



ISSN 2278 – 0211 (Online)

Settling into Campus Environment: Relationship between Teacher Trainees' Sense of Belonging and Educational Outputs of Colleges of Education in Volta Zone, Ghana

Clement Kantam Kolamong

College Secretary, Department of Administration,
St. Francis College of Education, Ghana

Seth Asare

Academic Affairs Officer, Department of Academic Affairs,
St. Francis College of Education, Ghana

Patrick Eshun

Quality Assurance Officer, Department of Quality Assurance,
St. Francis College of Education, Ghana

Fred Edinam Degboe

Human Resources Officer, Department of Administration,
St. Francis College of Education, Ghana

Abstract:

The relationship between teacher trainees' sense of belonging and educational outputs is a crucial aspect of academic success. While we vouch that several studies have been conducted on this topic, the majority of these studies are carried out in higher education (universities) and developed countries. Sparse literature exists on teacher training colleges in emerging economies. This is the backdrop against which this research was conducted. Utilizing the correlational research design and surveys of 522 respondents, the study examined the relationship between teacher trainees' sense of belonging and educational outputs, using colleges of education of Volta Zone in Ghana as case studies. Findings revealed that there is a statistically significant relationship between a sense of belonging and educational outputs of GPA ($R = .648, p = .003$); students' engagement ($R = .191, p = .000$); retention ($R = .718, p = .016$); and persistence ($R = .423, p = .035$). The study concludes that students' perception of a sense of belonging on college campuses is positively correlated with educational outputs at a 95% confidence level. Understanding and nurturing this connection holds the potential to enhance overall educational efficacy and contribute to a more inclusive and supportive learning environment.

Keywords: Sense of belonging, educational output, campus environment, relationship

1. Introduction

Transitioning of higher institution learners makes the fundamental human need for belonging more pressing. This desire is more acute in college settings when students feel disconnected from other students, instructors, and workers. A sense of belonging, defined as the perceived acceptance and inclusion in a community, has been identified as a crucial factor in fostering student success (Strayhorn, 2019). How friendly the school atmosphere and its societal relationships influence a student's sense of inclusion (Strayhorn, 2019; Walton & Cohen, 2011). However, figuring out the social patterns of a college campus is more challenging than determining its natural obstacles (Pousson et al., 2022). Due to the interpersonal aspect of belonging, any social interaction that results in unfavorable behaviors from teachers, workers, and colleagues affects students' feelings of rejection, belonging, scholarly tenacity, and overall personal growth (McCall, 2015; Strayhorn, 2019). Social exclusion is linked to poor brain retention and sadness, both of which have cognitive effects (Zorzo et al., 2019). Therefore, a low sense of connectedness may have a negative effect on education, success in the classroom, and general wellness (Bowskill et al., 2022; Lyken-Segosebe et al., 2019).

Learning in the classroom is seen as a socially organized activity, and the setting is seen as a social ecology. A lack of belonging among some students causes them to perform poorly and put their education on hold. A substantial amount of study has connected engaging learning settings to the growth of students' societal involvement, with investigations examining the association in both dimensions (Zhao et al., 2019). A student's sense of belonging is now crucial for fostering inclusive and fair learning environments (Hilliger et al., 2022) and a crucial societal and emotional requirement for college students (Singh, 2018). An organization can impact a learner's sense of belonging by providing deliberate and appropriate academic assistance (Perez, 2020). According to Durand (2018), to belong means to matter. This means that

when one matters in a particular environment, they belong to such an environment. The sense of belonging indices measured how connected learners feel to the larger school environment (Durand, 2018). Basically, learners who believe they belong will probably have a more favorable and fruitful learning experience (Durand, 2018). Research indicates that a positive sense of belonging is correlated with increased academic engagement, motivation, and overall satisfaction (Walton & Cohen, 2011).

Research has consistently highlighted the significance of a positive and supportive campus environment in shaping students' academic experiences and outcomes (Astin, 1993; Tinto, 1993). For instance, research indicates that a positive sense of belonging fosters academic engagement, motivation, and overall well-being among students (Hausmann et al., 2007; Goodenow, 1993). In the realm of teacher education, the importance of a supportive campus environment for the professional development of teacher trainees cannot be overstated (Inman et al., 2017). Following earlier research, this idea of feeling included is connected to learners' innate motivation to study and be successful, leading to educational success and perseverance in the classroom (Marra et al., 2012). Contrarily, learners who do not feel like they belong run a higher risk of quitting school, which has disproportionately impacted female and other marginalized students (Zhao et al., 2019).

