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Research Article

Affective-Cognitive Teaching Approach Affect on the Behavioural Engagements, Academic Achievement, and Self-efficacy of Technical and Vocational Students

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Abstract

Students' engagement with educators comprise a cognitive and affective interactions. The interaction between cognitive and affective engagement may enhance their overall behavioural response to teaching and learning activities. However, there are fewer studies on integrated cognitive-affective aspects of teaching and learning and its outcome among students in tertiary levels learning institutions in developing countries specially in the Sub-Saharan Africa. Therefore, the aim of the current study was to evaluate the effect of affective-cognitive teaching and learning on behavioural engagement, academic achievement and self-efficacy among students in Technical and Vocational Education Training (TVETs) in Kenya. This study employed a quasi-experimental design method comprising a pre- and post-test. Students groups were divided into two groups ($n_1 = 21$ and $n_2 = 24$). The two groups were taught the same course in technology education focusing on material design, where the first groups were done based on the integrated affective-cognitive approach, while the second (control) group was using the conventional method of teaching. The teaching method was the independent variable while the dependent variables were behavioural engagements, academic achievement and self-efficacy among TVET students. The study established that the group that were taught using cognitive-affective method had significantly ($P < 0.05$) higher scores in behavioural engagements (mean = 6.14 ± 0.34), academic achievement (5.87 ± 0.24) and self-achievement (5.043 ± 0.22) than the control group. The current study demonstrates the worthiness of the teaching intervention based on integrated affective-cognitive learning method. Therefore, the current study advocates for the integrated affective-cognitive teaching and learning approach in promoting positive behavioural engagements, academic achievements and self-efficacy among students in technical and vocational training institutions.

Keywords

Activity-based Learning, Affective-cognitive Teaching, Behavioural Engagement, Academic Outcomes, Vocational Education, Practical Skills

1. Introduction

Globally, access and participation in Technical and Vocational Education Training (TVET) programs ranges from 0% to 36% across 146 countries [1, 2]. These institution are essential as they confer individuals with the requisite skills and knowledge to work in specific fields and industries, drive economic growth and development, helps individuals to be competitive in the industry, as well as provide individuals with entrepreneurial skills for job creation [3]. These institu-

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tions are also credited for preparation of many people for the labor market [4, 5]. To achieve these aspects, technical education programs often include hands-on projects and real-world problem-solving exercises that enable the students to utilize their technical skills to solve real-world problems. Therefore, teaching of students in TVETs remains significant as they will need these skills and knowledge in the industry.

Imparting skills to students in TVETs relies on the teaching method adopted by the tutors or trainers [6, 7]. In several TVETs, there are several methods of teachings, but the most common ones are either using the cognitive and affective methods [8, 9]. Cognitive teaching method focuses on helping students to understand the concepts and information through remembering the concept [10]. The goal is to help students retain and understand material more effectively using their brains. In most TVETs cognitive method is largely in the form of lecture method of classroom instruction without any/adequate emphasis on the development of affective/emotional skills. Meanwhile, affective teaching is a method that focuses on students' emotions, perceptions, and behaviors to enhance learning [11, 12]. It is based on the idea that emotions play a key role in how students learn, remember information, and make decisions [13]. Cognitive-affective approach refers to teaching approach which provides a philosophical foundation that can be used by teachers for teaching ensuring ensure that the emotional and traditional cognitive realms are being delivered [14]. Nevertheless, on a realistic platform, this integration is occasionally witnessed in several higher learning institutions.

Success of students in various institutions can be determined by several measures key of which is behavioural engagement, and academic achievement, and self-efficacy [15]. Behavioural engagement, allows a specific set of behaviour such as determination and devotion, learning culture and student's self-regulatory strategies in their learning process [16]. Behavioural engagement allows investigation of the consequences 'in-action' and students ability to engage in high level of thinking during the learning process. Behavioural engagement are defined by positive indicators such as the students willingness to participate in class activities as tasks. On the other hand, there are also sets of negative behavioural indicators such cheating in examination, absenteeism from classes, damaging institution properties or delinquent characters. Academic achievement take the form of improvement in continuous assessment tests, performance in assignments, achievements in exams/examinations, writing essays, oral presentations and activeness in class participation [17, 18]. Meanwhile academic self-efficacy refers to students' beliefs and attitudes in their abilities of achieving academic feat, which also looks at their ability in fulfilling various academic tasks leading to more successful academic outcomes.

