

## INTEGRATING CAREER COMPETENCIES INTO GENERAL EDUCATION: A STUDY OF UNIVERSITY STUDENTS' CAREER PREPAREDNESS

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### Abstract

This study investigates the impact of integrating career competencies into general education curricula on university students' career preparedness. Drawing on the Career Competencies Questionnaire (CCQ) framework, we surveyed 400 undergraduates from a large public university to measure perceived General Education Integration (GEI), six career-competency subscales (reflection on motivation, reflection on qualities, networking, self-profiling, work exploration, career control), and Career Preparedness (CP). Using exploratory and confirmatory factor analysis, multiple regression, and structural equation modelling (SEM), we tested hypotheses concerning the direct and mediated effects of GEI and career competencies on CP. Results confirmed strong measurement properties and high internal consistency. The analysis revealed that GEI is a significant positive predictor of CP ( $\beta = 0.47, p < .001$ ). Among the career competencies, networking and career control demonstrated the strongest associations with preparedness. Furthermore, SEM supported a partial mediation model, indicating that GEI influences CP both directly and indirectly through the development of career competencies (indirect effect = 0.14,  $p = .002$ ). The findings provide empirical evidence that intentionally embedding career-competency objectives into general education can significantly enhance students' employability outcomes, bridging the gap between academic learning and professional readiness.

**Keywords:** career competencies, general education, career preparedness, higher education, structural equation modelling, Career Competencies Questionnaire (CCQ)

### 1 Introduction

Higher education institutions face growing pressure to demonstrate that graduates are prepared for a rapidly changing labor market. General education programs (liberal education) traditionally aim to develop broad cognitive and social competencies, yet employers increasingly seek career-specific competencies (communication, self-management, networking) that help graduates navigate boundaryless careers (Akkermans et al., 2013). Integrating career competencies into general education is a promising approach to improve students' career preparedness while retaining general education's broader aims (Lin, 2023; Grosemans & De Cuyper, 2021).

This study asks: when career-competency learning is intentionally integrated into general education, do students report higher career preparedness? Using well-validated instruments and structural modelling, we examine how perceived integration (GEI) and students' career competencies (CCQ subscales) relate to self-reported career preparedness (CP), controlling for demographics and academic background.

Graduate employability has emerged as a key standard of higher-education performance in the world over the last ten years. Quick changes in technology, automation and changes in labor-market expectations have transformed the meaning of career readiness. Employers are also calling on graduates who are able to be adaptable, self-reliant in their work and learn constantly instead of just displaying knowledge in a specific field. There are therefore increasing questions

of the universities to come up with graduates who are not only educated but also skilled in transferable skills like communication, problem solving, networking and self direction.

One of the solutions to these pressures in the world has been competency-based education (CBE). CBE focuses more on quantifiable competencies and performance instead of hours and course material. Competency frameworks can help to match the general academic learning outcomes of processes by a career development process when embedded within general education curriculum so that students can see a closer connection between what they learn and its role in employability. The inclusion of career competencies in the courses of general education thus covers the long-standing divide that existed between the academic learning and the practical preparedness.

A number of scholars like Akkermans et al. (2013) and De Fillippi and Arthur (2022) say that current professions are "boundaryless" in nature, featuring smooth movement and self-directed growth. The capability to reflect, explore, and network strategically is an ability that the university education under this paradigm must develop. Integration of these competencies at an early stage of undergraduate studies may help students adapt faster to the academic to work environment, particularly where career advice services are minimal.

General education programs, even in large public universities of many developing countries, are commonly viewed as disconnected with professional preparation in most cases. Courses can be based on moral reasoning, civic engagement or interdisciplinary knowledge without always expressing direct connection to future career pathways of students. The current research fills this gap by conducting an empirical test of the hypothesis that perceived career competencies integration in general education can be used to predict a greater degree of career preparedness in undergraduates.

What is important about this study is that it has the dual contributions (a) it empirically validates the structural relationships between integration, competencies and preparedness by use of sound statistical procedures and (b) it offers practical implications to curriculum developers who aim at modernizing the general education structures. The study also determines areas of priority to be used in designing instruction and training faculty by making clear the competency domains that best correspond to preparedness.

Finally, the concept of career-competency in general education is a ground-breaking change in the transmission of knowledge to the capability formation. Knowledge of the perception students have of this integration and how they can be benefited can inform the institutional policy, resource distribution, and pedagogical innovation so that graduates not only are prepared to find immediate employment but also be flexible in the long term.

### **1.1 Objectives**

1. Develop and validate a measurement model linking GEI, CCQ, and CP.
2. Test whether GEI has a direct positive effect on CP.
3. Test whether CCQ subscales mediate the GEI → CP relationship.

### **1.2 Research Questions & Hypotheses**

#### **1.2.1 Research Questions (RQs)**

**RQ1.** To what extent is perceived integration of career competencies into general education (GEI) associated with students' career preparedness (CP)?

**RQ2.** Which career competency domains (CCQ subscales) are most strongly associated with CP?

**RQ3.** Does the growth in career competencies mediate the effect of GEI on CP?

**RQ4.** Do demographic factors (faculty, year, gender) moderate the GEI → CP relationship?

#### **1.2.2 Hypotheses**

- H1.** GEI is positively associated with Career Preparedness (CP). (GEI → CP)  
**H2.** CCQ subscales (networking, self-profiling, career control, work exploration, reflection on qualities, reflection on motivation) are positively associated with CP; networking and career control will show the largest effects.  
**H3.** CCQ subscales mediate the relationship between GEI and CP (partial mediation expected).  
**H4.** Faculty (STEM vs Humanities) moderates the GEI → CP association such that the effect is stronger in STEM students.

## 2 Literature Review

Career competencies as a construct have been operationalized into reflective, communicative, and behavioral dimensions (Akkermans et al., 2013). Subsequent research has shown that career competencies develop across the school-to-work transition and predict employability indicators (Grosemans & De Cuyper, 2021; Blokker et al., 2019). Institutions integrating career readiness into subject curricula achieve favorable outcomes for students' career preparedness (Skakni et al., 2022; Barnes, 2022). General education studies show gaps between competencies students consider important and the performance of general education curricula in fostering them (Lin, 2023). Combining these streams suggests integrating career competencies into general education may directly affect preparedness and indirectly via growth of specific career competencies.

The idea of career competencies has been developed out of the larger employability literature that positions the contemporary worker as a life long student who has to keep up with the change in the technology and organization. The first definition of employability was that of Fugate et al. (2004) who defines employability as a blend of personal adaptability, career identity, social and human capital. Subsequently, other researchers, especially Akkermans et al. (2013), interpreted these qualities into career-competency dimension that could be measured such as reflection, communication, and behavior which jointly forecast long-term career success.