While existing literature acknowledges the importance of a sense of belonging in higher education, there is a notable gap in the literature concerning its specific relationship with educational outputs among teacher trainees in the Volta Zone. This study aims to fill this gap by exploring the nuanced dynamics within this geographical and educational context. Linking a sense of belonging to educational outputs is crucial for understanding the broader implications of a supportive campus environment. Educational outputs encompass not only academic performance but also factors such as retention rates, graduation rates, and overall teacher preparedness. Investigating the relationship between teacher trainees' sense of belonging and these educational outputs can provide valuable insights for both educators and policymakers. Understanding the relationship between a sense of belonging and educational outputs can have practical implications for Colleges of Education in the Volta Zone in Ghana. Insights from this research may inform the development of targeted interventions and policies aimed at enhancing the overall educational experience and outcomes of teacher trainees not only in Ghana but also in Africa, as well as globally.

2. Theoretical Framework

The theoretical framework guiding this study draws on Tinto's (1993) model of student integration, which posits that a sense of belonging is a key component of successful student integration into the academic and social fabric of an institution. The model suggests that the level of integration directly influences student persistence and achievement. Tinto argues that the degree to which students feel connected to their academic community significantly impacts their persistence and academic achievement. This sense of belonging is not only essential for fostering a positive learning environment but also plays a crucial role in mitigating factors that might lead to attrition or disengagement (Tinto, 1993). Research has consistently supported Tinto's model, indicating that a strong sense of belonging fosters a positive learning environment and contributes to student success (Hausmann, Schofield, & Woods, 2007; Strayhorn, 2012). In the context of teacher education, this model offers a comprehensive lens through which to examine the dynamics influencing the educational experiences of teacher trainees. Applying this framework to teacher education, it is hypothesized that a strong sense of belonging among teacher trainees will positively impact their educational outcomes.

2.1. Sense of Belonging

Modern college life has a plethora of engagement opportunities that have the possibility of developing or impacting a student's Sense of Belonging. Some of these experiences include college athletics, student organizations, academic courses, religious groups, campus jobs, and many more (Loper, 2022). The classroom setting is seen as a social ecosystem, and learning there is seen as a process that is governed by social structures (Zhao et al., 2019). A successful educational setting necessitates, inter alia, a thriving and robust society where all of its inhabitants experience a feeling of pride and ownership as well as a sense of belonging and access to resources for their physical, religious, and academic needs (Krafona, 2014; Lyken-Segosebe et al., 2019). For a long time, it has been believed that a high feeling of connectedness is critical for maintaining psychological wellness (Mcbeath, 2015). One of the most fundamental and important human wants and the outcome of an underlying human urge is a sense of belonging (Baumeister & Leary, 1995). Maslow's "theory of personality" (1943), Epstein's "cognitive-experiential self-theory" (1990), as well as Deci and Ryan's "self-determination theory" (1991) all mention that a person's feeling of belonging serves an important psychological purpose (Sheldon, Elliot, Kim & Kasser, 2001).

Academic achievement in any educational setting depends on a feeling of belonging (Strayhorn, 2019; Bowskill et al., 2022). In view of this, both Maslow (1962) and Strayhorn (2019) state that a college student's need for belonging must be satisfied before any other higher-order needs, such as knowledge and self-actualization (Strayhorn, 2019). Therefore, without a feeling of connectedness within the educational setting, it is impossible to gain insights or competence (Knehta et al., 2020). The feeling of belonging refers to how much a learner feels completely welcomed and assimilated into the general intellectual and social environments of their college (Museus & Maramba, 2010). In Peacock et al. (2020)'s study, participants held varying opinions about what constitutes a sense of belonging, including that it is the "feeling" of being a member of a society, joining a group of students who share a shared objective, and interacting with educational resources, other students, and instructors. Hoffmann et al. (2003) write, "sense of belonging is theorized to reflect students' integration into the college system". The feeling of acceptance, worth, and inclusion a student feels toward their classmates or other members of the school community is measured by a sense of belonging. The interactions a learner has with their

peers, instructors, family, and the larger community all have a role in how they feel like they belong (Centre for Education Statistics and Evaluation, 2020).

