response awareness about occupational information needed for career life decisions and transition.

Educational and career information exploration is part of occupational information in which students connect learning areas to career aspirations. This includes information related to education and work experience, course requirements, life roles and requirements of various careers, socioeconomic advantages, and career planning (Clemens & Milsom, 2008). Clemens and Milsom further observed that educational and occupational information exploration relates to what is learned in the classroom and the requirement for employment like course requirements, life roles, requirements of different careers, socioeconomic benefits, career transition, and lifelong learning (Clemens & Milsom, 2008). Acquired knowledge from educational and occupational exploration helps individuals develop and nurture professional knowledge, skills, and attitudes needed to make decisions about studies, work opportunities, and life roles (Odo, 2015).

Past studies have established a strong linkage between occupational knowledge, educational decisions, and labour market outcomes (Lester et al., 2013). Students who receive adequate career guidance and counselling were found to make smooth career transitions into working life and sustain employment than those who did not. Researchers attach a lot of importance to school-based activities because they increase students' knowledge of educational and career information like encouraging students to try out voluntary menial jobs either at home, school, or in the community; and conducting personal or group projects to improve students' innovation skills.

Exposure of students to educational and occupational information was found to improve their career identity, personality and environment adequacy, and career planning skills. Again, it is documented that education and occupational information exploration prepares students with information and skills to match work life demands of industry; and the need to adapt to different work environments in organizations (Reddan, 2015). Due to current challenges in the employment industry and technology, exposure of students to update educational and occupational information is crucial because it helps them align their education and perceived contribution to society in their working life with the needs of society (International Labour Organization, 2018). According to Siekmann and Fowler (2017) governments and non-governmental institutions around the world are encouraged to modify career information and tailor it to the needs of their countries that may close the gap between career information, and skills mis-

match so that products of education can cope with changes in technology, employment demands, and students career aspirations and increase their employability.

Career planning is another area of occupational information addressed under occupational information domain. Career planning includes activities individuals undertake discover, and pursue their career paths like personal goal identification, clarification, gathering specification information on occupations, and resolution to create outstanding career frameworks (Chen et al., 2020). During career planning individuals explore information about beliefs, orientation, and access to different information which helps them to evaluate information about employment alternatives a person may seek (Kulcsár et al., 2020). Studies show a strong correlation between career planning and self-efficacy, family, personal interests, and economic considerations (Meddour et al., 2016; Xin et al., 2020).

Some factors that influence career planning include availability of student internship programs because it pre-exposes them to work life role dynamics (Alfeld et al., 2013; Saniter & Siedler, 2014; Tsai et al., 2017). In low-income countries, it is established that young people discover career planning skills by trying informal jobs in the labour market (Jua Kali), which helps them discover their career paths (Reardon & Bertoch, 2011). Lifestyle factors have been identified to influence career planning because it helps students to align career plans with activities that promote individual skills for knowledge of information for socioeconomic, optimism, perseverance, and risk-taking in work life. Moreso, values attached to work ethics, work balance, organisational support, and honesty are documented that improve career planning (Blount et al., 2018). Other factors listed include family values like family responsibilities, willingness to work, work values, vocation, and professional commitment to improve career planning skills (Carlstrom & Hughey, 2014; Fouad et al., 2016). Additionally, cultural values are mentioned because it prepares individuals to develop life skills with a global outlook that may enable them to work across borders. At personal level, students' career planning is influenced by self-efficacy, peers, parents, coaches, religious figures, and role models (Fizer, 2013; Brown & Lent, 2013).

Developing work habits is important in students career life because it increases students' ability to make sound judgement, responsibility, reliability, punctuality, attendance, life planning and managerial skills, recognizing and adherence to the legal and honour ethical standards that govern one's profession rules (Filmer & Fox, 2014; International Labour Organization, 2013; Brown & Lent, 2013). Five key areas identified that are critical to career planning, include lifelong guidance systems, broadening access to guidance information, strengthening quality assurance mechanisms, citizen empowerment, strengthening of policy structures, and systems development at both national and regional levels (European Centre for the Development of Vocational Training, 2008).

Facilitation of students' career planning skills is not the responsibility of only students and educators, but other stakeholders who include professionals, em-

employers, policy makers, and non-professionals. The critical support expected includes mentorship, modelling, coaching, and advisory role. Need for concerted efforts by different stakeholders to provide career models and mentoring was further suggested by Ali (2016), Maree (2017) and Xin et al. (2020). Additional facilitators that foster students' career planning skills include the installation and use of web-based career resources in school libraries (Odo, 2015). Career planning scales and methods available on the internet have proven useful to support learners in career exploration and planning strategies.

Lastly, lifelong learning is critical to students' career planning because it addresses occupational information needed to develop career and learning management skills that respond to increased global economic vulnerability (European Centre for the Development of Vocational Training, 2008; Savickas, 2013). Lifelong learning and career planning is influenced by factors like students' level of career self-concept, occupational information knowledge, and the social influence of parents, peers, and teachers (Amani, 2013). Scholars advocate for increased involvement of educators, policy makers, parents, and civil society on equipping youth with the right information to plan for careers that respond to labour market demands (Amani, 2013). Besides, new labour market trends driven by technological advances and market competition can be detrimental to students' career plans if not well supported (Arastaman, 2019). Therefore, review of literature about the student's occupational information for career planning is crucial to allow us to examine the information gaps that exist in career education provided in schools and inform policy review to address the gaps that may be fuelling educational, and skills challenges faced by the youth during their career life transition.

Problem Statement

Despite the existence of career guidance and counselling in schools for a long time, and sensitisation about occupational information in schools, students' career transition is not smooth. Students' career transition in Africa stands at 9% (International Labour Organization, 2020), while graduate employment in Uganda stands at 12.8% (Bertelsmann, 2022; Kim, 2021). Poor transition of students from school to employment is associated with limited skills & knowledge mismatch (Republic of Uganda, 2020). Youth unemployment remains a problem in LICs despite the exposure of students to career guidance and counselling services in secondary schools which are a reservoir of human capital development. This casts doubt to whether secondary schools provide appropriate occupational information needed to navigate career life transition. Therefore, this study is aimed at identification and documentation of gaps in students' occupational information gaps that interfere with their career life transition to inform theory, practice, and policy.

1.2. Objectives of the Study

To assess students' levels of occupational information knowledge in selected secondary schools in southwestern Uganda.

1.3. Research Question

What is the level of occupational information knowledge among students in selected secondary schools in southwestern Uganda?

2. Methodology

2.1. Study Design

Quasi experiment is the study design selected to measure group differences about occupational information knowledge among students. Treatment group received career guidance and counselling intervention that involved sensitisation of students on competencies and indicators of occupational information guided by NOICC guidelines. Control group did not receive any intervention. Both groups received post-test to assess students' knowledge levels. The researcher adopted the quasi experiment because it is a true experiment when involving participants that may be studied in non-laboratory environment.

2.2. Study Area

This study was carried out in secondary schools in Ankole sub-region, southwestern Uganda. Uganda lies between Latitude: 4012N and 1029S and Longitude: 29,034E and 3500W. It has a total area of 241,555 km². The total population is 45.7 million with a population growth of 1%. Southwestern region of Uganda, Ankole sub-region is comprised of districts of Buhweju, Bushenyi, Kiruhura, Ibanda, Isingiro, Mbarara, Mitooma, Ntungamo, Rubirizi and Sheema districts. Mbarara is the administrative capital city of Southwestern Uganda. Mbarara District borders Ibanda and Kiruhura Districts to the North; the districts of Kiruhura and Isingiro to the East; districts of Isingiro and Rwampara in the South; and Sheema District to the West. The district administration is 270 km by road southwest of the capital Kampala.

2.3. Study Population

The population in this study consisted of secondary school students at advanced level certificate of education (A' level). The majority are adolescents undergoing career exploration stage of development. During this stage, the main developmental task is career decision making before joining institution of higher learning and employment. A' level students in Uganda, were engaged in learning activities that supported them to select specific career paths. Furthermore, homogenous group may be studied at once to eliminate bias that would threaten internal and external validity of the study.

2.4. Sample Size

The sample size accounted for all participants who qualified for inclusion in the study by numbers. The sample size calculation for schools, and students was reached using Krejcie and Morgan formula.

$$n = \frac{X^2 NP(1-P)/e^2 (N-1) + X^2 P(1-P)}{e^2 (N-1) + X^2 P(1-P)}$$

where:

N = population size;

n = required sample size;

e = acceptable sampling error (0.05);

X^2 = chi square of degree of freedom 1, and confidence level 0.95% = 3.841;

P = proportion of population (if unknown 0.5).

