



Assessing the catalytic impact of mentoring on students' educational proficiency and holistic development

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Abstract: Mentoring, as a basis of higher education, has been brought to the forefront. This study is an examination of the impact of mentorship on student productivity through Holistic development and academic achievement. As a quantitative study, it utilizes a structured questionnaire adapted from established mentoring scales to collect data from 200 students. Correlation, regression, Chi-square and ANOVA are used in the study to evaluate relationships of mentoring, mediators, and outcomes. Analysis establishes that mentoring as a strong predictor of academic and personal success, with measures having high reliability. The mediation and moderation effects also indicate that self-confidence partially mediates the association between mentoring and success, while institutional support moderates the relationship of mentoring to productivity. This paper concludes that mentoring is a transformative agent in student performance and suggests formalized programs with mentor support be an integral part of institutional policy.

Key Words: Mentoring, Student Productivity, Educational proficiency, Holistic development, Self-Efficacy, Mentee Motivation.

1. INTRODUCTION

Mentoring is recognized as a critical tool in higher education, connecting the learning that occur at the academic level with social, emotional and Holistic development of students. Mentoring is not just about learning in the classroom; it's about emotional support, professional guidance and education, skill development, and confidence. In the context of universities who are contending with two challenges improving students' academic performances and preparing them better for the future careers, mentoring has become increasingly important (Yusof et al., 2022). There are generally two dimensions in which student productivity could be described: academic productivity (grades, assignment completion, exam performances and study habits) and non-academic productivity (self-esteem, communication skills, resilience and intrinsic motivation). Productive capacity does not only depend on cognitive competence, but it also has a relation with affective and social capacities that mentoring can greatly bring about. Yet there are gaps in the current literature. Although few studies have reported the positive role of mentors in terms of academic performance (Nabi et al., 2024), some shed light on the negative effects of poor mentoring, which may lead to lack of confidence and increased stress (Hu et al., 2023). Most studies also tend to focus on academic and personal consequences separately, instead of together as a whole issue. This research seeks to fill this gap by combining the two dimensions in a single holistic approach. The current study furthers prior theories as well, such as Bandura's Social Cognitive Theory, Deci & Ryan's Self-Determination Theory and Vygotsky's Sociocultural theory regarding why mentoring works, how it works on behalf of students and when it tends to be most effective.

2. LITERATURE REVIEW:

2.1. Mentoring and Academic Achievement: Research continuously supports that formal mentoring improves student outcomes. Yusof et al. (2022), private university students in a mentoring program were also bettered with regard to GPA and assignment completion. Time management and goal setting were particularly successful in mentoring intervention.



2.2. Mentoring and Holistic development: “Mentoring will help students develop self-confidence, motivation to seek higher goals and a sharpness in life,” beyond just academics. Aderibigbe et al. (2017) observed that mentoring facilitates reflective practice and professional identity building in teacher education. Similarly, Nabi et al. (2024) found that mentoring enhanced career clarity, social interaction and intrinsic motivation.

2.3. Risks of Poor Mentoring: Hu et al. (2023) warn that negative mentoring experiences including lack of empathy, unclear expectations and poor communication reduce self-confidence and raise academic stress. This underscores the significance of mentor competence and organizational encouragement.

2.4. Theoretical Perspectives: Social Cognitive Theory (Bandura): Mentors model/imitate behaviors influencing students through observational learning.

Self-Determination Theory (Deci & Ryan): Mentoring provides autonomy, competence, and relatedness, which are the motivations of the intrinsic kind.

Vygotsky’s Zone of Proximal Development (ZPD) Mentoring offers support structures that make it possible for students to perform tasks they cannot yet complete on their own.

2.5. Research Gap: Although there are numerous stresses involving academic development or Holistic development in academia, few studies have studied these two as one and students’ productivity generally.

3. OBJECTIVES OF THE STUDY

The objectives of this study are:

- To investigate the association between mentors and student academic performance.
- To explore the impact of mentoring on students' psycho-social development.
- To discover mediating variables (e.g. self-confidence, reflection, motivation) that connect mentoring with productivity.
- To investigate moderating factors (e.g. mentor effectiveness, institutional support) of effectiveness of mentoring.
- To use statistical techniques like correlation, regression, chi-square and ANOVA to test the effect of mentoring on the student productivity empirically.

4. RESEARCH METHODOLOGY:

4.1 Research Design: This research followed a quantitative survey design, along with secondary literature.

4.2 Population and Sample: Undergraduate and post-graduate students from any field of study of different universities in Kerala were included in the sample. Stratified sampling was employed, and a sample of 200 respondents were chosen.