2.2. Sense of Belonging and Educational Success/Outcomes

Academic success is linked to a student's sense of connection at school (OECD, 2017). The perseverance of students, the quality of their training, and their general performance have all been found to be positively connected with their sense of belonging in college or university (Hausman, Ye, Schoefield & Woods, 2009; Museus & Maramba, 2010; Strayhorn, 2012). Greater degrees of college feeling of connectedness are linked to improved educational, societal and emotional results, such as stronger academic motivation, higher grade point averages, reduced attrition rates, and better socio-emotional functioning (Anderman, 2003; Pittman & Richmond, 2007; Shochet, Dadds, Ham & Montague, 2006). Additionally, the general wellness, psychological health, and long-term educational achievement of learners who feel like they belong at school are all boosted (Centre for Education Statistics and Evaluation, 2020). In essence, learners who believe they belong in their class are inclined to have happy and productive learning experiences (Durand, 2018).

Accordingly, it has been established that a student's general development and accomplishments in a college setting depend greatly on their sense of belonging (Hausmann, Schoefield & Woods, 2007; Strayhorn, 2012). Students who feel like they belong can concentrate more on doing well in school (Perez, 2020). poorly and put their education on hold (Zhao et al., 2019). A student's participation in or membership in an institution has been linked to successful academic outcomes (Vaccaro & Newman, 2016). According to studies, pupils who feel like they belong are inclined to continue school, be less absent from class, and perform better academically. In general, students who feel like part of the school community work more and are more driven to succeed (Centre for Education Statistics and Evaluation, 2020). Such students are more motivated and engaged, which improves retention rates and educational achievement (Davishahl & Alqudah, 2020). If learners do not sense that they belong in the classroom, it may be harder for them to succeed academically and graduate (Igram, 2012). Involving students can help them feel more a part of the group (Strayhorn, 2019). According to Centre for Education Statistics and Evaluation (2020), student involvement, welfare, and instructional strategies are all correlated with a sense of belonging.

3. Methodology

3.1. Study Area

Volta Region is one of the sixteen administrative regions in Ghana, with Ho as its capital. The region is bordered by Republic of Togo in the West and the Lake Volta in the East. The region, which is divided into 25 administrative districts, contains a variety of ethnic and linguistic groupings, including the "Ewe, Guan, and Akan peoples. The researcher considered various factors and motivations for choosing the Volti zone in the Volta region as a study area. First of all, the Volta region has unique characteristics, phenomena, or problems that align with the research objectives. Again, the availability of numerous Colleges of Education is another reason why the researcher chose the area. It is a place where comprehensive and reliable data is accessible, allowing the researcher to conduct a thorough investigation and draw meaningful conclusions. By focusing on such areas, the researcher can make original contributions to the field and fill gaps in knowledge of teacher trainees' experience in the campus environment. The study area is easily accessible by the researcher, which makes it manageable with the resources available and adheres to ethical guidelines.

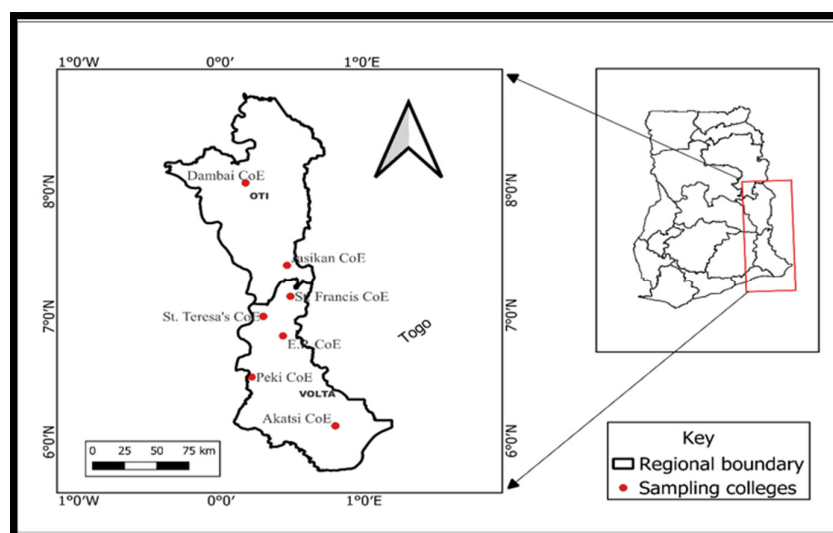


Figure 1: Map of the Study Area Showing the Sampling Colleges of Education in Volti Zone

3.2. Research Design

The study adopted the correlational research design to examine the relationship between a sense of belonging and students' educational outputs. Correlational research design is a valuable approach for investigating relationships between

variables, providing insights into associations without manipulating them (Bhandari, 2023). This design enables researchers to explore naturally occurring patterns and identify potential connections between variables (Williams, 2007; Johnson & Christensen, 2017). However, the investigators were mindful to note that any identified correlation does not imply causation. The strength and direction of correlations, as measured by Pearson's and Spearman's correlation coefficients, offered valuable quantitative information (Gliner et al., 2009).