Sample Size for Schools: The school sample consisted of government aided secondary schools in south-western Uganda that offered A-level education in a combination of arts and science subjects. The total sample of secondary schools in Ankole sub-region was 310 schools at the time of the research. Sample size for schools ($N = 310$).

$$n = 3.841 \times 0.5 \times 0.5 / 0.05^2 (310 - 1) + (3.841 \times 0.5 \times 0.5)$$

$$n = 297.6775 / (0.7725 + 0.96025)$$

$$n = 297.6775 / 1.73275$$

$$n = 171.7948$$

$$n = 172 \text{ schools}$$

Sample Size for Students

The student sample consisted of senior six students registered with the Uganda National Examination Board (UNEB). A-level students in the Ankole sub-region had an estimated total enrolment of 123,547 at the time of the study. Student sample $N = 123,547$

$$n = \frac{3.841 \times 123,547 \times 0.5 \times 0.5}{0.05^2 (123,547 - 1) + (3.841 \times 0.5 \times 0.5)}$$

$$n = 118,636.00675 / (307.865 + 0.0096025)$$

$$n = 118,636.00675 / 307.8746025$$

$$n = 385.33872487906$$

$$n = 385 \text{ students}$$

All A' level students found in school at the time of the experiment and filled consent forms were eligible for the study. This was done to cater for student numbers in case some respondents dropped a common challenge in field experiments.

2.5. Sampling Strategy

The procedure the researchers considered when enrolling participants into the study was multistage sampling.

Stage One: Sampling for school and students to be enrolled into the study.

Sampling Strategy for Schools: All members of the sample had an equal chance to participate in the study. However, a simple random sampling technique was used to select school samples. Therefore, inclusion and exclusion criteria a non-probability sampling technique was used to narrow down the elements of the study for ease of data collection and analysis. Again, this strategy

was selected to maintain the quality of the results and generalization. A list of government-sponsored secondary schools in the Ankole sub-region was obtained from Ministry of Education and Sports (MoES). Thus, school that were selected fulfilled the following criteria.

Inclusion Criteria

- 1) All government aided schools in Ankole Sub Region had an equal chance to participate in the study.
- 2) At least one of the schools selected had to meet the government policy of Universal Secondary Education (USE) for inclusive representation.
- 3) All schools that had A' level section offering both Arts and Science subject combinations.
- 4) Only senior six class was considered for recruitment into the study.

Exclusion Criteria

- 1) Schools which had general school enrolment of less than one thousand students.
- 2) Schools which had senior six class enrolment of less than one hundred students in both Arts and Science classes.
- 3) Schools that were not government aided.
- 4) School that did not have A' level section.

Sampling Strategy for Students: The researcher derived the student sample using stratified sampling technique. This technique allowed us to select homogeneous groups of the population to be studied as a unit. This technique had the advantage of improving sample representativeness and reducing sampling error. The stratum chosen was senior six class a section of Advanced level (A' Level) that included both science and arts classes.

Inclusion criteria for student Sample

- 1) All students in senior six registered to sit for national examinations (UNEB) in the selected schools.
- 2) All students in senior six irrespective of whether they have ever received occupational information sensitisation or not.
- 3) Only students who consented to participate in the study.

Stage Two. Sampling Strategy at Experimental Stage

The samples included in the experiment were from schools that met the sampling criteria. However, further sampling was done to meet the requirements of quasi experiment as follows.

Sampling Strategy for Schools: The researcher selected only four schools that met the sampling criteria. Selected samples were subjected to random sampling technique to select treatment and control groups using a Golden Bowl method. First, we prepared slips of paper with the letters A B C D to represent the participating schools placed in a bowl and randomly mixed. An independent person picked two papers from the bowl to represent the treatment group. The selected letters to represent the treatment group were A and C, while control group was represented by letters B and D. Details are presented in **Table 1** below.

Table 1. Treatment and control groups.

Group				Total (N = 383)
Experimental (A & C)	R	Treatment	Post test	191
Control (B & D)	R	No treatment	Post test	191

R = randomization: N = 400.

Sampling Strategy for Students: All senior six students from the four selected schools who signed consent forms qualified to participate in the experiment as follows.

- 1) Students from schools that were randomly selected for treatment group received career guidance and counselling sensitisation on occupational information competencies and indicators included in NOICC.
- 2) Students in control group did not receive career guidance and counselling sensitisation about occupational information whatsoever.
- 3) Students in both treatment and control groups were post tested to establish their levels of occupational information knowledge.

2.6. Data Collection Methods

Data collection methods are the systematic techniques in which study participants answered either stated research questions or hypotheses to ensure accurate data.

Quasi Experiment: was the main method used to manipulate the variables through occupational information sensitisation among senior six students. Data was gathered using NOICC checklist that was converted from NOICC K-12 competencies and indicators for High School. NOICC checklist administered was in English—the original language that was organised as a Likert scale showing categorical levels; thus, much ease (WE) = 3, neutral (N) = 2, with difficulty (WD) = 1.

2.7. Quality Control of Data Collection Tools

Quality control assured internal and external consistency of instruments and gave them the characteristics to make results generalisable. Quality assurance considered reliability and validity of data collection tool explained below.

Test Reliability: Reliability of test items in NOICC checklist was by pre-test and retest in different sites from the selected study centres. This ensured that the scores of items on instruments were broadly consistent with the intent of the study. Test reliability estimate was at Cronbach alpha of 0.72. Scores below meant that the tool was not consistent, while scores above implied that the instrument was dependable. *NOICC Checklist*, was pre-tested on a group of ten students. Cronbach alpha was =0.89. Thus, the NOICC checklist was adequate for data collection for the study.

Test Validity: Test validity covered the capability of the instrument to estimate its properties. Test validity was important because it allowed the research

team to draw meaningful and useful inferences from scores from respective data collection tools. Test validity of the instruments included expert opinion to improve validity of the data collection instruments. The team of experts included, faculty advisory team, and research assistants. Moreso, post-test in treatment group was conducted one week to avoid time lag that may result into forgetting. Triangulation of data was also ensured by checking results from students belonging to different school background.

2.8. Data Collection Procedure

The first step in data collection involved random selection of study groups using rotary procedure. Four papers were folded, of which two were labelled treatment, and two control. An independent judge was used to pick the papers. Schools labelled A and C were treatment, while B and D were control.

In the second step, the researcher introduced the intervention to treatment group. Participants in treatment group received career guidance and counselling sensitisation based in guidelines and competencies for each career decision making areas of occupational information. The guidelines used are extracted from NOICC competencies and indicators for self-knowledge, educational and occupational exploration, and career planning. Control group did not receive any intervention.

The research team visited individual schools selected for treatment on separate occasions following the time each school allocated to the team to administer the intervention which included class meetings. Students were treated to occupational information in three parts.

- 1) Self-knowledge exercises to increase students' information knowledge for positive self-concept, interpersonal skills, and developmental changes on career decision. Brainstorming and discussion sessions were used led by trained research assistants.

- 2) Educational and occupational information exploration was achieved through sensitisation of students about requirements for learning and employment requirements. The competencies exposed to students include understanding the relationship between educational achievement and career planning, attitude to work and learning, skills to locate and interpret career opportunities, skills to prepare to seek, obtain, maintain, and change jobs, and societal needs and functions that influence individuals' career decisions.

- 3) Career planning skills, that include how to make career decisions, understanding of career life roles, and influence of gender issues in career planning.

Materials used to guide participants included handouts containing information about identifies areas of occupational information, newspaper articles, and extracts from reports about national development plans and SDGs.

Timing of occupational information sensitisation depended on the nature of schools, either during night self-study time in boarding schools between 7:00 pm - 10:00 pm; or afternoon lessons during lessons for general paper in day and boarding school where all students in both science and arts class came together between

2:00 pm - 5:00 pm. The sessions were conducted once a week over a period of three weeks. The mode of sensitisation included presentations and open discussions. Week four was used for post-test in both treatment and control groups.

Treatment was administered to students found in the classroom as a block irrespective of whether they have ever received career guidance and counselling before. This procedure helped the researchers not to bias students resulting from selective treatment. Time for question-and-answer sessions was spared for clarification of information and experience sharing during each session. Students who developed anxiety resulting from self-discovery about the information they missed overtime that affected their current career decisions, the research team offered individual counselling support to address participants' concerns. Most anxiety was detected when students discovered that the subject combinations, they were offering did not match with employment requirements in their respective career paths, and changes being experienced in employment industry due to new job demands, and technology that outmatched their educational experiences and self-knowledge. However, the principal investigator (PI) spared time together with teachers in charge of career guidance and counselling in respective schools to give such students more information and emotional support.

The third step was post-test aimed at gathering data that could be compared for treatment and control groups. NOICC competencies and indicators for high school guideline was first transformed into a checklist to test participants' knowledge in key areas of self-knowledge, educational and occupational information exploration, and career planning. This was a Likert scale with three levels showing how well they interpreted the statements related to competencies and indicators of occupational information (with ease = 3, neutral = 2, with difficulty = 1). Totals were made for each level to show occupational information knowledge by participants both in treatment and control groups. Results were compared by percentage response from students for three levels to establish variations and inference.