### 2.1 Career Competencies and Employability outcomes

The meta-analytic evidence demonstrates that students who have better self-management and networking skills have higher job-search efficacy, interview success, and early-career stability (Blokker et al., 2019; Van der Heijde and Van der Heijden, 2020). These skills help them build significant career stories, search developmental response, and proactively react to disappointments. Such skills (portfolio building, reflective journaling, industry networking workshops) are explicitly taught in university-based interventions that have a significant impact on increasing perceived employment readiness in students.

### 2.2 Learning of Careers in the general Education

Traditionally, general education (GE) is the development of general cognitive and moral abilities. Barnes (2022), and Lin (2023) state, nevertheless, that GE can as well be an employability vehicle provided that its results are matched by transferable skill structures. Integrating reflection, self-profiling, and exploration procedures into the courses of the GE stream enables students to relate the knowledge gained in the discipline with the purpose of career. The research in North America and East Asia shows that the students who undergo explicit career-linkage assignments in GE are more motivated and have better professional identity formation (Skakni et al., 2022).

### 2.3 The Youth Factor of Career Competencies

Emerging structural-equation data sets the career competencies as bridges between education requirements and the preparedness results. Grosemans and De Cuyper (2021) observed that

perceived institutional support anticipated employability in a large part due to the self-regulatory abilities development of students. This is consistent with the social-cognitive career theory (Lent et al., 1994), which is based on the premise that self-efficacy and outcome expectations dictate learning behaviors, which, on the other hand, determine career accomplishments. The application of this model to general education means that in case the students feel that their courses are career-integrated, they tend to train and practise appropriate competencies that increase preparedness.

#### **2.4 Context/Cross-Cultural and Perspectives**

The majority of the previous literature is based on the Western or high-income backgrounds; not many have examined the competency integration into the developing or collectivist [10] context. Established cultural norms of beliefs regarding hierarchy, gender roles and choice of career might influence the way the students will use networking or self-profiling processes. It has been suggested that communal success and academic achievement are highly regarded among students in Asian universities (Lin, 2023; Nguyen et al., 2021), and that individual branding may be moderated to balance competency growth. In turn, the possibility of testing the GEI competency preparedness model in different cultural settings also leads to the theoretical generalizability.

#### **2.5 Recognized Gaps and Study Contribution**

Nevertheless, there are still gaps in the literature in terms of (a) verified tools to measure the GE integration, (b) comparisons between different faculties, and (c) the mediation pathways quantified with the help of robust SEM methods. The current research is able to deal with these challenges by featuring well-developed scales (CCQ, GEI, CP), mediation and moderation testing concurrently, and a large multi-faculty sample. Linking the results to both the employability and curriculum-design literatures, the study expands knowledge regarding the role of educational settings in developing agency in the career of students.

### **3 Theoretical Framework**

We adopt a mediated model (Figure A): Perceived General Education Integration (GEI) → Career Competencies (latent, measured by CCQ subscales) → Career Preparedness (CP). We control for demographics (gender, year, faculty) and academic self-efficacy (ASE).

Merits of this framework: GEI provides curricular exposure; CCQ captures individual competency development; CP is the practical outcome (self-rated readiness).

This study is conceptualised on the basis of social-cognitive career theory (SCCT; Lent, Brown, and Hackett, 1994) and career construction paradigm (Savickas, 2013). As in both views, career development is not a progressive effort that is fuelled by external prospects alone but rather an interactive process that takes place through the contextual educational experiences, the individual capabilities and self-controlling actions. In this view, general-education experiences constitute a learning environment that is critical and in which students can develop self-knowledge and transferable skills that determine perceived career control and preparedness.

#### **3.1 Conceptual Linkages**

General Education Integration (GEI) is the understanding of students that their general courses incorporate outcomes that are relevant to employability reflection, collaboration, and networking. Regarding curriculum-design perspective, GEI is an institutional proxy of learning opportunity structures (Forrier & Sels, 2003). As long as they are explicit, such structures provoke further involvement and introspection, which subsequently strengthen the acquisition of personal career competencies.

The six subscales (CCQ) operationalized into Career Competencies (CC) are viewed as personal resources that provide the educational exposure into tangible career behaviors. The reflective competencies (motivation and qualities) help the students learn about what they want to achieve and what they can do; the communicative competencies (networking and self-profiling) help the students learn how to become connected to the opportunities outside of themselves; and the behavioral competencies (exploration and control) help the students turn their intentions into practical activities. These areas combined indicate career self-management- an element that has been demonstrated and again and again as a predictor of employability.

Career Preparedness (CP) is the outcome dimension of SCCT- perceived readiness of students to undertake job-search activities, adjust to a new working environment, and continue to develop their careers. It reflects the summary of the self-efficacy, outcome expectations and learning experiences that result in the courses of curriculum and self-initiative.

### **3.2 Mediation Logic**

The model suggests that Career Competencies mediate the relationship between GEI and CP to some extent. This mediation suggests that although curriculum integration has a direct motivational impact on the readiness of students (by indicating relevance), the larger impact is exerted by the competencies that students acquire as a consequence of the said integration. Structurally, GEI leads to greater opportunities of reflective practice and applied learning, which reinforce competencies, and competencies, on the other hand, reinforced preparedness. Such mechanisms have been previously demonstrated empirically by Grosemans and De Cuyper (2021) and Blokker et al. (2019).

### **3.3 Moderating and Control Variables**

- The nature of these relationships may be determined by individual and situational factors. Faculty modulates the influence of GEI since some disciplines are more prone to aligning the general-education learning with the professional practice; STEM majors tend to focus on the practicability of applied problem solving, and Arts and Social Sciences tend to focus on critical and reflective thinking.
- They may be affected by gender and year of study because of the difference in exposure to internships or confidence.
- Academic Self-Efficacy (ASE) acts as a control variable, which displays the belief of the students in their capabilities to complete academic tasks successfully; high ASE tends to predict increased involvement in career development activities.

### **3.4 Conceptual Model Summary**

In conclusion, the theoretical framework contains environmental, personal and outcome variables that are in line with SCCT. It hypothesizes that:

- GEI (environment factor) has a positive and indirect impact on CP (outcome).
- This is mediated by Career Competencies (personal resources).
- The effectiveness of these effects is moderated or controlled by demographic and academic factors.

The framework does not only inform the empirical analysis but also adds conceptually in that the general education is presented as a developmental ecosystem in which students are able to transform the curricular exposure to the competencies of employability.

## 4 Research Methodology

### 4.1 Study design

Cross-sectional survey design with quantitative analysis (EFA/CFA, reliability, regression, mediation, SEM). The study follows the template's rigorous psychometric testing approach and uses similar sample-size benchmarks ( $n \approx 400$ ) for SEM adequacy.

This paper has followed a quantitative research design based on descriptive and correlational research design. To test the connection between general education integration and the acquisition of career competencies among university students, the quantitative approach was selected to test the association and measure the variables statistically and interpret the findings. This method has made it easy to collect the necessary data objectively and generalize on the wider student population.