3.3. Sampling Procedure

Using a proportionate stratified sampling technique, each of the seven (7) colleges of education served as a stratum from which samples were drawn. Stratified sampling allowed for increased precision and representativeness of the sample by ensuring that each stratum was proportionally represented in the sample (Sharma, 2017). In the strata, a simple random selection method was used to select the respondents. This was done to guarantee that every student had a fair opportunity to be selected to take part in the study. A total of 522 respondents participated in the research. This figure, from a population of 2172, was arrived at by Yamane's formula given as:

$$n_o = \frac{N}{1+N(e)^2} \dots \dots \dots (1)$$

Where:

- (N) is the total population size and
- (e) is the precision level, set at 0.05 (i.e. at 95% confidence level)

3.4. Data Collection Procedure

Questionnaires were the primary data-gathering tool. The respondent selects responses to questions and provides fundamental demographic data. The study used Hoffmann, Richmond, Morrow, and Salomone's (2002–2003) Revised Sense of Belonging Instrument. In their investigation, Hoffmann et al. (2002-2003) computed the internal consistency of sense of belonging scales. The four subscales are: "perceived peer support (8 items, $\alpha = .89$), perceived classroom comfort (4 items, $\alpha = .92$), perceived isolation (4 items, $\alpha = .85$), and perceived faculty support" (10 items, $\alpha = .89$). No pilot testing was conducted. However, the reliability test after the data collection confirmed the instruments' validity and dependability. In addition, measures of measurable and student-anticipated output items were developed after a thorough literature review. These items include students' engagement, measured by students' level of involvement in students' organization, GPA, persistence and retention.

Data were gathered between May and June 2023, and the period lasted for one-and-a-half months. This was one week after the informed consent form was approved. The researchers and the authorities of the institutions unanimously fixed the date to conveniently administer the survey to the respondents, without compromising the students' learning hours. Respondents who were not able to do so at the time were given some time to answer at their own convenience period. Assistance was given to the respondents when the need arose. The researchers carefully adhered to the ethics of social research, thus ensuring the anonymity and confidentiality of the respondents by removing any information in the questionnaire that revealed the identity of the respondents.

3.5. Data Processing and Analysis

The meticulous process of ensuring data accuracy began with a comprehensive cross-check of the questionnaires, addressing all necessary corrections prior to entry into statistical software. To maintain data integrity, each completed questionnaire was serialized, mitigating the risk of duplicate entries during the data entry phase. Test items underwent coding to systematically gauge respondents' evaluations of the investigator's suggested possibilities. Subsequently, the curated data was entered into IBM SPSS, a robust statistical software that facilitates systematic and efficient evaluation. The emphasis on inferential statistics, particularly correlations, provided a deeper understanding of the relationships within the data. The analysis of the information collected from respondents was not only thorough but also insightful, allowing for nuanced interpretations. To enhance clarity, the findings were meticulously organized and presented in tables, offering a visual representation for a more accessible and comprehensive grasp of the research outcomes.

4. Results

4.1. Respondents' Background Information

Regarding sex, 44.3% were males, while 55.7% were females. The data shows that the number of females polled was more than that of males. The age distribution demonstrates a significant majority of the respondents in the categories of 20-24 and 25-29, with 41.6% and 38.7%, respectively. The rest were between the ages of < 20, 30-34, and 35 and above, with 2.5%, 14.4%, and 2.9%, respectively. Regarding the institution, the majority polled were found in St. Francis College of Education with 22.2%, 15.3% were from Peki Government College of Education, 14.8% were from Dambai College of Education, 13.0% were from E. P. College of Education, 12.6% were polled from Akatsi College of Education, 11.7% were from Jasikan College of Education, and the lowest was occupied by St. Teresa's College of Education with 10.3%.

4.2. Relationship between Sense of Belonging and GPA

Pearson's Correlation analysis revealed that a sense of belonging is strongly and positively ($R = .648$) correlated with teacher trainees' GPAs with a coefficient of determination ($R^2 = 0.420$). This means that a higher sense of belonging leads to a corresponding increase in students' GPAs. From the analysis, a higher sense of belonging results in a 42% increase in students' GPAs.