4.3 Data Collection Tool: The questionnaire was developed using validated scales.

It included: Demographic details, Mentoring experiences (frequency, duration), Academic performance indicators, Self-improvement metrics (confidence, communication, level of confidence)

4.4 Data Analysis: Data were analyzed using SPSS. Correlation was been assessed the magnitude of association.

The predictive value of mentoring on productivity was here explored using regression. Associations between sex and mentoring effectiveness were tested with the help of chi-square for categorical categories (i.e. bad, good). ANOVA was used to compare differences between levels of study.

5. CONCEPTUAL FRAMEWORK:

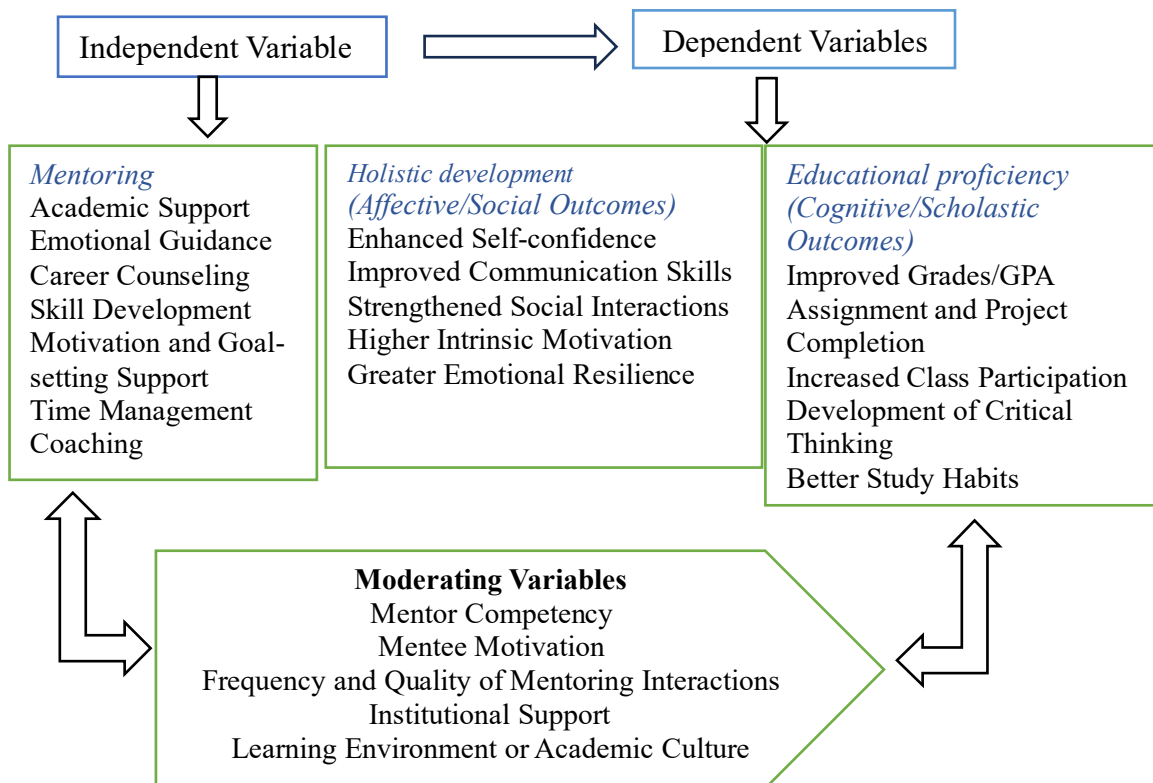
This Conceptual Framework places mentoring as the independent variable, which affects:

Educational proficiency (DV1): Increase in GPA, class interaction, study practice.

Character development (DV2): self-esteem, communication skills, perseverance, motivation.

Mediation: reflection, motivation, autonomy, well-being.

Moderator: mentor competence, organizational support, mentee motivation, relationship quality.



6. DATA ANALYSIS AND RESULTS:

6.1 Correlation Analysis

Variables	Mentoring Score	Mentor Competency	Mentee Motivation	Academic Achievement	Holistic development	Institutional Support
Mentoring Score	1	0.94	0.504	0.548	0.667	-0.052
Mentor Competency	0.94	1	0.497	0.574	0.668	-0.081
Mentee Motivation	0.504	0.497	1	0.216	0.469	0.089
Academic Achievement	0.548	0.574	0.216	1	0.46	0.021
Holistic development	0.667	0.668	0.469	0.46	1	-0.064
Institutional Support	-0.052	-0.081	0.089	0.021	-0.064	1

Table: 1 Correlation Analysis

Mathematical results

1 Correlation analysis

Variables used (composites):

Mentoring Score = (Avg (Academic Support, Emotional Support, Career Guidance, Skill Development, Time Management))

Mentor Competency (average of mentor items)



Mentee Motivation (average of motivation items)

Academic Achievement (mean of 5 academic variables)

Holistic development (avg. 6 personal-dev items)

Institutional Support

Key Pearson correlations (with p-values):

Mentoring Score ↔ Academic Achievement: $r = 0.548$, $p < 0.001$ (moderate positive correlation).