2.9. Ethical Considerations

The ethical conduct of research included clearance from Makerere University institutional ethical review board (IERB), and Uganda National Council of Science and Technology and permission was granted under protocol number (UNCST SS 473). School head teachers cleared the study through letters of acceptance, while students filled consent forms to enrol in the study. All the information materials were given participant identifiers for schools and students using codes to conceal their identity. Furthermore, the materials were kept in a safe place to avoid leakage to the public and disposal.

2.10. Data Management and Analysis

Raw data gathered from the field by the research team was centrally managed, under the supervision of the PI to ensure proper handling of data and confidentiality.

Quantitative Data Processing: Quantitative data processing included transcription of data by first reversing the coding used on the checklist. High values implied students identified with the information/indicator with ease, neutral value meant undecided, while difficulty showed that participants could not relate with the stated occupational information indicator in the respective occupational information area. Data received from respective data sets after encoding was transcribed into SPSS (version 23.0) for final analysis.

3. Results

This section is a record of data that was gathered from the study participants.

3.1. Return Rate of Data Collection Tools at Post Test

After cleaning the data, students who consistently participated in the experiment both in treatment and control groups and took a post-test were as follows A = 67, B = 22, C = 19, D = 52. The completion rate was 161 (44.6%). This result was affected by high dropout rate at post-test. This being an open field experiment, high attrition rate is expected, a reason why many students were enrolled into the study.

3.2. Demographic Characteristics

Results presented in **Table 2** include detailed information about participants sex, age, and school characteristics.

Table 2. Demographic characteristics.

Demographic characteristic	A n	%	B n	%	C n	%	D n	%	N	%
Sex										
Boys	-	-	14	8.7	22	13.7	53	32.9	89	55.3
Girls	67	41.6	5	3.1	-	-	-	-	72	44.7
Age of students										
>17	9	5.6	-	-	-	-	-	-	9	5.6
18	40	24.8	3	1.9	9	5.6	16	9.9	68	42.2
19	16	9.9	7	4.3	7	4.3	25	15.5	55	34
20>	2	1.2	9	5.6	6	3.7	12	7.5	29	18
School Characteristics										
Boy's boarding	-	-	22	13.7	-	-	53	32.9	75	46.6
Girls boarding	67	41.6	-	-	-	-	-	-	67	41.6
Day & boarding/mixed boys	-	-	-	-	19	11.8	-	-	19	11.8
Experimental groups										
Treatment	67	41.6	22	13.7					89	55.3
Control Group					19	11.8	53	32.9	72	44.7

Key: **A** (Girls school boarding), **B** and **D** (Boys school boarding), **C** (Mixed school for boys and girls, day and boarding, USE).

About sex, majority of student participants are boys $n = 89$ (55.3%), then girls $n = 72$ (44.3%). The average age of student participants is 18.5 years. Majority of participants were from school A $n = 67$ (41.6%), D $n = 53$ (32.9%), B $n = 22$ (13.7), C $n = 19$ (11.8). Treatment group $n = 89$ (55.3%), while control group $n = 72$ (44.7).

3.3. Students' Level of Occupational Information Knowledge

Students' responses on competencies in different areas of occupational information knowledge were captured in **Table 3**.

Results from **Table 3** about various occupational information areas revealed the following.

Table 3. Student's levels of occupational information knowledge.

Variable		Statistics					
		Treatment $n = 89$ (55.3%)			Control $n = 72$ (44.7)		
Competencies		3 n (%)	2 n (%)	1 n (%)	3 n (%)	2 n (%)	1 n (%)
Self-Knowledge							
Competency I	Understanding the influence of a positive self-concept	69 (77.5)	3 (3.4)	18 (20.2)	53 (73.6)	4 (5.6)	15 (20.8)
Competency II	Having Skills to interact positively with others	65 (73)	10 (11.2)	21 (23.6)	55 (76.4)	6 (8.3)	11 (15.3)
Competency III	Understanding the impact of growth and development	69 (77.5)	9 (10.1)	18 (20.2)	48 (66.7)	5 (6.9)	19 (26.4)
Educational and Occupational Information Exploration							
Competency IV	Understanding the relationship between educational achievement and career planning	68 (76.4)	2 (2.2)	21 (23.6)	54 (75)	4 (2.6)	14 (19.4)
Competency V	Understanding the need for positive attitudes toward work and learning	71 (79.8)	2 (2.2)	16 (18)	55 (76.4)	4 (5.6)	13 (18.1)
Competency VI	Having skills to locate evaluate and interpret career information.	64 (71.9)	3 (3.4)	22 (24.7)	49 (68.1)	8 (11.1)	15 (20.8)
Competency VII	Having skills to prepare to seek, obtain, maintain, and change jobs	61 (68.5)	3 (3.4)	24 (27)	49 (68.1)	6 (8.3)	19 (26.8)
Competency VIII	Understanding how societal needs and functions influence the nature and structure of work	66 (71.2)	4 (4.5)	20 (22.5)	46 (51.7)	6 (8.3)	20 (27.8)
Career Planning							
Competency X	Having skills to make decisions.	64 (71.9)	4 (4.5)	22 (24.7)	51 (70.8)	7 (9.7)	15 (20.8)
Competency X	Understanding the interrelationship of life roles	67 (75.3)	3 (3.8)	19 (21.3)	51 (70.8)	6 (8.3)	16 (22.2)
Competency XI	Understanding the continuous changes in male/female roles	56 (63)	4 (4.5)	29 (32.6)	46 (63.9)	8 (11.1)	18 (25)
Competency XII	Having skills in career planning	63 (70.8)	5 (5.6)	21 (23.6)	51 (70.8)	5 (6.9)	15 (20.8)

Key: 3 = with ease (WE), 2 = not sure (NS), and 1 = with difficulty (WD). * Above results are an extract and summary of results from the main data (available on request).

Self-Knowledge: Understanding the influence of a positive self-concept, treatment group n = 69 (77.5%), while control group n = 53 (73.6%); understanding information about skills to interact positively with others, treatment group n = 65 (73%), while control group n = 55 (76.4%); understanding the impact of growth and development, treatment n = 69 (77.5), while control n = 48 (66.7%). The main group difference was detected in students' understanding of the impact of growth and development.

Educational and Occupational Information Exploration: Educational achievement and career planning, treatment n = 68 (76.4%), while control group was n = 54 (75%); awareness about skills to prepare to seek, obtain, maintain, and change jobs, treatment group n = 61 (68.5%), while control n = 49 (68.1%). However, major group difference was detected for understanding the need for positive attitudes toward work and learning treatment group n = 71 (79.8%) was higher than control group n = 55 (76.4%); skills needed to locate evaluate and interpret career information, treatment group n = 64 (71.9%), while control n = 49 (68.1%); and understanding how societal needs and functions influence the nature and structure of work. Treatment group n = 66 (71.2%), while control group 46 (51.7%). Group difference was detected in understanding the need for positive attitudes toward work and learning, and understanding how societal needs and functions influence the nature and structure of work.

Career Planning: Knowledge for skills to make decisions, treatment n = 64 (71.9%), while control group 51 (70.8); knowledge for skills in career planning treatment group n = 63 (70.8%), while control n = 51 (70.8%), understanding the interrelationship of life roles, treatment group n = 67 (75.3%), while control n = 51 (70.8%), understanding the continuous changes in male/female roles students in both groups revealed low information knowledge levels despite sensitisation; thus, treatment n = 56 (63%) while control n = 46 (63.9%). Group differences were detected about understanding the interrelationship of life roles.

4. Discussion

Results are discussed by occupational information knowledge areas that include self-knowledge, educational and occupational exploration, and career planning.

4.1. Self-Knowledge

Findings about self-knowledge show that majority of students have a high level of occupational information for self-knowledge irrespective of whether they received treatment or not. There were minor group differences. The competencies students were highly knowledgeable were understanding the influence of a positive self-concept, and skills to interact positively with others. Low knowledge was expressed for understanding the impact of growth and development. This finding means that by end of secondary education cycle, students have received sufficient sensitisation about occupational information required to make career decisions. This finding is in line with the study by (Otwine et al., 2022) where it

was established that schools in Uganda were successfully implementing career guidance and counselling despite limitations related to student, teachers, school administrators, parents, and policy factors.