Students' GPA		
Sense of Belonging	Pearson's R	.648**
	Sig. (2-tailed)	.003
	N	522

Table 1: Correlations between Sense of Belonging and Students' GPA
 ** Correlation Is Significant at 0.05

4.3. Relationship between Sense of Belonging and Students' Engagement

The students' engagement was measured by the number of organizations to which students were members. The correlation coefficient ($R = .191$) means that an increase in students' sense of belonging results in a proportional increase in students' engagement or level of involvement. Although the increase is marginal ($R^2 = .036$), the statistical significance means calls for required attention. Generally, the result implies that variation in students' engagement in the college environment is accounted for by their perception of belonging to the college campus. When students perceive they belong to the college campus, they are likely to involve themselves in school activities and organizations, thereby creating networking relationships in the college environment.

Students' Engagement		
Sense of Belonging	Pearson's R	.191**
	Sig. (2-tailed)	.000
	N	519

Table 2: Association between Sense of Belonging and Students' Engagement
 ** Correlation Is Significant at 0.05

4.4. Relationship between Sense of Belonging and Retention

The Spearman's Rho Correlation analysis found that a sense of belonging has a strong, significant positive ($R = .718$) relationship with students' retention with ($R^2 = .516$). Students' perception of a sense of belonging to college campus directly results in their retention in school. To put it differently, teacher trainees' high sense of belongingness is associated with their retention on the college campus without putting their education on hold. This is summarized in the subsequent table.

Retention		
Sense of Belonging	Spearman's Rho	.718**
	Sig. (2-tailed)	.016
	N	522

Table 3: Association between Sense of Belonging and Students' Retention
 ** Correlation Is Significant at 0.05

4.5. Association between Sense of Belonging and Persistence to Graduation

The correlation statistic, as expressed by Spearman's Rho coefficient, revealed a moderate ($R = .423$) relationship between a sense of belonging and students' persistence. The coefficient of determination (.178) suggests that approximately 18% of the variation in college students' persistence to graduation is explained by their perceived sense of belonging to the college campus. This implies that when students perceive they belong to a college campus, they are likely to remain until graduation.

Persistence		
Sense of Belonging	Spearman's Rho	.423**
	Sig. (2-tailed)	.035
	N	522

Table 4: Association between Sense of Belonging and Students' Persistence
 ** Correlation Is Significant at 0.05

5. Discussion

Using the correlational research design and case studies from the Volti Zone, this study seeks to determine the association between a sense of belonging and students' educational outputs. The results revealed that there is a statistically significant relationship between a sense of belonging and (GPA, $R = .648$, $p = .003$; Students' engagement, $R = .191$, $p = .000$; retention, $R = .718$, $p = .016$; persistence, $R = .423$, $p = .035$). The implication of the findings is that students' educational outputs are associated with their perceived sense of belonging. Feeling connected to the college campus has a bearing on teacher trainees' GPAs, their engagement in campus organization and/or activities, retention, and persistence to graduation. The findings were discussed based on the theoretical framework of Tinto's (1993) model of student integration in relation to empirical literature. This study asserts Tinto's that the degree to which students feel connected to

their academic community significantly impacts their persistence and academic achievement. The findings concur with several reported literature.

Academic success is linked to a student's sense of connection at school (OECD, 2017). The perseverance of students, the quality of their training, and their general performance have all been found to be positively connected with their sense of belonging in college or university (Hausman et al., 2009; Museus & Maramba, 2010; Strayhorn, 2012). Greater degrees of college feeling of connectedness are linked to improved educational, societal and emotional results, such as stronger academic motivation, higher grade point averages, reduced attrition rates, and better socio-emotional functioning (Anderman, 2003; Goodenow & Grady, 1993; Pittman & Richmond, 2007; Shochet et al., 2006). Additionally, the general wellness, psychological health, and long-term educational achievement of learners who feel like they belong at school are all boosted (Centre for Education Statistics and Evaluation, 2020). In essence, learners who believe they belong in their class are inclined to have happy and productive learning experiences (Durand, 2018).