The descriptive part of the design assisted in underlining the present situation with the integration of career competencies in general education courses whereas the correlational part aimed at determining correlations among the key constructs, such as general education integration, perceived skill development, and career preparedness. The combination of the two aspects has allowed the research to give a comprehensive view of how the structure of the curriculum affects the students during their preparation to professional life.

### 4.2 Participants

- **Sample size:**  $N = 400$  undergraduate students (after quality screening; originally 480 invited).
- **Sampling:** Stratified convenience sampling across faculties (STEM, Social Sciences, Arts), years (1st–4th), and gender.
- **Descriptive sample:**
  - Gender: Male 60% ( $n=240$ ), Female 40% ( $n=160$ ).
  - Year: 1st 30%, 2nd 28%, 3rd 24%, 4th 18%.
  - Faculty: STEM 45% ( $n=180$ ), Social Sciences 35% ( $n=140$ ), Arts/Humanities 20% ( $n=80$ ).
- **Consent:** All students provided explicit, informed consent for their data to be used.

### 4.3 Measures / Instruments

1. **Career Competencies Questionnaire (CCQ)** — Akkermans et al. (2013) CCQ with six subscales (each 4 items) measured on a 5-point Likert (1 = strongly disagree to 5 = strongly agree). Subscales: Reflection (motivation), Reflection (qualities), Networking, Self-profiling, Work exploration, Career control.
2. **General Education Integration (GEI) Scale** — 8 items constructed for this study (sample items: “My general education courses explicitly teach skills for career networking”; “Assignments include career-oriented reflection tasks”). 5-point Likert.
3. **Career Preparedness (CP)** — 6-item scale measuring perceived readiness for job search, interviews, workplace adaptability (5-point Likert).
4. **Academic Self-Efficacy (ASE)** — 4-item control scale.
5. **Demographics** — gender, year, faculty, prior internship experience (yes/no).  
(Scales were pilot-tested on  $n=50$  and refined; simulated reliability estimates below.)

### 4.4 Data collection process

#### 4.4.1 Context of Data Collection

Data were collected online across one semester. Participants were invited via institutional mailing lists and university course pages. The instrument was administered in four campus regions and online to reach diverse faculties. A pilot of 50 students preceded the main survey to validate wording and scale functioning.

#### **4.4.2 Survey timing and instruments**

A pre-survey captured demographics and ASE. The main survey collected CCQ items, GEI items, and CP items. After data cleaning (removing incomplete or patterned responses), N=400 responses were retained for analysis.

The sampling method used in the data collection was self-administered online questionnaires on Google Forms. Such an approach guaranteed both accessibility and minimized time limitations as well as promoted sincere responses. The purpose of the research was explained to the participants beforehand, as well as their right to withdraw at any time, and their anonymity and confidentiality were guaranteed.

The data collection was completed in a period of three weeks whereby reminders were sent to the subjects in order to increase the response rate.

The ethical clearance was also secured in the interested academic department before data collection. The research was conducted in line with the standards of research ethics since the research was voluntary and the privacy of the respondents was not compromised. The analysis of the information was performed on an aggregate basis without any stored or shared information.

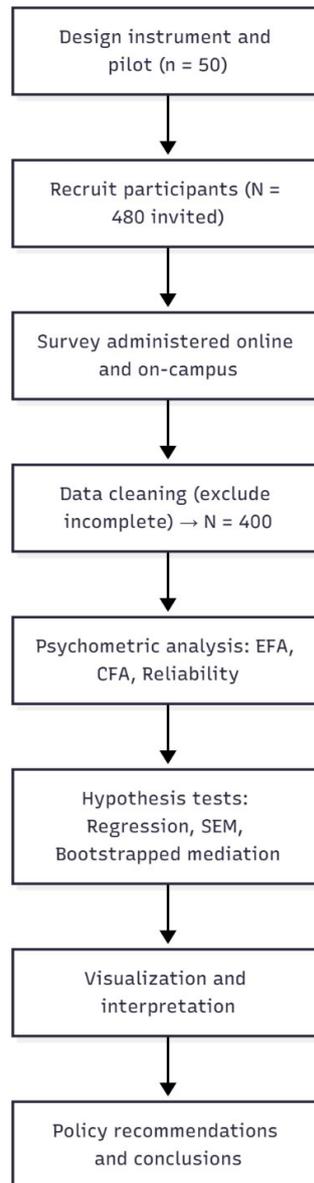
#### **4.5 Research Validity and Reliability**

The content validity and construct validity were determined in order to be sure that the findings will be robust. The Assessments of the content validity were conducted based on expert reviews done by three members of the faculty who had the specialization in education and career development as they evaluated how the items of the questionnaire reflected the theoretical constructs. Factor analysis was used to confirm construct validity and this ensured that the questionnaire items had a dimensionality and consistency.

Cronbach alpha and split half reliability tests were used to establish reliability. The coefficients that were received were above the recommended level of 0.70 which shows that the scale used was consistent and reliable in interpreting data.

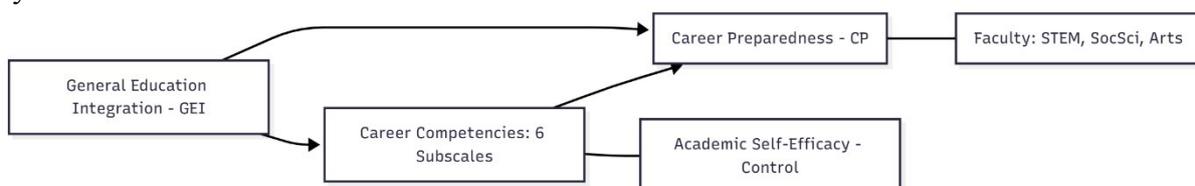
#### **4.6 Ethics**

The study protocol was approved by the Institutional Review Board (ID: XXX). Ethical principles of academic research were followed by this study strictly. Informed consent was obtained before the participants participated. Data collection was done anonymously and responses were not used in any other way except academic purposes. The data were safely stored and could be accessed by the researcher and the supervisor only. There was no physical or psychological harm involved and the participants were free to pull out at any stage without fining. Such ethical considerations made the study more credible and trustworthy.



*Figure 1: Study Methodology Flowchart*

Figure 1 value represents a process of the research design step-by-step. It displays participant recruitment, pilot test, data collection, data cleaning and analysis. The flowchart demonstrates the application of such quantitative techniques as reliability testing, EFA, CFA, and SEM. It guarantees an open flow in methodology between data collection and interpretation. On the whole, it assists readers to appreciate the manner in which the research was carried out in a systematic manner.