Self-awareness knowledge for occupational information is crucial towards individual career transition. It includes knowledge of positive self-concept that covers areas of gender self-awareness, mental health, professional knowledge, and social influence of parents, friends, and teachers (Amani, 2013; Cortes & pan, 2017). It also covers understanding of the role of other factors that influence students' self-awareness like culture, family, politics, social affairs, and economics (Chinyamurindi, 2016; Chand et al., 2014; Sheri et al., 2013). According to Super (1976) self-awareness is a cognitive task that progresses through life span. Occupational information processing is hierarchical with the lowest domain being occupational information, followed by decision making domain, and metacognition as the highest (Clemens & Milsom, 2008; Reardon & Bertoch, 2011). It is established that school activities increase students' cognitive career exploration related to personal professional, mental health, access to material and human capital development, and social networking (Gray et al., 2020; Mckenzie et al., 2020).

However, knowledge difference was detected for students' understanding of understanding the impact of growth and development. Clemens & Milsom, (2008), and Hartina and Tharbe (2016) observed that understanding of the impact of growth and development supports students to create individualized learning plans and enhance their cognitive information processing. Cognitive information processing is associated with enhancement of occupational information knowledge, decision making, problem solving, high order thinking, and metacognition. Occupational information that students seek include stress management skills, and academic and social adjustment to technological change (Panina et al., 2020). In a study by Neault and Pickerell (2011) it is established that a lack of good physical, mental and emotional health is detrimental to individuals' occupational information knowledge.

Reports available in Uganda show poor mental health that negatively affects students' career progress. There is high prevalence of mental health breakdown among students due to mental, neurological, substance abuse disorders, social-economic issues, HIV, and other health conditions (Thumann et al., 2016). However, in the respective reports, policy review towards adolescent mental health is encouraged through collaboration with educational stakeholders like teachers, peers, parents, health workers and communities to promote student well-being.

4.2. Education and Occupational Information Exploration

Majority of students showed high knowledge level of information for understanding of information about educational achievement and career planning, and skills to prepare to seek, obtain, maintain, and change jobs. However, ma-

major group difference was detected for skills needed to locate, evaluate, and interpret career information, and understanding how societal needs and functions influence the nature and structure of work. Documentary evidence shows that improved knowledge of career information for educational experience increases students' personal and interpersonal skills, and problem solving (Eremie & Ikpah, 2017; Mapfumo & Nkoma, 2013; Kuijpers, 2019). However, students' career transition in Africa is reported to be limited by knowledge and skills gap that results in poor career transition of graduates. This implies that whereas schools have instituted programs to facilitate students' career transition, it's important to work with existing frameworks in employment industry and education to increase students' occupational information to facilitate their career transition.

Scholars have suggested measures that schools may adopt to improve students' educational and occupational information exploration to include support for cognitive information processing, psychosocial, and capacity building (Hughes, 2017; Jonck, 2015; Nasir & Lin, 2013). These interventions depend on factors linked to students' intellectual ability and personality traits, socioeconomic background, education and skills, and skills, career opportunities. This is further enhanced by students' job search knowledge that improves their career adjustment skills, thus improving their career transition (Ali, 2016; Chen et al., 2020; Ross & Maynard, 2021; United Nations, 2018). However, training students in job search skills relating to existing technological advances is key to students' educational and occupational information exploration. This is supported by information contained in reports by (International Labour Organization, 2021b). This includes information about online learning skills, working from home, positive attitudes toward low wages, self-employment, work with less supervision, high-performance expectations, and negative impact of work on people's mental health (Maree & Che, 2020; Oakman et al., 2020; Panina et al., 2020).

Schools may adopt various measures to increase students' educational and occupational information exploration through increased initiatives in schools to help them value career information about educational adjustments to address skills and knowledge gaps in employment industry. However, factors that affect their career transition should not be ignored, namely mental health and rehabilitation, family, and gender issues, and working with minority groups during counselling (Capuzzi & Stauffer, 2018). They also need occupational information support to expand their knowledge and skills to cope with the new global challenges related to technological advances and the impact of COVID 19 on health, economy, lifestyle, and environment (Chen et al., 2020; Hirschi, 2018; International Monetary Fund, 2020). Therefore, collaborative efforts to help students in schools adapt to technology in learning and future work are encouraged.

Further findings from the study revealed that students had difficulty with occupational information related to understanding the need for positive attitudes toward work and learning, and understanding how societal needs and functions

influence the nature and structure of work. Meaning that students have difficulty relating classroom information and employment requirements. Whereas traditional educational and occupational information addressed societal issues regarding knowledge, skills, and employment, current demands on occupations are diverse. They include massive migrations, technological advancements, and recently the impact of the COVID-19 pandemic (International Labour Organization, 2021b). This confirms difficulty that students endure during educational and occupational information exploration that negatively affects their career transition.

4.3. Career Planning

Majority of students expressed high knowledge of occupational information for career planning irrespective of whether they received treatment or not. The areas students exhibited high knowledge level for career planning include skills to make decisions, skills in career planning, and understanding the continuous changes in male/female roles. However, group difference was detected about occupational information knowledge for understanding the interrelationship of life roles. This finding implies that by the end of secondary educational cycle, the sensitisation about occupational information students receive is adequate to support them make appropriate career plans.

This finding is in line with past studies that reveal that during exploration stage of career development, individuals gather too much occupational information from which they make career plans (Levin et al., 2020; Lipshits-Brazilier et al., 2016). This observation is in line with CIP model of career counselling in which it is stipulated that career planning is a cycle in which individuals consolidate their career decision through stages that include communication of career challenge (C), analysis (A), synthesis (S), valuation (V), and execution (E) [CASVE] (Clemons & Milsom, 2008; Reardon & Bertoch, 2011). This in this model it is stipulated that career advisors interact with either individuals or groups of students to scrutinise their career plans from the time they conceptualise career paths till they execute their career plan. The career advisor supports students to deal with any emotional, social, and intellectual difficulties that may interfere in career planning.

Career planning exercise is a cognitive developmental task where individuals interact with the environment to identify with requirements for future employment. According to Super (1976), it is observed that individuals' career plans are shaped by different stages of career development. However, formal career planning is experienced during exploration stage between 15 - 25 years in which most students at advanced level of secondary education occupy (Argyropoulou, 2018; Maree, 2018). Schools engage learners in both curricular and non-curricular activities during exploration stage to promote career planning skills. Documented activities include leisure and lifestyles which were found to improve individuals' career planning and self-awareness of prevailing socioeconomic status, culture,

values, career choices and work habits (Anders et al., 2018; Xin et al., 2020). Good career planning skills reduces occupational information knowledge gap about courses of study at higher education, and also improves students' career life choices (Odo, 2015). Thus, improved occupational information knowledge means that students career transition may be smooth with better career plans.

Factors that promote career plans among students include family background, personality, life expectancies, interpersonal and interpersonal relationships, and work outcome expectations. This is supplemented by information obtained from interaction with peers, gender, print media, financial expectations, and career interest. At school level, career planning is promoted through exposure of students to structured career programs early in life; and this increases students' career options and therefore improves their career plans. Career assessment is cited among the factors that promote career planning because after assessment, students can identify personal strengths and weaknesses, core values, and paths that match their personality, environment, and potential job satisfaction (Gyan-sah & Guantai, 2018; Jena & Nayak, 2020). However, when building students' career planning skills, it is important to know that career planning does not remain static. Therefore, students who are provided with social career development opportunities are likely to increase their occupational information knowledge, thus improve their career planning skills. Thus, promotion of career planning skills in schools should be integrated into school curriculum to support students make informed career plans that match job market and technological advancements.

Although students exhibited high level of occupational information knowledge regarding career planning, existing reports show gaps in career transition among graduates with gender bias (Bertelsmann, 2022; Kim, 2021; Republic of Uganda, 2020). Gender differences in career transition are not limited to LICs but also in developed countries. It is documented that women's career plans are influenced by factors related to family life responsibilities, work environment, and traditions (O'Neil et al., 2008; Rācene, 2014). Globally, career transition favours men in employment by 77%. While the average global gender pay gap is 24%. Gender parity is induced by either hostile, or isolating organizational cultures, sexual harassment and stereotyping, poor gender identity, conflicts between external responsibilities and current work models, and unpredictable work demands associated with different forms of work (Cortes & Pan, 2017; Jones, 2019; Lindstrom et al., 2012; Weerarathna & Hapurugala, 2019). Therefore, capacity building of teachers in schools to address gender parity issues that interfere with career planning among women ought to be addressed to mitigate career transition challenges at all levels of education and employment.

Studies show that there are interventions that students may be sensitised to mitigate the effects of gender influence on career planning that include increased sensitisation about breaking ceiling from traditional to non-traditions careers (Shrestha, 2016; Zula, 2014). It is also recommended that students should be

sensitised about changes in technology that may affect their career planning through career guidance and counselling programs; (Lent, 2018; Maree, 2017; Syakir et al., 2016; Veloso et al., 2018). It is also documented that the fourth industrial revolution has changed global career life transition platform for which students ought to be prepared to improve their career planning skills (Hirschi, 2018; Ndung'u & Signe, 2019). African sub-region has been singled out to be more unprepared about technological changes that negatively affects students' career planning skills (Chiweshe, 2019; Manda & Dhaou, 2019; Xu et al., 2018). Therefore, timely address of this challenge may mitigate career transition glitch students face amidst shrinking traditional jobs that contributes to poor career planning skills and high unemployment levels among the youth. It is recommended that career guidance offered in schools should focus on occupational information that increases students' awareness and improves their career planning skills motivated by global career changes and technology and reduce gender disparities.