There is lack of educational pedagogy some domains of teaching in TVETs especially in technology-oriented courses which focus on cognitive teaching instead of acquired knowledge which is more affective-cognitive approach. Therefore, this study investigated the effect of an integrated affective-cognitive teaching and learning approach on behavioural engagement, academic achievement and self-efficacy among students undertaking technology education.

2. Study Methodology

2.1. Research Design

This study was conducted through a non-equivalent quasi-experimental design [19]. This method does not give the participants to equal chance of being either in the control or the experimental groups. This ensured that a random assignment of the students to the two test groups. Equal teaching and learning was ensured among the two groups of students. This study was conducted for a period of nine weeks.

2.2. Sample Size

The samples for the study were students from Technology Education at the Eldoret National Polytechnic. The students taught using affective-cognitive method consisted of 21 students while the control group consisted of 24 students. The same tutors was used to teach the two groups to avoid teacher's personality bias and teaching confoundment. The sample was obtained from a defined number of TVETs as the unit of sampling.

2.3. Research Instruments

Information on behavioural engagement and self-efficacy towards technology education was gathered using participant observation schedule [20]. The behaviour(s) consisted of positive behavioural engagement and negative behavioural engagement. The positive behavioural engagement were voluntary asking and response to questions, classmate interactions, notes taking, opinions, and interactions with class assignments. The negative behavioural engagement were sleeping during classwork, disruptive behaviour, time wasting, and intolerable behaviours. Two research assistants were trained to aid data collection. Meanwhile academic performance data was gathered from the records at the students department. For each variable, the scores were coded a 7 point Likert scale where 1 is very poor and 7 is excellent score.

The intervention was based on the integrated affective-cognitive teaching method. The activities in the method are based on knowledge from best practices in teaching and learning for the affective and cognitive domain.

2.4. Data Collection Procedure

Data collection permits and relevant certification were obtained prior to the research. The quasi experiment lasted the duration of the term for the students. After it was determined

that the experimental group had benefited from the affective-cognitive teaching, the same method was used for the control group as well so that the control group could benefit equally from the involvement in the study.

2.5. Data Analysis

Normality of the data distribution between the two groups was examined using Levene's test for equality of variance and t-test for equality of means. A 5% level of significance was applied during the study to determine the difference in behavioural engagements, academic achievement and self-efficacy between the two groups. Differences in the score of the variables between the two groups was analyzed using independent sample t-test.

2.6. Ethical Consideration

The ethical consideration in the current study informed consent, honesty, objectivity, confidentiality, respect for the subjects and intellectual property rights [21]. Permits to carry out research were sourced from relevant authorization agencies and institutions.

3. Results and Discussion

This study determined the effect of an intervention that promotes students behavioural engagements, academic achievement and self-efficacy. Normality of the data distribution between the two groups is presented in Table 1. Table 1 indicates no significant difference on the self-efficacy scores of behaviuoral engagements, academic achievements and self-efficacy. This implies that both sets of students are from the same population, which assumes equivalence among students among the studied variables at the initial stage of the study. This equality suggest that the students similar at the start of the study and therefore any differences among them at the end of the study may be attributed to the intervention.

Table 1. *Levene's test for equality of variance and t-Test result on mean difference of behavioural engagements, academic achievement and self-efficacy between groups.*

Variable	Levene's test for equality of variance		t-Test for equality of means	
	F	***P***	***F***	***P***
Behavioural engagements	1.452	0.236	2.232	0.073
Academic achievement	0.878	0.547	1.783	0.328
Self-efficacy	1.443	0.212	1.225	0.246

The differences in behavioural engagements, academic achievement and self-efficacy between groups are provided in Table 2. Based on Table 2, there were significant differences ($P < 0.05$) in the score of the three attributes before and after intervention, where the intervention group had higher scores than the control group.