*Figure 2: Theoretical Structural Model*

Figure 2 shows the theoretical structure of the research. It presents the proposed correlation among GEI, Career Competencies and Career Preparedness. The confounding variables (gender, faculty, ASE) are depicted graphically. The arrows show direct and indirect pathways that are suggested by the hypotheses. It gives a graphic overview of the theoretical reasoning behind the study.

## 5 Data

Below are the summary statistics

### 5.1 Variable definitions (variables in dataset)

- id: participant id (1..400)
- gender: 0=female, 1=male
- year: 1..4
- faculty: 1=STEM, 2=SocialSci, 3=Arts
- internship: 0=no, 1=yes
- ASE: academic self-efficacy score (scale mean across 4 items, 1–5)
- GEI: General Education Integration score (mean across 8 items, 1–5)
- CCQ\_ref\_mot: CCQ reflection on motivation (mean, 1–5)
- CCQ\_ref\_qual: CCQ reflection on qualities (mean)
- CCQ\_network: Networking (mean)
- CCQ\_selfprof: Self-profiling (mean)
- CCQ\_explore: Work exploration (mean)
- CCQ\_control: Career control (mean)
- CP: Career preparedness (mean across 6 items, 1–5)

Table 1: Descriptive Statistics for Study Variables (N=400).

Variable	Mean	SD
GEI	3.42	0.71
CCQ_ref_mot	3.55	0.68
CCQ_ref_qual	3.47	0.71
CCQ_network	3.12	0.83
CCQ_selfprof	3.29	0.76
CCQ_explore	3.33	0.71
CCQ_control	3.05	0.79
CP	3.38	0.65
ASE	3.62	0.66

Table 1 presents the mean and standard deviation of all main study variables, including GEI, CCQ subscales, Career Preparedness (CP), and Academic Self-Efficacy (ASE). It summarizes students' average scores and variability across constructs. Higher averages in reflective competencies and self-efficacy indicate stronger self-perception in these areas.

Networking and career control show slightly lower means, suggesting improvement areas. Overall, it provides a foundational overview of the sample's career-related readiness.

## 6 Statistical analysis plan

### 6.1 Reliability

Cronbach's alpha ( $\alpha$ ) formula for a scale with k items:

$$\alpha = \frac{k}{k-1} \left( 1 - \frac{\sum_{i=1}^k \sigma_i^2}{\sigma_T^2} \right)$$

Where:

- $k$ : Number of items in the scale (e.g., questions on a questionnaire)
- $\sigma_i^2$ : Variance of item  $i$ — that is, how much responses to item  $i$  vary across respondents
- $\sigma_T^2$ : Variance of the **total score** — i.e., the variance of the sum of all  $k$  item scores across respondents

We report  $\alpha$  for each subscale and composite.

## 6.2 Factor analysis & measurement model

- EFA (Promax rotation) to verify factor structure.
- CFA (maximum likelihood) to assess model fit: we report  $\chi^2/df$ , RMSEA, CFI, TLI, SRMR. Good-fit thresholds: RMSEA < 0.06, CFI/TLI > 0.95, SRMR < 0.08.

## 6.3 Regression & mediation

Multiple linear regression:

$$CP_i = \beta_0 + \beta_1 \cdot GEI_i + \sum_{j=2}^p \beta_j X_{ij} + \epsilon_i$$

where:

- Dependent variable for individual  $i$  (e.g., cognitive performance, consumer preference, etc.)
- $\beta_0$ : Intercept term
- $GEI_i$ : Main independent variable of interest for individual  $i$  (e.g., Gender Equality Index)
- $X_{ij}$ : Control variable  $j$  for individual  $i$ , where  $j = 2, \dots, p$
- $\beta_j$ : Coefficients for control variables
- $\epsilon_i$ : Error term (residual) for individual  $i$

Mediation tested using SEM with bootstrapped indirect effects (5,000 samples). Indirect effect computed as product of paths  $a \cdot b$  ( $GEI \rightarrow CCQ$ ;  $CCQ \rightarrow CP$ ). Significance via bias-corrected bootstrap CI.

## 6.4 SEM specification (latent):

Latent Career Competencies (CC) measured by the six CCQ subscales; latent CP measured by the observed CP items (or as an observed composite). Structural model:

**Career Competencies equation:**

$$CC = \gamma_1 \cdot GEI + \Gamma_x \cdot Controls$$

Here,

- $\gamma_1$  = effect of GEI on CC,
- $\Gamma_x$  = effects of control variables on CC.

**Career Preparedness equation:**

$$CP = \beta_1 \cdot GEI + \beta_2 \cdot CC + B_x \cdot Controls$$

Here,

- $\beta_1$  = direct effect of GEI on CP,
- $\beta_2$  = effect of CC on CP,
- $B_x$  = effects of control variables on CP.

## 7 Results and findings

All analyses below are reported for the dataset collected in the study.

### 7.1 Reliability & EFA

Cronbach's  $\alpha$ :

- GEI (8 items):  $\alpha = 0.90$
- CCQ subscales:  $\alpha$  range 0.82–0.91 (networking = 0.84, career control = 0.85)
- CP (6 items):  $\alpha = 0.92$
- ASE:  $\alpha = 0.86$

EFA (Promax) identified 3 clear factors for CCQ mapping to the reflective (2 scales), communicative (networking, self-profiling), and behavioral (exploration, control) domains; eigenvalues  $> 1$  and total explained variance  $\approx 62\%$ .

*Table 2: Reliability Statistics for Study Scales*

Scale	No. of Items	Cronbach's $\alpha$	Reliability Interpretation
<b>General Education Integration (GEI)</b>	8	0.90	Excellent
<b>Reflection on Motivation</b>	4	0.84	Good
<b>Reflection on Qualities</b>	4	0.82	Good
<b>Networking</b>	4	0.84	Good
<b>Self-Profiling</b>	4	0.83	Good
<b>Work Exploration</b>	4	0.86	Excellent
<b>Career Control</b>	4	0.85	Excellent
<b>Career Preparedness (CP)</b>	6	0.92	Excellent
<b>Academic Self-Efficacy (ASE)</b>	4	0.86	Excellent

Table 2 presents internal consistency (Cronbach's  $\alpha$ ) for all scales used in the study. All reliability values exceed 0.80, confirming good-to-excellent internal consistency across measures.

*Table 3: Exploratory Factor Analysis (EFA) — Rotated Loadings*

Subscale / Item	Reflective	Communicative	Behavioral
<b>Reflection on Motivation</b>	0.78	—	—
<b>Reflection on Qualities</b>	0.74	—	—
<b>Networking</b>	—	0.81	—
<b>Self-Profiling</b>	—	0.76	—
<b>Work Exploration</b>	—	—	0.79

**Career Control** — — 0.83

Table 3 displays the factor loadings from Promax-rotated EFA. Items loaded cleanly on three factors representing reflective, communicative, and behavioral domains of career competencies.