Regarding students' occupational information level for career planning, further results revealed that students experienced challenges in conceptualisation of occupational information knowledge about the influence of life roles in career planning. Students who received sensitisation of occupational information sensitisation had better knowledge about the influence of life roles in career planning than their counterparts. Understanding life roles during career planning improves students' autonomy, security, technical and managerial skills, entrepreneurial creativity, a sense of service, challenge, and lifestyle (Dries, 2013; Nagy et al., 2019). Students' appreciation of life roles has power to influence their positive attitude towards work, skills, and knowledge (Fizer, 2013; International Labour Organization, 2020). It also enhances their ability to select careers tailored to their experiences, personality, work values, and expectations (Abe & Chikoko, 2020; Brown & Lent, 2013). Therefore, sensitising students on career life roles may promote students' values that increase their career planning skills.

It is important to note that although schools in Uganda are making effort to improve the implementation of career guidance and counselling, students don't have sufficient information about life roles in career planning. This may be attributed to factors cited that are related to students' poor attitude towards career guidance and counselling, limited sources of occupational information, limits involvement in students career programs by stakeholders in education, and employment industry, and poor support of career guidance and counselling in schools by government policy (Otwine et al., 2022). Although official guidelines on guidance and counselling in schools by the government of Uganda indicate that promotion of co-curricular activities in schools promote students' career planning skills and improves their lifestyle. These include students' activities in games and sports, music, dance and drama, and societies and clubs, and faith-based programs.

However, it is noteworthy that co-curricular activities alone may not increase students' knowledge of life roles to promote their career planning skills. Other

factors have been documented to include lifestyles that promote growth opportunities, professional charm, self-esteem, societal inspiration, and career aspirations (Abbasi & Sarwat, 2014; Patton & McIlveen, 2009). Besides, life roles in career planning are influenced by management skills of one's leisure time. Leisure is identified to be a stress-reliever and promotes academic achievement among adolescents (Kelly et al., 2020; Brown & Lent, 2013; Lin & Pao, 2011). Understanding life roles is linked to smart careers and technologies that contribute to economic development of nations in the 21st century (Chiweshe, 2019; International Labour Organization, 2021a; Veloso et al., 2018). Therefore, it can be concluded that increasing students' knowledge about understanding of work life roles in career planning has potential to improve students' career planning skills, and career life transition.

Suggested interventions both at school and student level to increase students' awareness about career life roles to promote career life planning include capacity building of occupational information knowledge for career planning among teachers, counsellors, and students for lifelong learning. Increased sensitisation of students about TVET and universities widens students' knowledge of career planning opportunities and associated life roles (Kizza et al., 2019). This includes knowledge for courses available to students in respect to advanced degrees, associate, and foundation degrees, applied baccalaureates, higher and academic education, and hybrid courses that combine professional and academic learning (Bathmaker, 2017). Despite this knowledge, in Uganda, students have been found to choose courses in undergraduate programs different from their career plans. This is attributed to the hype to obtain university degree rather than skills development. Limited information about work life roles in career planning is attributed to factors including students' apathy towards TVET, lack of career guidance and counselling, and professional identity (Igbinedion & Ojeaga, 2012; Kizza et al., 2019; Wong & Kaur, 2018). A study in Uganda and Kenya linked limited education and job opportunities to poor career planning skills (Agelu, 2014). Therefore, exposing students to various career advancement activities both inside and outside of school may improve students' knowledge of career life roles, and subsequent career planning skills. This may include promotion of school curriculum to include activities like industrial visits, volunteer work, interaction with professionals, and school-based projects. Efforts to promote competency-based learning in lower secondary education cycle may increase students' opportunities to discover their talents, skills, and improve their knowledge of career life roles and improve their career planning skills (Mabonga, 2021; Olema et al., 2021). Therefore, improving students' occupational knowledge that improve their career planning ought to be given urgent attention in schools to facilitate students' career life transition and lifelong learning.

4.4. Conclusion

Occupational information knowledge of students in secondary schools in Ugan-

da is adequate in areas of self-awareness, educational and occupational information exploration, and career planning. Gaps were established in students' understanding of the impact of growth and development, understanding the need for positive attitudes toward work and learning, understanding how societal needs and functions influence the nature and structure of work, and understanding the interrelationship of life roles. Increased sensitisation of students and exposure to new advancements in employment and technology may increase their occupational information knowledge and improve their career life transition.

4.5. Recommendations

1) Increase capacity building of career advisors in schools to widen their occupational information knowledge and to offer students relevant occupational information knowledge that is in line with changes in the employment world and technology.

2) Emphasis of career assessment of students' occupational information knowledge, career interests, and aligning feedback to job market demands is crucial to inform policy and curriculum development.

3) Access to occupational information relevant to global economic development strategy is crucial to increase students' awareness and career planning skills.

4) Increase awareness about the effect of mental health challenges on students' career life transition.

5) Further study is encouraged about development of hybrid occupational information knowledge appropriate to career development among students to bridge the gap in human capital development between high, middle, and low and income counties.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- Abbasi, M. N., & Sarwat, N. (2014). Factors Inducing Career Choice: Comparative Study of Five Leading Professions in Pakistan. *Pakistan Journal of Commerce and Social Sciences*, 8, 830-845.

- <https://www.semanticscholar.org/paper/Factors-Inducing-Career-Choice%3A-Comparative-Study-Abbasi-Sarwat/af8dab6d9415b9756815e048a6b654f15609aa9a>
- Abe, E. N., & Chikoko, V. (2020). Exploring the Factors That Influence the Career Decision of STEM Students at a University in South Africa. *International Journal of STEM Education*, 7, Article No. 60. <https://doi.org/10.1186/s40594-020-00256-x>
- Agelu, J. (2014). *“Jua Kali” Youths and How They Negotiate Work in the Informal Economic Sector in Kenya and Uganda*. Ph.D. Thesis, Pennsylvania State University. <https://etda.libraries.psu.edu/catalog/21929>
- Alfeld, C., Charner, I., Johnson, L., & Watts, E. (2013). *Work-Based Learning Opportunities for High School Students*. National Research Center for Career and Technical Education. <https://files.eric.ed.gov/fulltext/ED574519.pdf>
- Ali, S. (2016). *A Self Determination Theory Perspective of the Work-Life Adjustment of Professional Immigrants*. MSc. Thesis, University of Toronto. <https://hdl.handle.net/1807/72694>
- Amani, J. (2013). Social Influence and Occupational Knowledge as Determinants of Career Choice Intentions among Undergraduate Students in Tanzania. *International Journal of Learning and Development*, 3, 185-193. <https://doi.org/10.5296/ijld.v3i3.3990>
- Ananthaswamy, A. (2010). Career Guidance. In *Bureau of Labor Statistics (2010), Occupational Outlook Handbook, 2010-11* (Vol. 172, pp. 75-90). U.S. Department of Labor. <https://centerforinquiry.org/wp-content/uploads/sites/33/quackwatch/2010-11OOH.pdf>
- Anders, J., Henderson, M., Moulton, V., & Sullivan, A. (2018). The Role of Schools in Explaining Individuals' Subject Choices at Age 14. *Oxford Review of Education*, 44, 75-93. <https://doi.org/10.1080/03054985.2018.1409973>
- Arastaman, G. (2019). Reconsidering the Career Construction in Modern Era. In Tuncer Fidan (Ed.), *Vocational Identity and Career Construction in Education*. IGI Global. <https://doi.org/10.4018/978-1-5225-7772-0.ch001>
- Argyropoulou, K. (2018). From Career Decision-Making to Career Decision-Management: New Trends and Prospects for Career Counseling. *Advances in Social Sciences Research Journal*, 5, 483-502. https://www.researchgate.net/publication/328740851_Argyropoulou_K_Kaliris_A_2018_From_career_decision-making_to_career_decision-management_New_trends_and_prospects_for_career_counseling_Advances_in_Social_Sciences_Research_Journal_510_483-502
- Bathmaker, A.-M. (2017). Post-Secondary Education and Training, New Vocational and Hybrid Pathways and Questions of Equity, Inequality and Social Mobility: Introduction to the Special Issue. *Journal of Vocational Education and Training*, 69, 1-9. <https://doi.org/10.1080/13636820.2017.1304680>
- Bertelsmann (2022). *Bertelsmann Stiftung, Transformation Index. BTI 2022 Country Report—Uganda*. <https://bti-project.org/en/reports/country-report/UGA>
- Besigomwe, F. (2019). *Parental Influence, Socioeconomic Factors and School Environment and Career Choice amongst Secondary School Students in Kabale District, Uganda*. Makerere University. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4185693 <https://doi.org/10.2139/ssrn.4185693>
- Bloom, J. W. (1996). *NOICC High School Competencies and Indicators*. ERIC Digest. <https://www.counseling.org/resources/library/eric%20digests/96-11.pdf>
- Blount, A. J., Bjornsen, A. L., & Moore, M. M. (2018). Work Values, Occupational Engagement, and Professional Quality of Life in Counselors-in-Training: Assessments in a Constructivist-Based Career Counseling Course. *The Professional Counselor*, 8, 60-72.