Accordingly, it has been established that a student's general development and accomplishments in a college setting depend greatly on their sense of belonging (Hausmann, Schoefield & Woods, 2007; Strayhorn, 2012). Students who feel like they belong can concentrate more on doing well in school (Perez, 2020). Conversely, students who do not feel like they belong are more likely to do poorly and put their education on hold (Zhao et al., 2019). A student's participation in or membership in an institution has been linked to successful academic outcomes (Vaccaro & Newman, 2016). Learners who feel like they belong are inclined to continue school, be less absent from class, and perform better academically. In general, students who feel like part of the school community work more and are more likely to succeed (Centre for Education Statistics and Evaluation, 2020). These learners have a more favorable and fruitful learning experience (Durand, 2018) and are more motivated and engaged, which improves retention rates and educational achievement (Davishahl & Alqudah, 2020; Freeman et al., 2010). Involving students can help them feel more a part of the group (Strayhorn, 2019). According to Centre for Education Statistics and Evaluation (2020), student involvement, welfare, and instructional strategies are all correlated with a sense of belonging. Reduced stress and anxiety are benefits of social connection. Feeling belonging to a group can help with a "social cure" (Haslam et al., 2016; Jetten et al., 2009).

Similarly, in McBeath, Drysdale, and Bohn's (2015) research, a sense of belonging supports learners in various ways, including psychological and interpersonal assistance, involvement in campus life, a feeling of bonding, and overall tolerance. When a student has a higher sense of belonging to the college of education, not only are they persistent in graduation, but they are also more motivated to complete coursework and participate in campus activities (Loper, 2022). A comparative study in the UK concluded: "At the heart of successful retention and success is a strong sense of belonging in higher education for all students" (Thomas, 2012). As students feel a sense of belonging to the campus environment, their interest is stirred, allowing them to learn hard to attain higher academic heights. These students are psychologically sound and emotionally stable in the pursuit of their learning goals. The converse holds for students who feel alienated and marginalized. They feel cut off from the college campus, making sense that they do not belong. Such students are likely to put their education on hold when confronted with emotional and psychological issues.

6. Limitation

While the study establishes a significant correlation between teacher trainees' sense of belonging and educational outputs, it is essential to acknowledge potential limitations. Firstly, the research relies on self-reported data from teacher trainees, introducing the possibility of response bias. Secondly, the study focuses primarily on quantitative measures, limiting a nuanced exploration of the qualitative aspects of belonging. Additionally, the research context may not be universally applicable, as cultural and institutional differences among teacher training programs could influence the generalizability of the findings. Finally, the cross-sectional nature of the study restricts the ability to establish causation or analyze the long-term impact of a sense of belonging on educational outputs.

7. Conclusion/Implication

The relationship between teacher trainees' sense of belonging and educational outputs is a critical aspect that significantly influences the overall effectiveness of teacher preparation programs. This study has delved into the intricate dynamics of how a sense of belonging among teacher trainees can shape their educational outputs. The findings of this research underscore the undeniable importance of fostering a strong sense of belonging within teacher-trainee cohorts. A sense of belonging not only enhances the overall well-being and satisfaction of teacher trainees but also plays a pivotal role in shaping their attitudes, motivation, and commitment to the teaching profession. When teacher trainees feel a connection to their educational community, whether through meaningful interactions with peers, mentors, or the institution itself, they are more likely to thrive academically and develop a deeper understanding of the responsibilities associated with effective teaching.

Moreover, the impact of a sense of belonging extends beyond the individual teacher trainee to the broader educational landscape. As these individuals progress through their training programs with a heightened sense of belonging, they are better equipped to create inclusive and supportive learning environments for their future students. This, in turn, can contribute to positive educational outcomes, such as increased student engagement, improved academic performance, and enhanced classroom behavior.

The implications of these findings are far-reaching and hold significant importance for educational policymakers, institutions, and teacher training programs. It is imperative that efforts are made to intentionally cultivate a sense of belonging within teacher-trainee communities. This could involve implementing mentorship programs, fostering a culture of inclusivity, and providing professional development opportunities that address the social and emotional aspects of teaching.

As we move forward in the realm of teacher education, acknowledging and prioritizing the relationship between teacher trainees' sense of belonging and educational outputs should be a cornerstone of program design and implementation. By doing so, we can not only enhance the overall quality of teacher training but also contribute to the creation of a more supportive and effective educational system. Ultimately, investing in the sense of belonging among teacher trainees has the potential to yield long-term benefits for both educators and the students they will inspire and educate in the future.