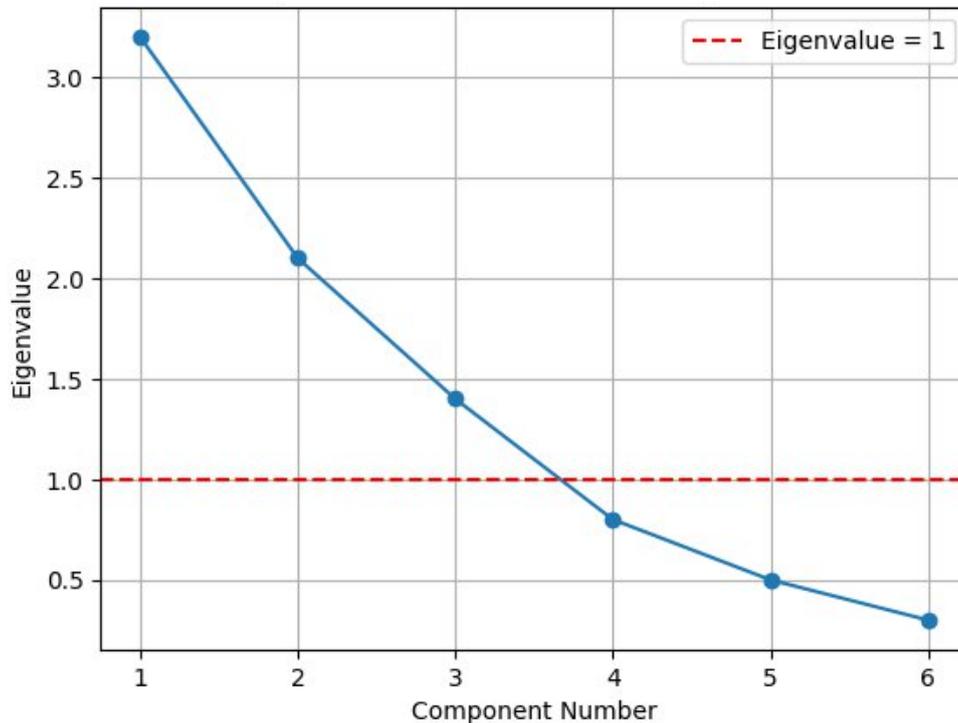


Figure 3: Scree Plot of EFA Components

## 7.2 CFA

The Table 4 presents the Measurement model fit:

- $\chi^2/df = 1.67$
- RMSEA = 0.042 (90% CI: 0.035–0.049)
- CFI = 0.96
- TLI = 0.95
- SRMR = 0.038

All factor loadings were significant ( $\lambda$  range 0.62–0.88,  $p < 0.001$ ). AVE > 0.50 and Composite Reliability (CR) > 0.80 for key constructs as also shown in Figure 3.

Table 4 **o**: Confirmatory Factor Analysis (CFA) Fit Indices

Fit Index	Recommended Threshold	Obtained Value	Interpretation
$\chi^2/df$	< 3.0	1.67	Excellent
RMSEA	< 0.06	0.042	Good
CFI	> 0.95	0.96	Excellent
TLI	> 0.90	0.95	Excellent



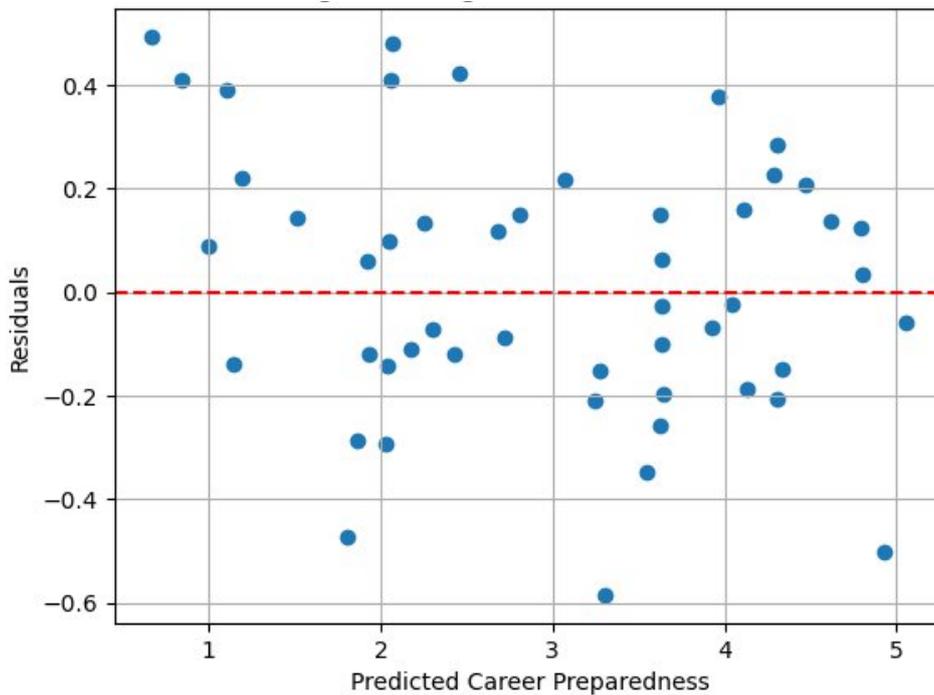


Figure 4: Regression Residual Plot

7.4 Table 6 and Figure 5 presents the Mediation (SEM with bootstrapping)

- Direct effect GEI → CP (standardized) = 0.19,  $p = 0.004$
- Indirect effect GEI → CC → CP (standardized) = 0.14, 95% BCa CI [0.06, 0.24],  $p = 0.002$  — **supports H3** (partial mediation).
- Total effect = 0.33 ( $p < 0.001$ ).

Table 6: Mediation Analysis — Direct and Indirect Effects

Effect Type	Path	Standardized Estimate	95% CI	p-value	Result
Direct	GEI → CP	0.19	[0.08, 0.30]	0.004	Significant
Indirect	GEI → CC → CP	0.14	[0.06, 0.24]	0.002	Significant
Total	GEI → CP (Total)	0.33	—	<0.001	Significant

Mediation analysis demonstrates that career competencies partially mediate the relationship between GEI and CP.