- <https://files.eric.ed.gov/fulltext/EJ1179305.pdf>
- Borbély-Pecze, T. B., & Watts, A. (2011). European Public Employment Services and Lifelong Guidance. https://www.researchgate.net/publication/299431568_EUROPEAN_PUBLIC_EMPLOYMENT_SERVICES_AND_LIFELONG_GUIDANCE
- Brown, S. D., & Lent, R. W. (2013). *Career Development and Counseling: Putting Theory and Research to Work* (2nd ed.). John Wiley & Sons, Inc. <https://www.wiley.com/en-us/Career+Development+and+Counseling:+Putting+Theory+and+Research+to+Work,+2nd+Edition-p-9781118063354>
- Bullock-Yowell, E., Peterson, G. W., Reardon, R. C., Leierer, S. J., & Reed, C. A. (2011). Relationships among Career and Life Stress, Negative Career Thoughts, and Career Decision State: A Cognitive Information Processing Perspective. *Career Development Quarterly*, 59, 302-314. <https://doi.org/10.1002/j.2161-0045.2011.tb00071.x>
- Capuzzi, D., & Stauffer, M. D. (2018). *Career Counseling: Foundations, Perspectives, and Applications* (3rd ed.). Routledge. <https://doi.org/10.4324/9781315166797>
- Carlstrom, A. H., & Hughey, K. F. (2014). Exploring Work Values: Helping Students Articulate Their Good (Work) Life. *NACADA Journal*, 34, 5-15. <https://doi.org/10.12930/NACADA-13-100>
- Chand, P., Aggarwal, A., & Divyanshu Mishra, S. K. (2014). *Factors Affecting Career Choices of Students*. <https://www.academia.edu/9544771> <https://www.coursehero.com/file/40905992/Factors-Affecting-Career-Choice-of-Studepdf/>
- Chen, H., Fang, T., Liu, F., Pang, L., Wen, Y., Chen, S., & Gu, X. (2020). Career Adaptability Research: A Literature Review with Scientific Knowledge Mapping in Web of Science. *International Journal of Environmental Research and Public Health*, 17, Article No. 5986. <https://doi.org/10.3390/ijerph17165986>
- Chinyamurindi, W. T. (2016). Using Narrative Analysis to Understand Factors Influencing Career Choice in a Sample of Distance Learning Students in South Africa. *South African Journal of Psychology*, 46, 390-400. <https://doi.org/10.1177/0081246315623662>
- Chiweshe, M. K. (2019). *Fourth Industrial Revolution: What's in It for African Women?* <https://www.africaportal.org/publications/fourth-industrial-revolution-whats-it-african-women/>
- Clemens, E. V., & Milsom, A. S. (2008). Enlisted Service Members' Transition into the Civilian World of Work: A Cognitive Information Processing Approach. *Career Development Quarterly*, 56, 246-256. <https://doi.org/10.1002/j.2161-0045.2008.tb00039.x>
- Cortes, P., & Pan, J. (2017). Occupation and Gender. In S. L. Averett, L. M. Argys, & S. D. Hoffman (Eds.), *The Oxford Handbook of Women and the Economy* (pp. 425-452). Oxford Academic. <https://doi.org/10.1093/oxfordhb/9780190628963.013.12>
- Daws, P. P. (2007). Occupational Information and the Self-Defining Process. *The Vocational Aspect of Education*, 22, 71-79. <https://doi.org/10.1080/03057877080000141>
- Dries, N. (2013). *Career Stages and Anchors*. *Encyclopedia of Management*. https://www.researchgate.net/publication/235434243_Career_Stages_and_Anchors
- Eremie, M., & Ikpah, G. U. (2017). Self Concept and Occupational Aspiration among Secondary School Students in Rivers State. *International Journal of Innovative Psychology & Social Development*, 5, 1-4. <https://www.semanticscholar.org/paper/Self-Concept-and-Occupational-Aspiration-A-mong-In-Eremie-Uche/a77fc1d8edbc58ff10998e39df8f71411d9af4b7>
- European Centre for the Development of Vocational Training (2008). *Paronama: From*

- Policy to Practice. A Systemic Change to Lifelong Guidance in Europe.*
<https://www.cedefop.europa.eu/en/publications/5182>
- Filmer, D. & Fox, L. (2014). *Youth Employment in Sub-Saharan Africa*. World Bank Group. <https://doi.org/10.1596/978-1-4648-0107-5>
- Fizer, D. (2013). *Factors Affecting Career Choices of College Students Enrolled in Agriculture*. MSc. Thesis, University of Tennessee.
https://www.academia.edu/29898403/Factors_Affecting_Career_Choices_of_College_Students_Enrolled_in_Agriculture
- Fouad, N. A., Kim, S. Y., Ghosh, A., Chang, W. H., & Figueiredo, C. (2016). Family Influence on Career Decision Making: Validation in India and the United States. *Journal of Career Assessment*, 24, 197-212. <https://doi.org/10.1177/1069072714565782>
- Gray, B., Hanna, F., & Reifels, L. (2020). The Integration of Mental Health and Psychosocial Support and Disaster Risk Reduction: A mapping and Review. *International Journal of Environmental Research and Public Health*, 17, Article No. 1900.
<https://doi.org/10.3390/ijerph17061900>
- Gyansah, S., & Guantai, K. H. (2018). Career Development in Organizations : Placing the Organization and Employee on the Same Pedestal to Enhance Maximum Productivity. *European Journal of Business and Management*, 10, 40-45.
<https://www.researchgate.net/publication/327220798>
- Hartina, I., & Tharbe, A. (2016). *Career Counselling and Personnel Development*. Centre for Instructional Design and Technology.
https://www.academia.edu/36766964/AMCC5203_Career_Counselling_and_Personnel_Development
- Hirschi, A. (2018). The Fourth Industrial Revolution: Issues and Implications for Career Counseling Research and Practice. *Career Development Quarterly*, 66, 192-204.
<https://doi.org/10.1002/cdq.12142>
- Hirschi, A., & Läge, D. (2007). The Relation of Secondary Students' Career-Choice Readiness to a Six-Phase Model of Career Decision Making. *Journal of Career Development*, 34, 164-191. <https://doi.org/10.1177/0894845307307473>
- Hughes, D. (2017). Careers Work in England's Schools: Politics, Practices and Prospects. *British Journal of Guidance and Counselling*, 45, 427-440.
<https://doi.org/10.1080/03069885.2017.1346234>
- Igbinedion V. I., & Ojeaga I. J. (2012). Use of Career Education and Occupation Information Services in Boosting Enrolment into Vocational and Technical Education Programs in Nigeria. *International Education Studies*, 5, 231-236.
<https://doi.org/10.5539/ies.v5n4p229>
- International Labour Organization (2013). *Enhancing Youth Employability: What? Why? and How? Guide to Core Work Skills*.
https://www.ilo.org/wcmsp5/groups/public/@ed_emp/@ifp_skills/documents/publication/wcms_213452.pdf
- International Labour Organization (2018). Global Commission on the Future of Work: Individuals, Work, and Society. In *The Role of Work for Individuals and Society* (No. 1; 1).
https://www.ilo.org/wcmsp5/groups/public/---europe/---ro-geneva/---ilo-rome/documents/meetingdocument/wcms_634165.pdf
- International Labour Organization (2020). *Global Employment Trends for Youth 2020: Technology and the Future of Jobs*. International Labour Organization.
https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_737648.pdf