8. References

- i. Anderman, L. H. (2003). Academic and social perceptions as predictors of change in middle school students' sense of school belonging. *Journal of Experimental Education*, 72(1), 5–22. doi:10.1080/00220970309600877
- ii. Astin, A. W. (1993). *What matters in college? Four critical years revisited*. San Francisco, CA: Jossey-Bass.
- iii. Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497–529.
- iv. Bhandari, P. (2023). Correlation research: When and how to use. Retrieved from: <https://www.scribbr.com/methodology/correlational-research/>
- v. Bowskill, N., Hall, D., Harrogate, M., & Hutchinson, L. (2022). Nostalgia, belonging and mattering: An institutional framework for digital collegiality drawn from teachers' experience of online delivery during the 2020 pandemic. *Journal of University Teaching and Learning*, 19(4).
- vi. Centre for Education Statistics and Evaluation. (2020). Supporting students' sense of belonging: Every student is known, valued, and cared for in our schools. NSW Department of Education. cese.nsw.gov.au
- vii. Davishahl, J., & Alqudah, S. (2020). Complete work: Investigation of sense of belonging to engineering in introductory level pre-engineering classes. *ASEE Annual Conference and Exposition, Conference Proceedings, 2020-June*.
- viii. Durand, S. (2018). Beyond access: Sense of belonging of black/African American women writing to complete Ph.D. *University of Massachusetts Amherst*.
- ix. Freeman, T. M., Anderman, L. H., Jensen, J. M., Freeman, T. M., Anderman, L. H., Sense, J. M. J., & Jensen, J. M. (2010). Sense of belonging in college freshmen at the classroom and campus levels. *The Journal of Experimental Education*, 75(3), 203–220. <https://doi.org/10.3200/JEXE.75.3.203-220>
- x. Goodenow, C., & Grady, K. E. (1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent students. *The Journal of Experimental Education*, 62(1), 60–71.
- xi. Gliner, J. A., Morgan, G. A., & Leech, N. L. (2009). *Research methods in applied settings: An integrated approach to design and analysis*. Routledge.
- xii. Haslam, C., Cruwys, T., Haslam, S. A., Dingle, G., & Chang, M. X.-L. (2016). Groups 4 Health: Evidence that a social-identity intervention that builds and strengthens social group membership improves mental health. *Journal of Affective Disorders*, 194, 188–195. <https://doi.org/https://doi.org/10.1016/j.jad.2016.01.010>
- xiii. Hausmann, L., Schofield, J., & Woods, R. (2007). Sense of belonging as a predictor of intentions to persist among African American and White first-year college students. *Research in Higher Education*, 48(7), 803–839. <https://doi.org/10.1007/s11162-007-9052-9>
- xiv. Hoffman, M., Richmond, J., Morrow, J., & Salomone, K. (2003). Investigating “sense of belonging” in first-year college students. *Journal of College Student Retention: Research, Theory & Practice*, 4(3), 227–256.
- xv. Hilliger, I., Astudillo, G., Baier, J., & de los Rios, M. J. (2022). WIP: Exploring differences in students' sense of belonging inside and outside the engineering classroom. *ASEE 2022 Annual Conference: Excellence through Diversity*.
- xvi. Igram, D. (2012). College students' sense of belonging: Dimensions and correlates. *Stanford University*.
- xvii. Inman, D. A., Mayes, R. D., & Schwager, M. T. (2017). Teacher candidates' sense of belonging and cultural competence development: A mixed-methods study. *Journal of Teacher Education*, 68(2), 161–178.
- xviii. Jetten, J., Haslam, C., Haslam, S. A., & Branscombe, N. R. (2009). The social cure. *Scientific American Mind*, 20(5), 26–33. <https://doi.org/10.1038/scientificamericanmind0909-26>
- xix. Johnson, B., & Christensen, L. (2017). *Educational research: Quantitative, qualitative, and mixed approaches*. Sage Publications.
- xx. Knekta, E., Chatzikyriakidou, K., & McCartney, M. (2020). Evaluation of a questionnaire measuring university students' sense of belonging to and involvement in Biology. *CBE-Life Sciences Education*. <https://doi.org/10.1187/cbe.19-09-0166>
- xxi. Krafona, K. (2014). A sense of belonging in a university community: A study of undergraduate students. *International Journal of Psychology and Behavioural Sciences*, 4(1), 16–20. <https://doi.org/10.5923/j.ijpbs.20140401.03>
- xxii. Loper, K. R. (2022). University student belonging scale: Defining and evaluating students' sense of belonging to their university. *Oklahoma State University*.
- xxiii. Lyken-segosebe, D. E., Moremi, M., Mafuraga, M., & Mogotsi, B. M. (2019). The role of the campus environment in fostering a sense of matter among postgraduate commuter students in Botswana. *International Journal of Higher Education*, 8(6). <https://doi.org/10.5430/ijhe.v8n6p1>
- xxiv. Marra, R. M., Rodgers, K. A., Shen, D., & Bogue, B. (2012). Leaving engineering: A multi-year single institution study. *Journal of Engineering Education*, 101(1), 6–27. <https://doi.org/10.1002/j.2168-9830.2012.tb00039.x>
- xxv. Maslow, A. H. (1962). *Toward a psychology of being*. New York: Van Nostrand Reinhold.