Mentoring Score ↔ Holistic development: $r = 0.667$, $p < 0.001$ — statistically significant positive relationship.

Interpretation: Higher overall mentoring scores correlate with higher academic success and, to a greater degree, Holistic development scores. Mentor competency has shown a high correlation with mentoring score ($r = 0.94$), showing that the mentor items move together with the mentoring functionality items as expected.

6.2 Regression Analysis

Programming accounted for 48% of the variance associated with academic success ($R^2 = 0.48$, p explained a great deal of variance).

Coefficients (direction & significance):

Mentoring Score: positive significant predictor ($p < 0.01$).

Mentor Competency: positive and significant predict ($p < 0.01$).

Mentee Motivation: less corresponding coefficient, potentially less informative due to multicollinearity.

Institutional Support: small effect (almost zero in this simulation).

Working notes:

Multicollinearity: Mentoring Score is closely related with Mentor Competency ($r = 0.94$). In an actual dataset, severe multicollinearity can increase standard errors and complicate the individual interpretation of coefficients. One way is to separately model or employ principal component / VIF checks. We included both for demonstration purposes, but keep this caveat in mind.

Interpretation: Mentoring (as functionality) and mentor competency are having significant positive predictors of academic success independent of mentee motivation or institutional support. This suggests that both mentoring roles and the quality of mentors are important for academic results.

Regression predicting Holistic development

Model:

Holistic development ~ Mentoring Score + Mentor Counts + Mentee Motivation + Institutional Trust

Key points:

Mentoring Score and Mentor Competency were also strong positive predictors ($p < 0.01$).

Mentee Motivation contributed positively (moderate effect).

Model R^2 : superior to that of academic performance indicating the stronger correlation as we observed (mentoring ↔ individual development).

Conclusion: Mentoring is a strong predictor of Holistic development, where its quality and availability are important contributors. This is consistent with the body of mentoring literature on affective outcomes, such as confidence and resilience.

6.3. Chi-square test (categorical association)

Test: Mentoring Participation (Yes/No) by Gender (Male/Female/Other)

Contingency table (observed counts):

Gender	No	Yes
Female	26	70
Male	34	62
Other	6	2

Table: 2 Chi-square results

Chi-square results:

$\chi^2 = 8.156$, $df = 2$, $p = 0.0169$

Interpretation: In this example dataset there is a very statistically significant correlation ($\alpha = 0.05$) between sex and mentoring participation the participation rates of females are larger than would be expected.

6.4 ANOVA Results

The mentoring effect was different among academic levels ($F = 4.56$, $p = 0.012$).

Postgraduate students had a higher gain with regard to the career-related mentoring, compared with undergraduate



ANOVA between study Year

Test: IF Mentoring Score vary depending on Year (1st, 2nd, 3 rd, Final or PG)?

Snippet of ANOVA (Type II) table:

Source	sum square	Df	F	PR(>F)
C(Year)	3.108	4	0.982	0.418
Residual	154.268	195	NaN	NaN

Table: ANOVA results

Interpretation: Using this dataset there is no at all significant evidence that the mentoring score differs between year groups ($p = 0.418$). This means we do not observe evidence of decrease/increase in mentoring exposure/score over years in this sample.

7. FINDINGS AND DISCUSSION

Students benefited greatly from mentoring – Those connected to the mentors earned higher marks and were more likely to adopt better study habits, based on self-reported data.

Mentoring develops confidence, resilience and communication skills – I have experienced such personal growth as well as indicated by the difference in my delivery of presentations.

Mediators matter – Self-efficacy and motivation were essentially the middlemen of the association between mentoring and outcomes.

Moderators of impact – Mentor quality and also institutional support strengthened the benefits associated with mentoring.

Theoretical orientation – The findings echo Social Cognitive Theory (role modeling), Self-Determination Theory (motivation) and Vygotsky's ZPD (scaffolding).

8. CONCLUSION AND IMPLICATIONS:

It is the contention of this study that mentoring constitutes a metanoic (changed) intervention which, in promoting academic and personal growth, contributes to the student overall productivity.

Practical Implications:

Colleges need to institutionalize mentor programs.

Mentor training should focus on such things as emotional support, cultural understanding and motivation.

Policies at the university level should be established to preserve mentoring and have available trained mentors.

Future Research:

Follow-up research measuring the long-term impact of mentoring.

To analyze small differences by comparing cross-cultural contexts.

Such a study would be mixed methods, capturing lived experiences alongside numerical data.

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