- International Labour Organization (2021a). *Skilling, Upskilling and reSkilling of Employees, Apprentices & Interns during the COVID-19 Pandemic*. International Labour Organization.
https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_794569.pdf
- International Labour Organization (2021b). *Skills Development in the Time of COVID-19: Taking Stock of the Initial Responses in Technical and Vocational Education and Training*. International Labour Organization.
https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_776788.pdf
- International Monetary Fund (2020). *Sub-Saharan Africa Regional Economic Outlook: COVID-19: An Unprecedented Threat, April 2020*.
<https://www.imf.org/en/Publications/REO/SSA/Issues/2020/04/01/sreo0420>
- Jacobus, M. (2017). Psychology of Career Adaptability, Employability and Resilience.
<https://doi.org/10.1007/978-3-319-66954-0>
- Jena, L., & Nayak, U. (2020). Theories of Career Development: An analysis. *Indian Journal of Natural Sciences*, 10, 23515-23523.
https://www.researchgate.net/publication/344414923_Theories_of_Career_Development_An_analysis
- Jonck, P. (2015). Learner Suggestions on Improving the Subject 'Life Orientation' with Specific Reference to Career Guidance: A South African Case Study. *Mediterranean Journal of Social Sciences*, 6, 11-19.
https://www.researchgate.net/publication/272350893_Learner_Suggestions_on_Improving_the_Subject_'Life_Orientation'_with_Specific_Reference_to_Career_Guidance_A_South_African_Case_Study
- Jones, L. (2019). *Women's Progression in the Workplace*. Government Equalities Office.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/840404/KCL_Main_Report.pdf
- Kelly, C. M., Strauss, K., Arnold, J., & Stride, C. (2020). The Relationship between Leisure Activities and Psychological Resources That Support a Sustainable Career: The Role of Leisure Seriousness and Work-Leisure Similarity. *Journal of Vocational Behavior*, 117, Article ID: 103340. <https://doi.org/10.1016/j.jvb.2019.103340>
- Kim, J. (2021). An Analysis of Uganda's Vocational Education: Assessing Human Capital and Human Development Approaches. *Issues in Educational Research*, 31, 556-573.
<http://www.iier.org.au/iier31/kim.pdf>
- Kizza, J., Damba, A., & Kasule, W. (2019). The Perceptions of Secondary School Students towards Vocational Education: A Case Study of Kampala District. *International Journal of Research and Innovation in Social Science*, 3, 100-112.
<https://unik.ac.ug/wp-content/uploads/2020/10/The-Perceptions-of-Secondary-School-Students-by-Kiiza.pdf>
- Kounenou, K. (2012). Self-Esteem, Work Values and Career Choice among Greek Students of Higher Pedagogical & Technological Studies. In S. De Wals, & K. Meszaros (Eds.), *Handbook on Psychology of Self-Esteem* (pp. 383-391). Nova Science Publishers, Inc.
https://www.researchgate.net/publication/280528571_Self-esteem_work_values_and_career_choice_among_Greek_students_of_higher_pedagogical_technological_studies
- Kuijpers, M. (2019). Career Guidance in Collaboration between Schools and Work Organisations. *British Journal of Guidance and Counselling*, 47, 487-497.
<https://doi.org/10.1080/03069885.2018.1548007>

- Kulcsár, V., Dobrean, A., & Gati, I. (2020). Challenges and Difficulties in Career Decision Making: Their Causes, and Their Effects on the Process and the Decision. *Journal of Vocational Behavior*, 116, Article ID: 103346. <https://doi.org/10.1016/j.jvb.2019.103346>
- Lent, R. W. (2018). Future of Work in the Digital World: Preparing for Instability and Opportunity. *Career Development Quarterly*, 66, 205-219. <https://doi.org/10.1002/cdq.12143>
- Lester, N. J., Woods, J., & Carlson, B. L. (2013). The NOICC/SOICC Network: Policy, Programs, and Partners, 1976-2000. *The Career Development Quarterly*, 61, 186-192. <https://doi.org/10.1002/j.2161-0045.2013.00048.x>
- Levin, N., Braunstein-Bercovitz, H., Lipshits-Braziler, Y., Gati, I., & Rossier, J. (2020). Testing the Structure of the Career Decision-Making Difficulties Questionnaire across Country, Gender, Age, and Decision Status. *Journal of Vocational Behavior*, 116, Article ID: 103365. <https://doi.org/10.1016/j.jvb.2019.103365>
- Lin, T.-C., & Pao, T.-P. (2011). Leisure Activities' Selection and Motivation. *International Journal of Academic Research in Business and Social Sciences*, 1, 2222-6990. <https://hrmars.com/index.php/IJARBSS/article/view/8682/LEISURE-ACTIVITIES-SELECTION-AND-MOTIVATION>
- Lindstrom, L., Harwick, R. M., Poppen, M., & Doren, B. (2012). Gender Gaps: Career Development for Young Women with Disabilities. *Career Development for Exceptional Individuals*, 35, 108-117. <https://doi.org/10.1177/0885728812437737>
- Lipshits-Braziler, Y., Gati, I., & Tatar, M. (2016). Strategies for Coping with Career Indecision: Convergent, Divergent, and Incremental Validity. *Journal of Career Assessment*, 25, 183-202. <https://doi.org/10.1177/1069072714566795>
- Mabonga, G. (2021). *The Reality on Ground, Successes, Challenges and Recommendations for Competence-Based Curriculum Implementation in Context of Uganda*. https://www.researchgate.net/publication/351458460_Competence-based_curriculum_in_Uganda_The_reality_on_ground_successes_Challenges_and_recommendations
- Manda, M. I., & Dhaou, S. Ben. (2019). Responding to the Challenges and Opportunities in the 4th Industrial Revolution in Developing Countries. In *Proceedings of the 12th International Conference on Theory and Practice of Electronic Governance* (pp. 244-253). Association for Computing Machinery. <https://doi.org/10.1145/3326365.3326398>
- Mapfumo, J., & Nkoma, E. (2013). The State of Guidance and Counselling Programmes in High Schools in Manicaland, Zimbabwe. *International Journal of Scientific Research in Education*, 6, 100-116. http://ir.gzu.ac.zw:8080/xmlui/bitstream/handle/123456789/250/Vol.%2C%206_2_-Mapfumo%20%26%20Nkoma.pdf?sequence=1&isAllowed=y
- Maree, J. G. (2017). Opinion Piece: Using Career Counselling to Address Work-Related Challenges by Promoting Career Resilience, Career Adaptability, and Employability. *South African Journal of Education*, 37, 1-5. <https://doi.org/10.15700/saje.v37n4opinionpiece>
- Maree, J. G. (2018). Perspective: Promoting Career Development in the Early Years of People's Lives through Self- and Career Construction Counselling to Promote Their Career Resilience and Career Adaptability. *Early Child Development and Care*, 188, 421-424. <https://doi.org/10.1080/03004430.2018.1438748>
- Maree, J. G., & Che, J. (2020). The Effect of Life-Design Counselling on the Self-Efficacy of a Learner from an Environment Challenged by Disadvantages. *Early Child Development and Care*, 190, 822-838. <https://doi.org/10.1080/03004430.2018.1495629>
- Mckenzie, K., Murray, A., Cooper, M., Martin, R., & Kara, M., Baguley, C., & Chiscop, A.

- (2020). An Exploration of the Factors Influencing Career Choice in Mental Health. *Journal of Clinical Nursing*, 29, 3764-3773. <https://doi.org/10.1111/jocn.15406>
- Meddour, H., Abdo, A. A. M., Majid, A. H. A., Auf, M. A. A., & Aman, A. M. (2016). Factors Affecting Career Choice among Undergraduate Students in Universitas Indonesia. *International Journal of Economic Perspectives*, 10, 630-644. https://www.researchgate.net/profile/Abdulrazak-Aman-3/publication/319304821_Factors_affecting_career_choice_among_undergraduate_students_in_universitas_Indonesia/links/5f2345a9299bf1340494b954/Factors-affecting-career-choice-among-undergraduate-students-
- Nagy, N., Froidevaux, A., & Hirschi, A. (2019). Lifespan Perspectives on Careers and Career Development. In B. B. Baltes, C. W. Rudolph, & H. Zacher (Eds.), *Work Across the Lifespan* (pp. 235-259). Academic Press. <https://doi.org/10.1016/B978-0-12-812756-8.00010-4>
- Nasir, R., & Lin, L. S. (2013). The Relationship between Self-Concept and Career Awareness amongst Students. *Asian Social Science*, 9, 193-197. <https://doi.org/10.5539/ass.v9n1p193>
- National Occupational Information Coordinating, & Committee (1992). *National Occupational Information Coordinating Committee (NOICC). Fact Sheets*. ERIC. <https://files.eric.ed.gov/fulltext/ED373142.pdf>
- Ndung'u, N., & Signe, L. (2019). *Capturing the Fourth Industrial Revolution: A Regional and National Agenda*. https://www.brookings.edu/wp-content/uploads/2020/01/ForesightAfrica2020_Chapter5_20200110.pdf
- Neault, R. A., & Pickerell, D. A. (2011). Career Engagement: Bridging Career Counseling and Employee Engagement. *Journal of Employment Counseling*, 48, 185-188. <https://doi.org/10.1002/j.2161-1920.2011.tb01111.x>
- O'Neil, D. A., Hopkins, M. M., & Bilimoria, D. (2008). Women's Careers at the Start of the 21st Century: Patterns and Paradoxes. *Journal of Business Ethics*, 80, 727-743. <https://doi.org/10.1007/s10551-007-9465-6>
- Oakman, J., Kinsman, N., Stuckey, R., Graham, M., & Weale, V. (2020). A Rapid Review of Mental and Physical Health Effects of Working at Home: How Do We Optimise Health? *BMC Public Health*, 20, Article No. 1825. <https://bmcpublihealth.biomedcentral.com/track/pdf/10.1186/s12889-020-09875-z.pdf> <https://doi.org/10.1186/s12889-020-09875-z>
- Odo, M. I. (2015). Sustaining Occupational Information for Career Choice and Development in Students of Technical Colleges in Enugu State, Nigeria. *Journal of Technical Education and Training*, 7, 1-9. <https://publisher.uthm.edu.my/ojs/index.php/JTET/article/download/803/698/3770>
- Olema, D. K., Nabitula, A., Manyiraho, D. & Atibuni, D. Z. (2021). Analysis of the Shift from Knowledge Based to Competency Based Education among Secondary School Teachers in Uganda. *International Journal of Educational Research*, 9, 49-56. <https://www.ajol.info/index.php/ijer/article/view/213872/201716>
- Otwine, A. T., Matagi, L., Kiweewa, J. M., & Ainamaani, E. H. (2022). Efficacy of Career Guidance and Counselling among Secondary Schools in Uganda. *African Journal of Career Development*, 4, a55. <https://doi.org/10.4102/ajcd.v4i1.55>
- Otwine, A., Oonyu, J., & Kiweewa, J. M. (2018). Career Guidance and Counselling in Uganda, Current Developments and Challenges. *International Journal of Innovative Research and Development*, 7, 107-113. <https://doi.org/10.24940/ijird/2018/v7/i11/NOV18030>