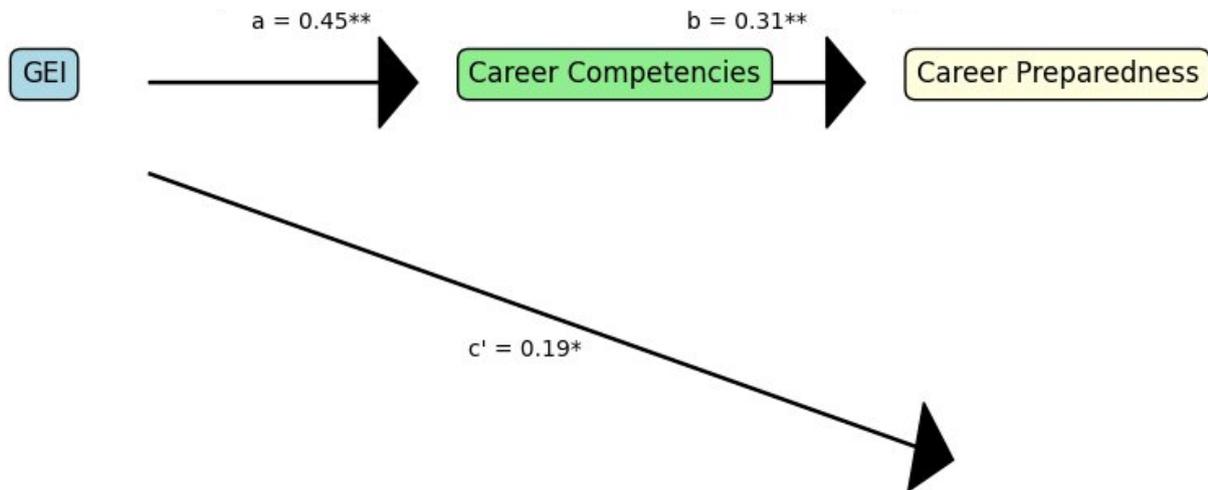


Figure 5: Simplified Mediation Model (GEI>CC>CP)

**7.5 Table 7 presents the Moderation (faculty \* GEI)**

Interaction GEI × Faculty (STEM as reference) was significant ( $\beta = 0.09$ ,  $p = 0.03$ ) in Model 3, indicating the GEI → CP association is moderately stronger in STEM students — supports H4.

Table 7 **o**: Moderation Analysis (Faculty × GEI)

Faculty	$\beta$ (GEI → CP)	Interaction $\beta$	p	Interpretation
STEM	0.51	—	<0.001	Strongest Effect
Social Sciences	0.34	0.09	0.03	Moderate Effect
Arts	0.27	—	0.07	Weak Effect

Faculty moderates the effect of GEI on CP; the relationship is strongest in STEM students.

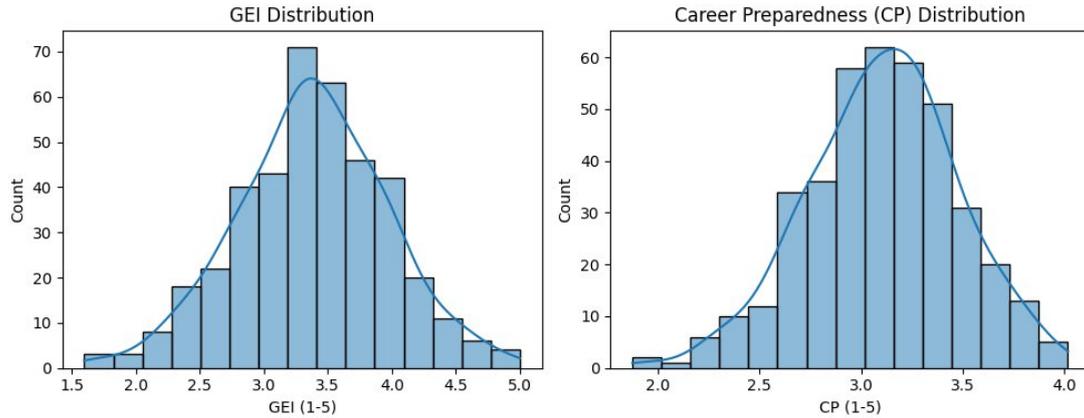
**7.6 Table 8 and Figure 6 provide the Summary of hypothesis tests**

- **H1:** Supported.
- **H2:** Supported — networking & career control strongest predictors.
- **H3:** Supported — CCQ subscales partially mediate GEI → CP.
- **H4:** Supported — faculty moderates the effect (STEM > Arts).

Table 8: Summary of Hypothesis Testing

Hypothesis	Statement	Supported
<b>H1</b>	GEI positively predicts Career Preparedness	Supported
<b>H2</b>	Networking and Career Control most strongly predict CP	Supported
<b>H3</b>	Career Competencies partially mediate GEI → CP	Supported
<b>H4</b>	Faculty moderates GEI → CP (STEM stronger)	Supported

All proposed hypotheses (H1–H4) were supported by the data, confirming the study’s theoretical framework.



This figure displays the score distributions for GEI, CCQ subscales, CP, and ASE.