Table 2. *Score (x/7.0) in behavioural engagements, academic achievement and self-efficacy between groups.*

Variables	Group 1 (Experimental)	Group 2 (Control)	t-Test	
	F	***P***	***F***	***t***
Behavioural engagements	6.14 ±0.34	4.23 ±0.44	27.277	<0.001
Academic achievement	5.87 ±0.24	4.54 ±0.41	20.396	<0.001
Self-efficacy	5.043 ±0.22	4.21 ±0.37	18.025	<0.001

Persistently high scores in behavioural engagements, academic achievement and self-efficacy in the current study suggest that students' learning was improved which has also been reported in a similar study elsewhere [22]. The high mean score behavioural engagements, academic achievement and self-efficacy among students taught using affec-

tive-cognitive methods are a pointer to the positive impact of the integrated affective-cognitive learning approach on the learning process. This is an indicator that students disengagement in task and learning when conventional method of teaching is applied. The affective-cognitive approach was effective in achieving the course learning outcomes which was determined by higher academic measures of the experimental group. The current finding converge with another study on the which attempted to improve academic achievement through interventions based on meta-analysis [23]. The current results may also mean that conventional methods of teaching failed to support students learning. The current finding also support the assertion that affective-cognitive teaching methods also improve students behaviour and self-esteem which are important for the students to engage with their teachers and hence find success in learning. It was previously shown that affective-cognitive learning support students in by encouraging learning responsibilities, and positive attitude since the teaching method is not just focusing on what is taught but the method as well which was described as more stimulating [24, 25].

4. Conclusions and Recommendations

The study determined the influence of affective-cognitive teaching method on behavioural engagements, academic achievement and self-efficacy among TVET students. The study established that the group that were taught using cognitive-affective method had significantly ($P < 0.05$) higher scores in behavioural engagements (mean = 6.14 ± 0.34), academic achievement (5.87 ± 0.24) and self-achievement (5.043 ± 0.22) than the control group. The current study demonstrates the worthiness of the teaching intervention based on integrated affective-cognitive learning method.

The current study advocates for the integrated affective-cognitive teaching and learning approach in promoting positive behavioural engagements, academic achievements and self-efficacy among students in technical and vocational training institutions. However, future research of affective-cognitive affective teaching there is need to incorporate the use of Information and Communication Technology (ICT) as moderating factor.

Abbreviations

TVET	Technical and Vocational Education Training
ICT	Information and Communication Technology

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Author Contributions

Elijah Omutange: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Resource, Software, Writing – original draft, Writing – review & editing

Violet Barasa: Supervision, Validation, Visualization, Writing – review & editing

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Data Availability Statement

The data is available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] Frick, S., TVET (Technical Vocational Education Training) Contributions toward Education Policy, Economic Sustainability, Development, and Poverty Abatement in a Globalized Economy: A Wicked Problem. 2022, The University of Arizona Thesis.

[2] Antoninis, M., B. Alcott, S. Al Hadheri, D. April, B. Fouad Barakat, M. Barrios Rivera, Y. Baskakova, M. Barry, Y. Bekkouche, and D. Caro Vasquez, Global Education Monitoring Report 2023: Technology in education: A tool on whose terms? 2023.

[3] Sebola, M. P., The role of Technical Vocational Education and Training Colleges (TVET) in higher education teaching: a higher education provided at basic education standard. EUREKA: Social and Humanities, 2022. 1: p. 50-57. https://doi.org/10.21303/2504-5571.2022.002257

[4] Paryono, P. The importance of TVET and its contribution to sustainable development. in AIP Conference Proceedings. 2017. AIP Publishing. https://doi.org/10.1063/1.5003559

[5] Baryamureeba, V. and W. K. Nahamya, The Role of TVET in Building Regional Economies. International Journal of Vocational Education & Training, 2014. 22(1).

[6] Alam, A., Investigating sustainable education and positive psychology interventions in schools towards achievement of sustainable happiness and wellbeing for 21st century pedagogy and curriculum. ECS Transactions, 2022. 107(1): p. 19481. https://doi.org/10.1149/10701.19481ecst

[7] Lashari, T. A., M. Alias, M. J. Kesot, and Z. A. Akasah, An affective-cognitive teaching and learning approach for enhanced behavioural engagements among engineering students. Engineering Education, 2013. 8(2): p. 65-78. https://doi.org/10.11120/ened.2013.00011

[8] Paryono, P., Approaches to preparing TVET teachers and instructors in ASEAN member countries. TVET@ Asia, 2015. 5: p. 1-27. Online: http://www.tvet-online.asia/issue5/paryono_tvet5.pdf (retrieved 23.07.2015).