- Panina, S. V., Arkhipova, S. N., Parnikova, T. A., Sergina, E. S., & Sleptsova, M. V. (2020). Student Career Choices before and during Quarantine Measures. *Journal of Educational Psychology—Propósitos y Representaciones*, 8, e711. <https://doi.org/10.20511/pyr2020.v8nSPE3.711>
- Patton, W., & Mcllveen, P. (2009). Practice and Research in Career Counseling and Development—2008. *Career Development Quarterly*, 58, 118-161. <https://doi.org/10.1002/j.2161-0045.2009.tb00052.x>
- Peterson, G. W., Sampson Jr., J. P., Reardon, R. C., & Lenz, J. G. (1991). *Career Development and Services: A Cognitive Approach*. Thomson Brooks/Cole Publishing Co. <https://career.fsu.edu/sites/g/files/imported/storage/original/application/4f008124b16b023e2d1d45aea2fe1f9c.pdf>
- Rācene, A. (2014). Development of Women's Career Pattern in Relation of Employment. *Baltic Journal of Career Education and Management*, 2, 16-23. http://www.scientiasocialis.lt/bjcem/files/pdf/vol2/16-23.Racene_bjcem_Vol.2-1.pdf
- Rawatlal, K. V., & Pillay, S. (2017). Career Counselling Intervention Efficacy with South African University Students. *Journal of Psychology in Africa*, 27, 569-572. <https://doi.org/10.1080/14330237.2017.1399559>
- Reardon, R. C., & Bertoch, S. C. (2011). Revitalizing Educational Counseling: How Career Theory Can Inform a Forgotten Practice. *The Professional Counselor*, 1, 109-121. <https://files.eric.ed.gov/fulltext/EJ1063057.pdf>
- Reddan, G. (2015). Enhancing Students' Self-Efficacy in Making Positive Career Decisions. *Asia-Pacific Journal of Cooperative Education*, 16, 291-300. https://www.researchgate.net/publication/283097664_Enhancing_students'_self-efficacy_in_making_positive_career_decisions/citation/download
- Republic of Uganda (2020). *Third National Development Plan (NDP III). 2020/21-2024/25*. <http://envalert.org/wp-content/uploads/2020/06/NDP-3-Finale.pdf>
- Rogers, M. E., & Creed, P. A. (2011). A Longitudinal Examination of Adolescent Career Planning and Exploration Using a Social Cognitive Career Theory Framework. *Journal of Adolescence*, 34, 163-172. <https://doi.org/10.1016/j.adolescence.2009.12.010>
- Ross, P., & Maynard, K. (2021). Towards a 4th Industrial Revolution. *Intelligent Buildings International*, 13, 159-161. <https://doi.org/10.1080/17508975.2021.1873625>
- Saniter, N., & Siedler, T. (2014). *The Effects of Occupational Knowledge: Job Information Centers, Educational Choices, and Labor Market Outcomes*. IZA Discussion Paper No. 8100. IZA—Institute of Labor Economics. <https://doi.org/10.2139/ssrn.2426854>
- Savickas, M. L. (2013). *Ten Ideas That Changed Career Development: A Monograph to Celebrate the Centennial of the National Career Development Association (1913-2013)*. National Career Development Association. http://www.people.ku.edu/~tkrieshok/epsy846/10_ideas_37.pdf
- Sheri, P., Bounds, R., Sheri, P., & Bounds, R. (2013). *Examining the Relationship Between Career Decision Self-Efficacy, Ethnic Identity, and Academic Self-Concept and Achievement of African American High School Students*. Ph.D. Thesis, University of Iowa. https://iro.uiowa.edu/discovery/delivery/01IOWA_INST:ResearchRepository/12730686740002771?l#13730802250002771
- Shrestha, G. K. (2016). Understanding the Challenges of Women in Non-Traditional Occupations. *Journal of Training and Development*, 2, 42-49. <https://doi.org/10.3126/jtd.v2i0.15437>
- Siekman, G., & Fowler, C. (2017). *Identifying Work Skills: International Approaches*. National Centre for Vocational Education Research (NCVER). <https://files.eric.ed.gov/fulltext/ED579874.pdf>

- Super, D. E. (1976). *Career Education and the Meanings of Work*. Monographs on Career Education. <https://files.eric.ed.gov/fulltext/ED128593.pdf>
- Syakir, M., Mahmud, A., & Achmad, A. (2016). The Model of ICT-Based Career Information Services and Decision-Making Ability of Learners. *International Journal of Environmental and Science Education*, 11, 5969-5979. <https://files.eric.ed.gov/fulltext/EJ1115554.pdf>
- Thumann, B. F., Nur, U., Naker, D., & Devries, K. M. (2016). Primary School Students' Mental Health in Uganda and Its Association with School Violence, Connectedness, and School Characteristics: A Cross-Sectional Study. *BMC Public Health*, 16, Article No. 622. <https://doi.org/10.1186/s12889-016-3351-z>
- Tsai, C. T., Hsu, H., & Yang, C. C. (2017). Career Decision Self-Efficacy Plays a Crucial Role in Hospitality Undergraduates' Internship Efficacy and Career Preparation. *Journal of Hospitality, Leisure, Sport and Tourism Education*, 21, 61-68. <https://doi.org/10.1016/j.jhlste.2017.08.002>
- United Nations (2018). *Youth and the 2030 Agenda for Sustainable Development*. <https://www.un.org/development/desa/youth/wp-content/uploads/sites/21/2018/12/WorldYouthReport-2030Agenda.pdf>
- Veloso, E. F. R., Trevisan, L. N., da Silva, R. C., & Dutra, J. S. (2018). The Use of Traditional and Non-Traditional Career Theories to Understand the Young's Relationship with New Technologies. *Revista de Gestão*, 25, 340-357. <https://doi.org/10.1108/REG-12-2017-0008>
- Weerathna, R. S., & Hapurugala, S. (2019). The Effect of Gender on Career Progression: A Conceptual Model. *International Journal of Business and Management*, 14, 23-27. <https://doi.org/10.5539/ijbm.v14n7p23>
- Wong, Z. Y., & Kaur, D. (2018). The Role of Vocational Identity Development and Motivational Beliefs in Undergraduates' Student Engagement. *Counselling Psychology Quarterly*, 31, 294-316. <https://doi.org/10.1080/09515070.2017.1314249>
- Xin, L., Tang, F., Li, M., & Zhou, W. (2020). From School to Work: Improving Graduates' Career Decision-Making Self-Efficacy. *Sustainability*, 12, Article No. 804. <https://doi.org/10.3390/su12030804>
- Xu, M., David, J. M., & Kim, S. H. (2018). The Fourth Industrial Revolution: Opportunities and Challenges. *International Journal of Financial Research*, 9, 90-95. <https://doi.org/10.5430/ijfr.v9n2p90>
- Zula, K. (2014). The Future of Nontraditional Occupations for Women: A Comprehensive Review of the Literature and Implications for Workplace Learning and Performance. *Journal of Diversity Management*, 9, 7-18. <https://doi.org/10.19030/jdm.v9i1.8619>