- xxvi. McBeath, M. L. (2015). Sense of belonging, peer support, and social media: Examining the mental health, well-being and school to work transitions of cooperative and non-co-operative education students. *University of Waterloo*.
- xxvii. McBeath, M., Drysdale, M., & Bohn, N. (2015). Connected Minds Healthy Minds: Exploring the impact of sense of belonging and peer support on the mental health of emerging adults. *School of Public Health and Health Systems, University of Waterloo, Canada*.
- xxviii. Museus, S. D., & Maramba, D. C. (2010). The impact of culture on Filipino American students' sense of belonging. *The Review of Higher Education, 34*(2), 231–258. <https://doi.org/10.1353/rhe.2010.0022>
- xxix. OECD. (2017). Students' sense of belonging at school and their relations with teachers: The Organisation for Economic Cooperation and Development. <https://doi.org/10.1787/9789264273856-11-e>
- xxx. Peacock, S., Cowan, J., Irvine, L., & Williams, J. (2020). An exploration into the importance of a sense of belonging for online learners. *International Review of Research in Open Distributed Learning, 21*(2).
- xxxi. Perez, M. L. (2020). Sense of belonging from a distance: How online students describe, perceive, and experience belonging to the institution. *Dissertations and Theses: Portland State University*.
- xxxii. Pittman, L. D., & Richmond, A. (2007). Academic and psychological functioning in late adolescence: The importance of school belonging. *Journal of Experimental Education, 75*(4), 270–290.
- xxxiii. Pousson, J. M., Laughlin, C. O., & Laughlin, C. O. (2022). Perceptions of marginality and mattering of LGBTQIA community college students. *Community College Journal of Research and Practice, 00*(00), 1–15. <https://doi.org/10.1080/10668926.2022.2100008>
- xxxiv. Sharma, G. (2017). Pros and cons of different sampling techniques. *International Journal of Applied Research, 3*(7), 749–752.
- xxxv. Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology, 89*, 325–339.
- xxxvi. Shochet, I. M., Dadds, M. R., Ham, D., & Montague, R. (2006). School connectedness is an under-emphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical Child and Adolescent Psychology, 35*, 170–179.
- xxxvii. Singh, A. (2018). Investigating the sense of belonging for international students through a predictive model. *Iowa State University*.
- xxxviii. Strayhorn, T. L. (2012). *College students' sense of belonging: A key to educational success for all students*. Routledge.
- xxxix. Strayhorn, T. L. (2019). *College students' sense of belonging*. In *A Key to Educational Success for all Students* (2nd ed.). New York: Routledge.
- xl. Thomas, L. (2012). Building student engagement and belonging in higher education at a time of change: A summary of findings and recommendations from the what works? Student retention & success programme. *London, UK: Paul Hamlyn Foundation*. Retrieved from: <https://www.phf.org.uk/wp-content/uploads/2014/10/What-Works-Summary-report.pdf>
- xli. Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: University of Chicago Press.
- xlii. Vaccaro, A., & Newman, B. M. (2016). A sense of belonging through the eyes of first-year LGBQ students. *Journal of Student Affairs Research and Practice, 1*–13. <https://doi.org/10.1080/19496591.2016.1211533>
- xliii. Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science, 331*(6023), 1447–1451. <https://doi.org/10.1126/science.1198364>
- xliv. Williams, C. (2007). Research methods. *Journal of Business & Economics Research (JBER), 5*(3).
- xlv. Zhao, D., Simmons, D. R., & Duva, M. (2019). Measuring students' class-level sense of belonging: A social-network-based approach. *ASEE Annual Conference and Exposition, Conference Proceedings*. <https://doi.org/10.18260/1-2--33093>
- xlvi. Zorzo, C., Méndez-López, M., Méndez, M., & Arias, J. L. (2019). Adult social isolation leads to anxiety and spatial memory impairment: Brain activity pattern of COx and c-Fos. *Behavioural Brain Research, 365*, 170–177. <https://doi.org/https://doi.org/10.1016/j.bbr.2019.03.011>