[9] Majumdar, S., Teacher education in TVET: Developing a new paradigm. International Journal of Training Research, 2011. 9(1-2): p. 49-59. https://doi.org/10.5172/ijtr.9.1-2.49

[10] Zhou, X., A conceptual review of the effectiveness of flipped learning in vocational learners' cognitive skills and emotional states. Frontiers in Psychology, 2023. 13: p. 1039025. https://doi.org/10.3389/fpsyg.2022.1039025

[11] Dahri, S., Y. Yusof, and C. Chinedu. TVET lecturer empathy and student achievement. in Journal of Physics: Conference Series. 2018. IOP Publishing. https://doi.org/10.1088/1742-6596/1049/1/012056

[12] Yusof, Y., R. Roddin, and H. Awang, What students need, and what teacher did: The impact of teacher's teaching approaches to the development of students' generic competences. Procedia-Social and Behavioral Sciences, 2015. 204: p. 36-44. https://doi.org/10.1016/j.sbspro.2015.08.107

[13] Daher, W., K. Sabbah, and M. Abuzant, Affective engagement of higher education students in an online course. Emerg. Sci. J, 2021. 5(4): p. 545-558. https://doi.org/10.1016/j.sbspro.2015.08.107

[14] Goulet, C. and P. Owen-Smith, Cognitive-affective learning in physical therapy education: from implicit to explicit. Journal of Physical Therapy Education, 2005. 19(3): p. 67-72. https://doi.org/10.1097/00001416-200510000-00009

[15] Bowden, J. L.-H., L. Tickle, and K. Naumann, The four pillars of tertiary student engagement and success: a holistic measurement approach. Studies in Higher Education, 2021. 46(6): p. 1207-1224. https://doi.org/10.1080/03075079.2019.1672647

[16] Gillen-O'Neel, C., Sense of belonging and student engagement: A daily study of first-and continuing-generation college students. Research in higher education, 2021. 62(1): p. 45-71. https://doi.org/10.1007/s11162-019-09570-y

[17] Brown, C., D. Bailey, J. T. Passley, K. Barnaby-Swaby, S.-L. Seivewirght, and P. A. Bourne, An Examination of Strategies Employed to Increase Academic Performance among a Group of Ninth Graders in a Technical and Vocational Education and Training (TVET) High School in Western Jamaica. 2024. https://www.eurekajournals.com/GJETESS.html

[18] Stander, L., B. D. Plooy, and E. Scheckle, "Some of them are afraid of the language": Perceptions of TVET college staff about the relationship between English language proficiency and academic performance among Engineering students. South African Journal of Higher Education, 2022. 36(1): p. 296-311. https://doi.org/10.20853/36-1-4541

[19] Krishnan, P., A review of the non-equivalent control group post-test-only design. Nurse researcher, 2024. 32(1). https://doi.org/10.7748/nr.2018.e1582

[20] Seim, J., Participant observation, observant participation, and hybrid ethnography. Sociological Methods & Research, 2024. 53(1): p. 121-152.

[21] Resnik, D. B. and A. E. Shamoo, Reproducibility and research integrity. Accountability in research, 2017. 24(2): p. 116-123. https://doi.org/10.1080/08989621.2016.1257387

[22] Sotardi, V. A. (2022). On institutional belongingness and academic performance: mediating effects of social self-efficacy and metacognitive strategies. Studies in Higher Education, 47(12): p. 2444-2459. https://doi.org/10.1080/03075079.2022.2081678

[23] Schroeder, C. M., Scott, T. P., Tolson, H., Huang, T. Y., and Lee, Y. H. A meta‐analysis of national research: Effects of teaching strategies on student achievement in science in the United States. Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching, 2007. 44(10): p. 1436-1460. https://doi.org/10.1002/tea.20212

[24] Tzanavari, A., and Tsapatsoulis, N. (Eds.). Affective, interactive and cognitive methods for e-learning design: Creating an optimal education experience: Creating an optimal education experience. IGI Global. 2010. https://doi.org/10.4018/978-1-60566-940-3

[25] Lashari, T. A., Alias, M., Kesot, M. J., & Akasah, Z. A. An affective-cognitive teaching and learning approach for enhanced behavioural engagements among engineering students. Engineering Education, 2013. 8(2): p. 65-78. https://doi.org/10.11120/ened.2013.00011