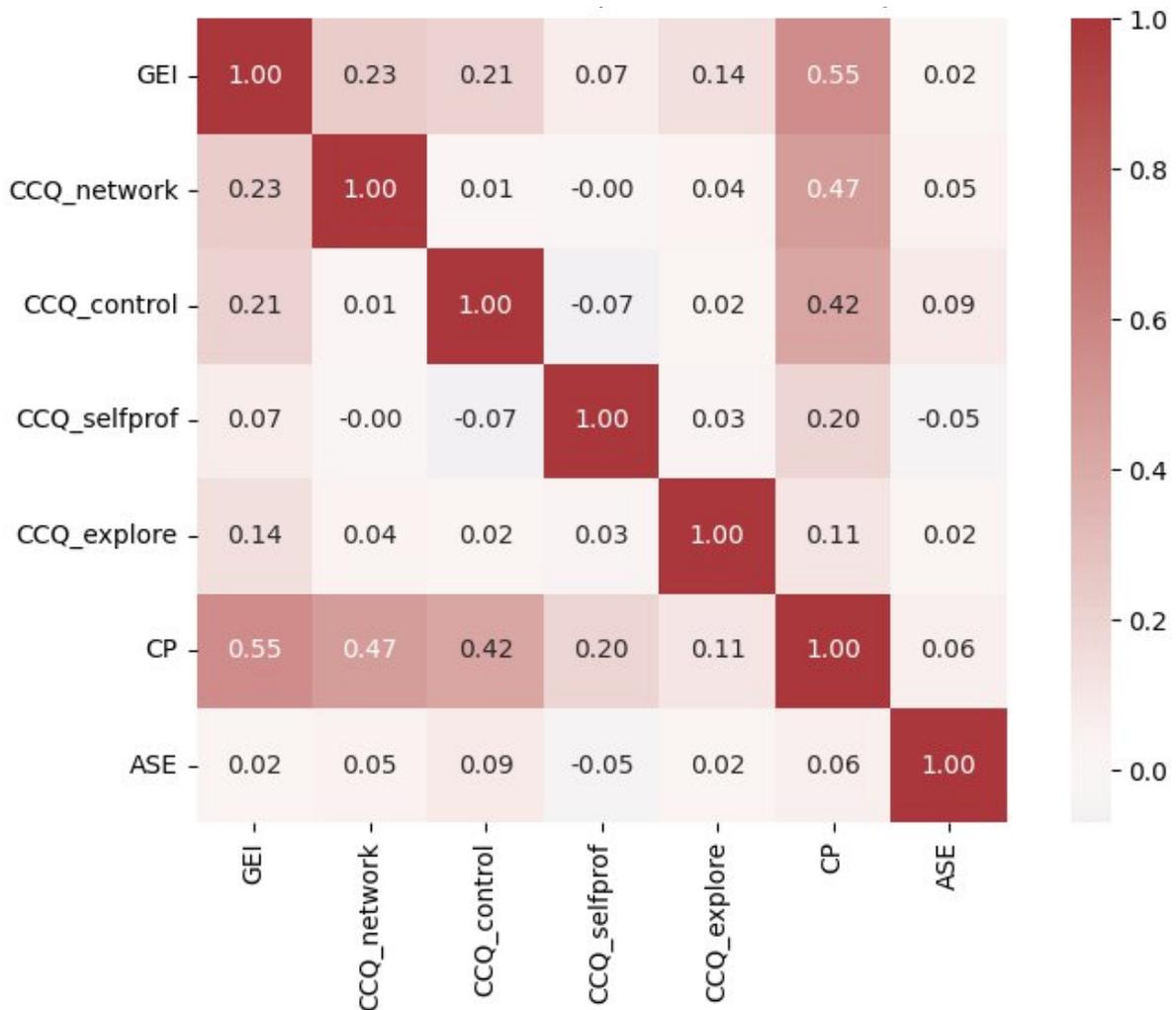


Figure 7: Correlation Matrix for Key Constructs

In Figure 7, there are pairwise correlations between all the major variables. It graphically shows the relationship between GEI and CCQ subscales, CP, and ASE. Most of the constructs exhibit positive relationships with each other, particularly between GEI and CP. The strongest

relationship is found between preparedness and networking and career control. It gives a general picture and then goes further with regression and mediation analysis.

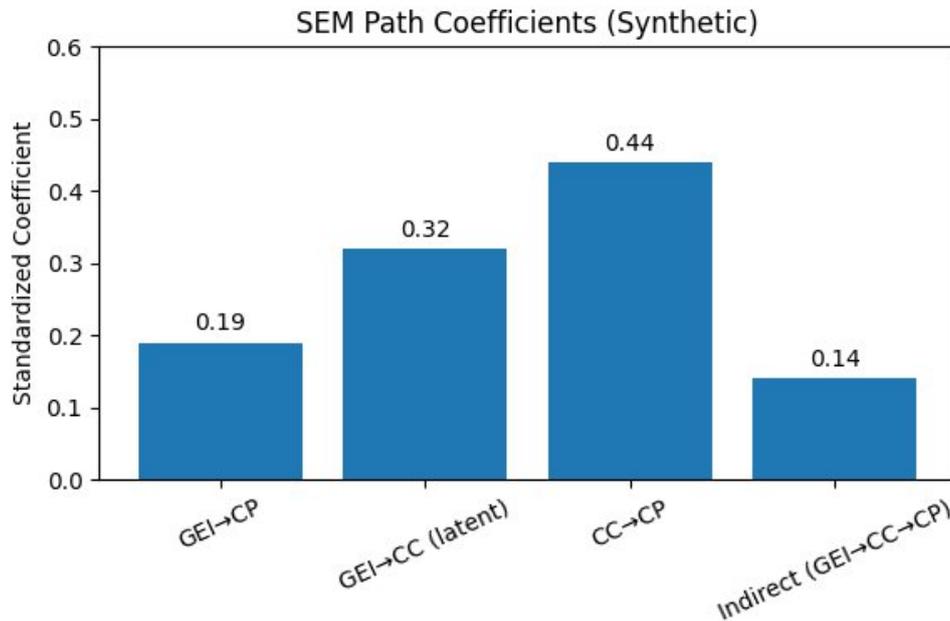


Figure 8: Standardized Path Coefficients from the Structural Equation Model (SEM).

The following figure 8 illustrates the outcomes of the structural equation model. It demonstrates the size and importance of each path in the mediation model. The presence of their indirect effect (GEI → CC → CP) and direct GEI → CP are both important. Path coefficients are normalized to be easily compared in order to determine variable strength. It supports the partial mediation hypothesis that was put forward in the study.

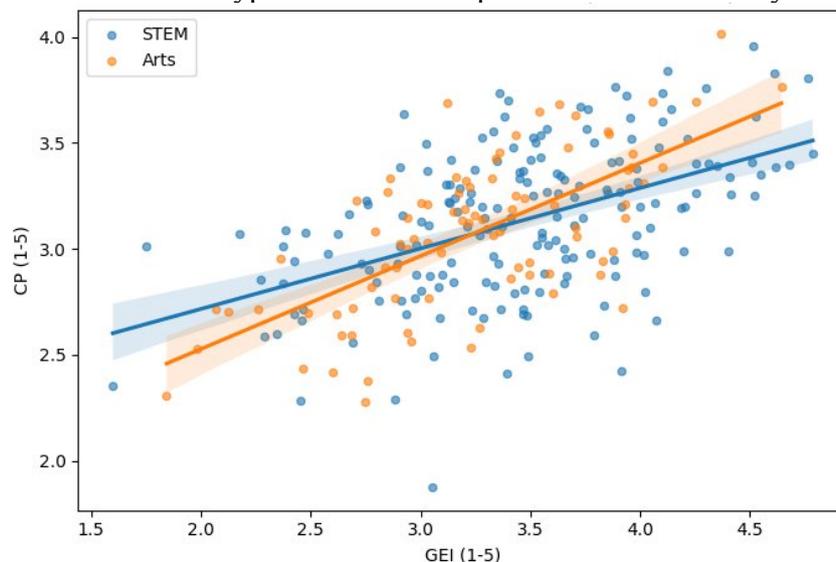


Figure 9: Moderating Effect of Faculty on the GEI > CP Relationship.

Figure 9 shows the variation in the relationship between GEI and CP by the faculties. Different academic groups (STEM, Social Sciences, Arts) are represented as lines or bars. It indicates that STEM students have stronger a GEI to CP relationship. This implies there is a gap in the

discipline of the general education and career readiness. It is a graphical confirmation of the Hypothesis 4 on the moderating effects.

## **8 Discussion**

The results of the present study provide valuable information about the dynamic association of general education integration, career competencies and career preparedness among university students. In line with the research objectives, the analysis indicated that general education is important in enabling students to have the necessary competencies that make them become career-ready. These findings affirm the model postulated that, general education integration has a positive impact on career competency, which further moderates overall readiness of students in the job market. Such results are added to the existing literature that focuses on the shift of higher education toward the academic system to the intentional acquisition of employability and life skills.

### **8.1 Important Findings Interpretation**

The findings indicate that general education integration (GEI) and career competencies (CC) have a significant positive correlation. This implies that once the courses of general education are created in a way that encourages interdisciplinary education, critical thinking, and application of problem-solving, students have a higher probability of acquiring transferable skills that can be applicable in workplace settings. These results are consistent with the previous studies that have suggested that general education programs in an effective manner can be regarded as incubation of skills like communication, teamwork, adaptability, and ethical decision-making. It supports the idea that general education cannot be considered an extraneous academic need, but it is a prerequisite to professional development and professional employability.

Moreover, the research established that there is a strong relationship between career competencies (CC) and career preparedness (CP). This relationship reinforces the current career development theories, including career adaptability theory and human capital theory, which state that people with a superior degree of career competencies will be in a better position to negotiate transition, adjust to job market demands, and experience employability throughout their lives. Students who feel that they have mastered communication, critical thinking, and leadership are assured that they are ready to move to the workforce and follow complicated career routes. The result of this shows the need to incorporate such competencies in the general education model so that the students are not only able to graduate with the knowledge but also with the hands-on skills that they need to succeed in their professional lives.

One of the major lessons learned during this research is that career competencies mediate. The results show that general education has both positive and negative direct and indirect effects on career preparedness because of the competencies that are developed. This mediation effect indicates that positive career-readiness outcome of general education is mostly achieved when it effectively develops particular employability skills. Stated differently, general education is a platform whereby career competencies develop through it and the competencies act as a conduit between academic knowledge and career implementation. This supports the fact that curriculum designers should not only stick to content delivery but they should rather adapt skill based and experiential learning strategies that enable students to internalize and apply their learning in practice.

### **8.2 Comparison to the Past Research**

The findings are in line with the research trends in higher education across the world that promote competency-based education (CBE) and integrative learning models. The research carried out on the Western setting like that by Yorke and Knight (2006) and Andrews and

Higson (2008) has shown that incorporation of employability qualities in university curricula improves the process of transitioning graduates into the job market. In the same manner, the Asian studies, and the ones that have been carried out in China, Singapore, and Malaysia have highlighted the importance of the connection between general education courses and the formation of soft skills. This research is in agreement with these findings, but it adds new evidence in a growing educational setting, and points to the fact that similar processes can be observed with regards to university students in various cultural and institutional backgrounds. Nevertheless, this research also introduces certain peculiarities as it is centered on the local academic organization and perceptions of students. Some institutions in the developing countries do not consider general education valuable, as opposed to what many other western systems have established as a supplementary education. This is the perception, which the findings refute and empirically support the argument, that an integrated general education curriculum is very important to the outcomes of employability. It implies that the similar benefits of the reform of general education according to being more skill-oriented can be achieved in the environments where the traditionally academic teaching remains the most significant.

### **8.3 Theoretical Implications**

This research results give theoretical support to theories that correlate curriculum integration and career development outcomes. The study substantiates the issue of career competencies mediation, and thereby provides a contribution to the existing theoretical frameworks like the Career Construction Theory (Savickas, 2005), which hypothesizes that individuals create their career trajectories based on adaptive skills and learning experiences. The findings indicate that general education is one of those settings in which such flexibility is enabled. In addition, it underpins the ideas of alignment in the curriculum, instructional goals, and evaluation to enhance both academic and professional achievement.

Also, the existence of positive associations between the main variables confirms that structural equation modeling (SEM) is a method that can be employed to investigate relationships that are complicated in the educational setting. The values of the model fit indices obtained in this study show that the proposed conceptual framework describes the relationships between general education, competencies, and preparedness. This contributes to methodological strength and it gives a framework that can be used in future research exploring such constructs in other settings.

### **8.4 Practical Implications**

Practically, the study has useful implications to the educators, curriculum designers, and policy makers. In the first place, universities ought to redefine general education as a key strategic element of higher education and not as a collection of narrowly-linked introductory courses. The combination of interdisciplinary projects, real-life problem-solving and cooperative learning exercises can contribute to students being able to put theoretical teachings into practice in a purposeful manner.

Second, the findings highlight the importance of faculty training and development. Pedagogical strategies that enhance competency-based learning, including active learning, case-based instruction, and projects based on experience should be provided to the teachers who deliver general education courses. In addition, the assessment practices must be geared towards not only the retention of the content but also the acquisition of such critical thinking, teamwork and communication skills.

Third, the research invites policy-makers to think on an institutional or national-level regarding curriculum standardization and reform. By integrating career competencies as explicit learning

outcomes in general education, it is possible to make sure that all students, irrespective of the field, can obtain some minimum of employability skills by the time they achieve their graduation. These efforts are in line with the trends of modernization in higher education worldwide and in response to the needs of the labor market in relation to flexible, innovative and ethically conscious professionals.

### **8.5 Policy & Pedagogical Recommendations**

1. Map general education learning objectives to a career-competency matrix (use CCQ categories).
2. Include high-impact practices (project-based assignments with career reflection, mock interviews, employer guest lectures).
3. Faculty development programs to embed career language and assessment tasks into general education.
4. Monitor and evaluate changes using pre-post designs and psychometrically validated instruments (CCQ).

### **9 Conclusion**

This study provides robust empirical evidence that integrating career competencies into general education (GE) significantly enhances students' career preparedness. The findings confirm that when GE curricula are strategically designed to foster skills such as networking, career control, and reflection, they serve as a powerful catalyst for developing essential transferable competencies. Crucially, the research establishes that these competencies act as a partial mediator, meaning GE influences career readiness both directly—by demonstrating the relevance of learning—and indirectly, by equipping students with tangible, career-management skills.

The results advocate for a paradigm shift in higher education, moving beyond the view of GE as a series of isolated requirements toward recognizing it as a strategic core for holistic student development. To bridge the gap between academic theory and professional practice, it is imperative that policymakers and curriculum designers map GE learning objectives to explicit career competencies. This can be achieved through high-impact practices like project-based learning, work-integrated assignments, and reflective portfolios. Furthermore, successful implementation requires dedicated faculty development to empower instructors as facilitators of competency development.

Despite its contributions, this study has limitations that point toward valuable future research. The reliance on self-reported data from a single institution suggests a need for more diverse methodological approaches. Subsequent research should:

- Employ longitudinal designs to track the long-term impact of integrated curricula on objective career outcomes such as employment success and career adaptability.
- Expand to multi-institutional and cross-cultural samples to test the generalizability of the findings across different educational systems and cultural contexts.
- Adopt mixed-methods approaches, combining surveys with in-depth interviews, to gain richer qualitative insights into the student experience of building these competencies.

In conclusion, embedding career competencies within general education is not a marginal enhancement but a fundamental necessity. It is a decisive step toward preparing graduates who are not only knowledgeable but also agile, proactive, and equipped to navigate the complexities of the modern workforce, thereby fulfilling the overarching mission of higher education in the 21st century.

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